US Army Corps of Engineers
New Orleans District

CULTURAL RESOURCES SERIES

Report Number: COELMN/PD-92/01

NATIONAL REGISTER EVALUATION OF THE KEYSTONE LOCK AND DAM ST. MARTIN PARISH, LOUISIANA

PRENTICE THOMAS AND ASSOCIATES, INC.
124 Shell Avenue, SE
Fort Walton Beach, FL 32548

FINAL REPORT

DECEMBER 1997

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

Unclassified. Distribution is Unlimited.

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	22 Dec 1997	Final 10/95 to 5/96

4. TITLE AND SUBTITLE
National Register Evaluation of the Keystone Lock and Dam, St. Martin Parish, Louisiana (Unclassified)

5. FUNDING NUMBERS
DACW29-94-D-0021
Delivery Order 3

6. AUTHOR(S)
Bergstresser, Jack R., Sr.; Brasseaux, Carl; Morehead, James R. and Thomas, Prentice M., Jr.

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
Prentice Thomas and Associates, Inc.
124 Shell Avenue, SE
Fort Walton Beach, FL 32548

8. PERFORMING ORGANIZATION REPORT NUMBER
PTA Report of Investigations No. 332

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
New Orleans District, US Army Corps of Engineers
P.O. Box 60267
New Orleans, LA 70160-0267

10. SPONSORING/MONITORING AGENCY REPORT NUMBER
COELMN/PD-92/01

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT
Unclassified. Distribution is unlimited.

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

This document presents the background research, field inspection and findings from a National Register of Historic Places evaluation of the Keystone Lock and Dam in St. Martin Parish, Louisiana. Construction of the Keystone Lock and Dam, located on Bayou Teche, was begun in 1910 and the facility opened in 1913. Faced with economic hardships stemming from the decline of the steamboat industry and the completion of the railroad at Lafayette, the residents of St. Martinville, Louisiana, sought to improve their situation by making the upper Teche navigable to barges, thus attracting industry to the area. Several area residents who owned property adjacent to Bayou Teche donated land in anticipation of great benefits to the local population that would result from the construction of the Keystone Lock and Dam. The original facility consisted of a 175 foot dam and lock with an overall length of 229 feet. The lock had a 160 foot chamber and gate bays at the north and south ends. Based on a thorough review of the area and facility history as well as the facility itself, the Keystone Lock and Dam is recommended as eligible for nomination to the National Register of Historic Places. Preservation is strongly recommended, but, if preservation is not feasible, Historic American Engineering Record documentation is recommended as a mitigative alternative.

14. SUBJECT TERMS
Historic, cultural resources management, evaluation, National Register of Historic Places, Keystone Lock and Dam, Bayou Teche, engineering feature, navigation, water-borne commerce, Historic American Engineering Record

15. NUMBER OF PAGES
81 including appendices

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	

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

REPLY TO
ATTENTION OF:

November 17, 1997

Planning Division
Environmental Analysis Branch

To the Reader:

The following report provides a National Register of Historic Places evaluation of the Keystone Lock and Dam, located on Bayou Teche in St. Martin Parish, Louisiana. The evaluation was performed as part of the planning process for the future of the facility. Although the fate of the lock and dam remains to be determined while alternatives are considered, the assessment described in this report demonstrates that it meets at least two of the criteria for eligibility for the National Register (36CFR§60.4[a,c]). Both the U.S. Army Corps of Engineers and the Louisiana State Historic Preservation Officer concur in this determination of eligibility.

This evaluation was designed, funded, and directed by the U.S. Army Corps of Engineers, New Orleans District, as part of our cultural resources management program. The report has been reviewed and accepted by the New Orleans District. Although we generally concur with the recommendations for mitigation made in the report, a number of alternatives are being considered. The final decision about mitigating the proposed impacts to the lock and dam will be made in the future through consultation with appropriate interested parties.

Edwin A. Lyon
Technical Representative

Michael E. Stout
Contracting Officer's
Representative

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

NATIONAL REGISTER EVALUATION OF THE KEYSTONE LOCK AND DAM ST. MARTIN PARISH, LOUISIANA

CONTRACT DACW29-94-D-0021
DELIVERY ORDER 3

BY

JACK R. BERGSTRESSER, SR.
CARL BRASSEAUX
JAMES R. MOREHEAD
AND
PRENTICE M. THOMAS, JR.

FOR

NEW ORLEANS DISTRICT CORPS OF ENGINEERS

PRENTICE THOMAS AND ASSOCIATES, INC.
REPORT OF INVESTIGATIONS NO. 332

1997

ACKNOWLEDGMENTS

The Keystone Lock and Dam study was interesting from both a historical and technological perspective. I hope the resultant report will make a contribution to the historical record of commerce in the Upper Teche region of south Louisiana.

In conducting this work, my firm was fortunate to have the consultation and assistance of many people. Foremost among them is Dr. Edwin Lyon of the New Orleans District Corps of Engineers. Mr. Michael Stout, also with the New Orleans District, provided technical guidance as the contracting officer's representative.

I would also like to acknowledge the excellent contribution of the two primary authors, our consulting historian, Dr. Carl Brasseaux, and our consulting industrial archaeologist, Dr. Jack Bergstresser. Dr. Bergstresser's work benefitted greatly from the information provided by two informants, Mr. Gary Angeron, the Lock and Dam Equipment Mechanic Supervisor at Berwick Lock and Dam, and Mr. Lennis F. Paray, Lock and Dam Equipment Mechanic at Berwick Lock and Dam.

I would also like to thank Mr. James R. Morehead for his input on the area environment. Other members of the staff who deserve special mention include Ms. Paula Cook, drafter; Ms. Pamela Mathews, report production; Ms. Barbara Rivera, accounts manager; and Ms. Mathilda Cox, editor.

Prentice M. Thomas
Principal Investigator

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER ONE
INTRODUCTION

By
Prentice M. Thomas, Jr.

In 1994, Prentice Thomas and Associates, Inc. (PTA) was awarded an indefinite quantity contract to conduct various cultural resources investigations for the New Orleans District, U.S. Army Corps of Engineers, New Orleans District (NOD). The contract had a one-year base period with an additional option year.

Scope of Work

Under delivery order 3, PTA was tasked with evaluating the National Register of Historic Places (NRHP) eligibility of the Keystone Lock and Dam, situated on Bayou Teche between St. Martinville and New Iberia, Louisiana (Figures 1 and 2). Recommendations for treatment of the property if recommended as eligible were also required. The NOD specifically wanted to determine the effect on the lock of filling the chamber with rocks and abandoning the structure by maintenance cessation.

Study Tasks

The study required a background research phase in which relevant source material was consulted regarding the facility's history, creation, construction and operation. The second phase, completed subsequent to preparation of the background data report, was a field visit to the site for purposes of investigation, description, photography and informant interview. The final phase was data synthesis and report preparation. We note that the research and this document focus on the Keystone Lock and Dam proper, as well as the facility's impact on the surrounding area. For information related to the historical and technological development of locks and dams, the reader is referred to Dobney et al. (1987).

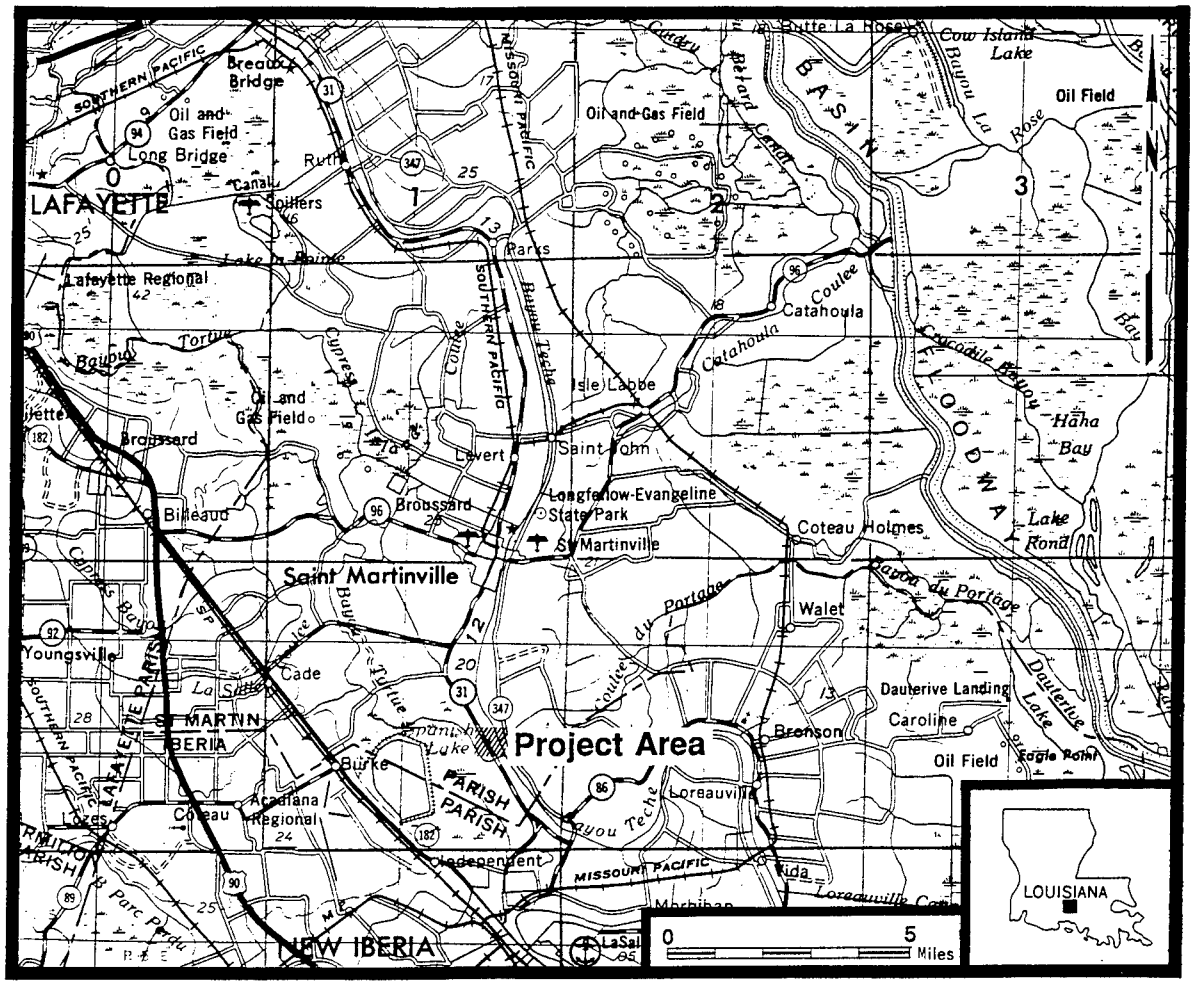


Figure 1. General location map of Keystone Lock and Dam.
(Excerpt of the New Iberia North quadrangle)

Report Organization

Chapter Two summarizes environmental characteristics of the study area. Chapter Three presents a historical overview. Chapter Four contains a discussion of the lock and dam. Chapter Five is the management recommendations discussion. Appendix I contains the scope of work.

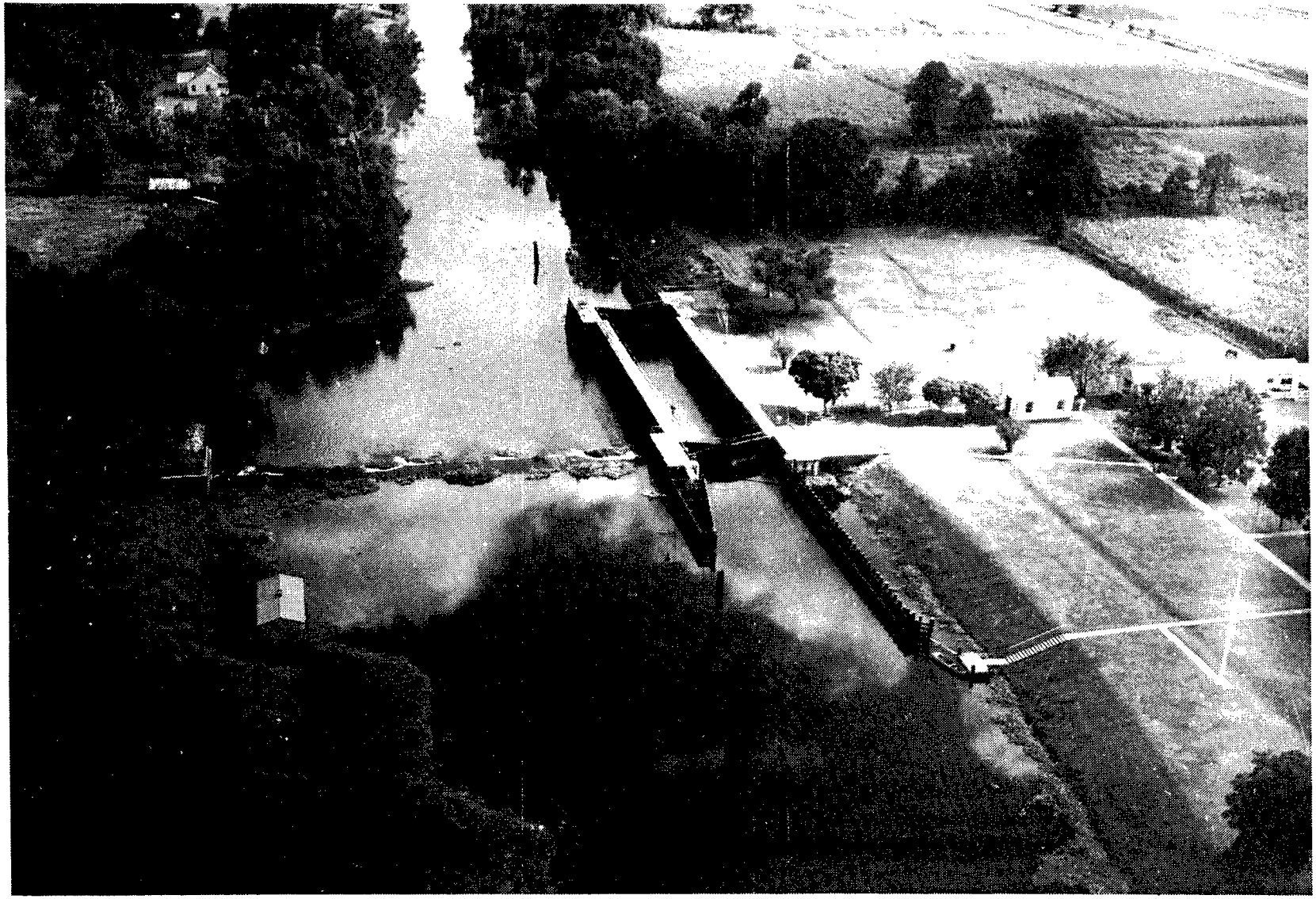


Figure 2. Aerial photograph of Keystone Lock and Dam - 1947.
(Courtesy NOD)

CHAPTER TWO
ENVIRONMENTAL OVERVIEW

By
James R. Morehead

Geomorphology

The area surrounding the Keystone Lock and Dam lies in the central Gulf Coastal Plain, a dissected, gently-sloping surface between the Ouachita and Appalachian Mountains and the Gulf of Mexico. The project area is in a region amid ancient point-bar deposits laid down by the Teche-Mississippi system. Pleistocene-age Prairie Formation fluvial deposits lie some three miles west (Saucier 1994: Plate 11). The landscape of the project area has been deposited and shaped by the Mississippi and other rivers for thousands of years.

This section is not a comprehensive study of the geology and geomorphology of southern Louisiana, but simply a brief review of features and events with direct bearing on the development of the landscape and soils of the project area. Sources consulted include, but are not limited to Howe and Moresi (1931), Gagliano and Thom (1967), Saucier (1974, 1976, 1994), Coastal Environments (1977), Miller [in United States Department of Agriculture (USDA) 1977], Gibson (1978, 1990, 1991), Lenzer (1982), USDA (1974, 1977), Snead and McCullough (1984), Jeter et al. (1989) and Mossa and Autin (1989). We have relied most heavily on the most recent compendium on the Lower Mississippi Valley (Saucier 1994), which substantially revises certain conceptions.

The Prairie Formation

The Prairie Formation is believed to be a product of alluvial deposition by Mid-Pleistocene rivers, including the ancestral Mississippi and Red (Saucier 1974:16; USDA 1977; Gibson 1990; Saucier 1994). Its deposition is traditionally conceived of as concurrent with the Sangamon Interglacial (Saucier 1994:16); it has been recently suggested that the upper parts of the Prairie were deposited in what is termed the "Eowisconsin" (Saucier 1994). The matrix is believed to represent deltaic or alluvial deposits (USDA 1977). Both the upper and lower surfaces of the Prairie Formation are marked by ridge and swale topography left by meanders of the Mississippi River (USDA 1977:3; Howe and Moresi 1931).

Subsequently, most of the Prairie surface and parts of the adjacent Mississippi deltaic plain were covered by loess deposits up to several meters thick (USDA 1977; Jeter et al. 1989; Gibson 1990). Exactly how many episodes there were and when is unclear (cf. Saucier 1976). It is clear, however, that there were multiple episodes of deposition (Jeter et al. 1989:7) based on the presence of weak soil horizons within the loessal deposits, the earliest of which may be quite ancient (Mossa and Autin 1989; cf. Ruhe 1983). The age of much of the loess is typically estimated at about 20,000 years B.P. (Saucier 1974; Coastal Environments 1977; Mossa and Autin 1989). The latest deposition episode may have begun circa 12,000 B.P. based on the presence of mastodon bones near the base of the loess deposits on Coteau Ridge (Gibson 1990). Loess deposition seems to have ended by Late Paleoindian times, as artifacts of this age have been found on top of loess soils (Gibson 1990).

The Lower Mississippi Valley Alluvial Plain

A detailed reconstruction of the geomorphological history of the Lower Mississippi Valley would be redundant, as several sources deal with those topics in detail (Howe and Moresi 1931; Saucier 1974; Coastal Environments 1977; USDA 1977; Gibson 1978, 1982; Jeter et al. 1989) and the developmental history has been reviewed in considerable detail in a recent publication (Saucier 1994). This is a review of what is known or strongly suspected about it.

Although the Mississippi is believed to have occupied several belts and to have developed corresponding delta lobes in the last 12,000 years (Coastal Environments 1977), only a small number of these are directly relevant to the project area (Figure 3). The earliest deposits in the area are thought to have been related to the Lafayette meander belt and delta complex which was formed during the Late Paleoindian Period as well as the Bayou Tortue meander belt and associated Maringouin delta system occupied by the Mississippi River in Early-Middle Archaic times (Coastal Environments 1977; Gibson 1990; Saucier 1994). These systems have left few identifiable traces in the project area (Gibson 1990), and most of the sediments deposited by them seem likely to have been scoured out by the later Teche-Mississippi and its movements.

The Teche-Mississippi and associated Sale-Cypremort delta lobe were formed about 6000-4500 B.P. Alluvial deposition associated with the Teche-Mississippi is believed to have begun circa 6000 years ago and to have ended at about 4500-4000 B.P. although some distributaries of the Teche system may have remained active until about 3000 B.P. (Saucier 1974, 1994; USDA 1977; Coastal Environments 1977). During this interval, the Mississippi was flowing in the western part of its alluvial plain. The associated sediments are primarily backswamps, levees and in the project area, point bar deposits (USDA 1977; Saucier 1994).

About 4500 B.P., the Mississippi River seems to have abandoned the Teche system in favor of a more easterly course near Baton Rouge (Saucier 1994), at which time the development of the St. Bernard delta complex, including the Metairie Lobe, began (Saucier 1974; Coastal Environments 1977). This and subsequent Mississippi evolutionary developments have little bearing on the physical depositional history of the project area.

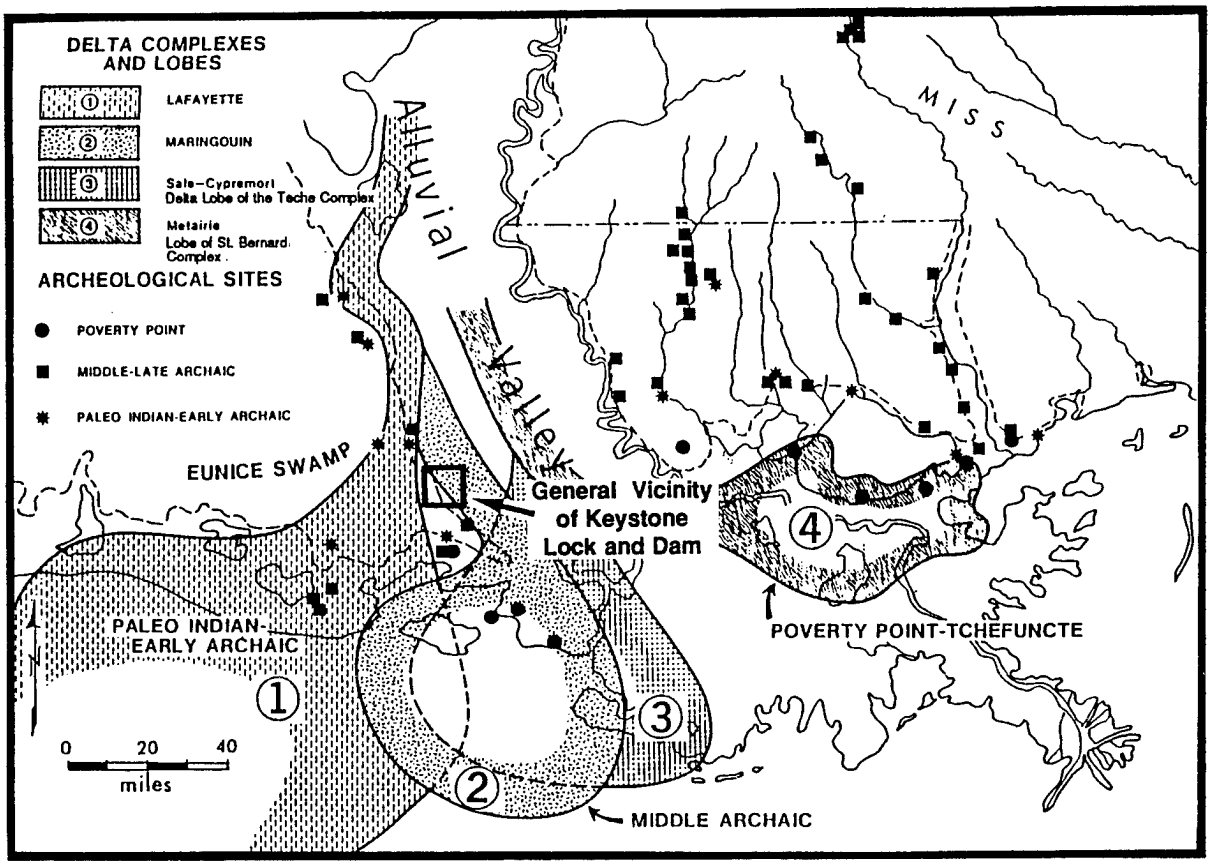


Figure 3. Pleistocene and Holocene Mississippi River courses and deltas in southern Louisiana.
(from Coastal Environments 1977)

However, the Red River's contributions to the area may have begun at about this time. We say "may" above, because recent studies summarized by Saucier (1994) have called into question the precise dating of most Red River events in the area. It has been believed that the Red joined the Teche-Mississippi upstream and that after the Teche system was abandoned by the Mississippi, the Red continued to occupy the abandoned Mississippi course. It was underfit in the old Mississippi channel and made few overbank contributions except for crevasse outbreaks (Gibson 1990) leaving isolated deposits which are the parent material for Gallion soils.

Current Setting

Much of the area around the lock today is farmland as depicted by the aerial view shown in Figure 4; also present are swamps and isolated stands of wood. Prior to cultivation, the area landscape was dominated by live oaks (Gibson 1990:15) with a willow-cottonwood community in the higher areas, followed by red maple, bitter pecan and green ash (O'Neil et al. 1975; Gibson 1982:71).

Figure 4. Aerial photograph of Keystone Lock and Dam - 1965.
(Courtesy NOD)

St. Martin Parish is drained by several streams. The most important are the Atchafalaya River which runs along the eastern boundary and Bayou Teche, which is a relict channel of the Mississippi River, later occupied by the Red River (Howe and Moresi 1931; Saucier 1994). There are other streams in the immediate area such as Bayou Tortue, Coulee du Portage, Bayou Teche and LaSalle Coulee.

The modern climate of southern Louisiana may be described as humid subtropical (Muller and Willis 1978). It is dominated by the presence of the Gulf of Mexico and the warm, humid masses of air which flow off the Gulf. Summers are hot and humid, but tempered some by Gulf breezes. Winters are marked by short-lived cold spells during which frigid high pressure air masses push through to the Gulf, followed quickly by a return to milder conditions.

Temperatures range from a minimum of 12°F in January to a maximum of 103°F in August. January highs average 62°F with average lows of about 42°F, with 83°F and 12°F being the extremes. July highs average 91°F with an average low of 72°F, with 102°F and 61°F being the extreme high and low (USDA 1977:Table 1).

Precipitation averages about 57" (155cm) per year, ranging from 45 to 67" (114 to 170cm). Monthly precipitation ranges from less than 0.5" to almost 13" (1.3 to 33cm), but on average is spread through the year (USDA 1977). Downpours are not uncommon and stalled fronts may drop as much as one foot (30cm) of rain in as little as 24 hours. Sleet is unusual; hail and snow are also quite rare.

CHAPTER THREE
HISTORICAL OVERVIEW

By
Carl Brasseaux

Since the focus of this document is upon a historic engineering structure, the prehistoric events in the region are of little relevance other than to set the stage for introducing the historic overview. As such, the following provides a brief discussion of the prehistoric era, followed by a more detailed review of the historic period.

Prehistoric Era

The time and location of the initial human foray into the upper Teche Valley is virtually impossible to determine because of heavy sedimentation over the last twelve millennia. Archaeological excavations at Avery Island (16IB23, 16IB24) in Iberia Parish and the Vatican site (16SL1) near the Lafayette-St. Landry Parish border indicate that Paleoindians were active in the area between 10,000 and 6,000 B.C. (Gibson 1976:9).

Three prehistoric archaeological sites have been discovered along the central Teche, in proximity to Keystone Lock. The oldest of these three, the Berard Mounds (16IB2), is located in present-day Loreauville (Iberia Parish). The Berard Mounds consist of two low, conical mounds on the east bank of Bayou Teche. Standing approximately 180 meters apart, both mounds have been disturbed. Numerous artifacts excavated from the mounds were once on display in the now-defunct Loreauville Heritage Museum. Existing artifact collections suggest little more than the cultural period in which the mounds were created—Marksville (ca. A.D. 100 to A.D. 500). A second Marksville site (16IB1) is located seven kilometers north by northeast of Loreauville, along Coulee du Portage (Gibson 1976:38).

The third site, the Duplantis site (16SM6), is a non-mound site located about one-half kilometer west of Bayou Teche and 2.2 kilometers east of Spanish Lake. The Duplantis site produced "potsherds, amorphous clay fragments, flakes, and reported projectile points" (Gibson

1976:37). The physical evidence suggests that a village occupied by approximately 100 persons once stood upon the site during the Plaquemine period (A.D. 1200 to 1600).

Despite the large chronological gap between the Marksville and Plaquemine period sites, the central Teche Valley was almost certainly subject to constant human occupation, as in the more thoroughly investigated Vermilion River Valley nearby. The area, however, was sparsely populated at the beginning of the historical period.

Historic Era

At the dawn of historic times, the upper Teche constituted the eastern extremity of the lands traditionally claimed by the Attakapas tribe. The Attakapas have been the subject of heated scholarly debate for much of the late twentieth century. Numerous contemporary observers consistently pointed to the tribe's alleged cannibalism; indeed, the tribe's very name means "man eater" in Choctaw. The tribe was also known variously as the Han, Cahoques and Akokisas to the Spanish (Cassidy 1967:4).

According to Cabeza de Vaca, the first European to contact the tribe in 1528, the Attakapas were "large and well formed." A nomadic group of hunter-gatherers, these pre-agricultural people ranged throughout coastal Louisiana. Hunting was plentiful in spring, summer and fall, but in winter, they endured great hardships from exposure and malnutrition. Despite their great hunger, Attakapas tribal members evidently did not engage in cannibalism at the time of Cabeza de Vaca's residence among them; at least the Spanish explorer does not mention the practice in his memoirs. They did, however, practice a form of symbolic cannibalism, in which the surviving family members of a deceased tribal physician drank the ashes of his cremated body.

By 1684, however, the Attakapas had evidently reverted to cannibalism in its most grisly form (Cassidy 1967:4-6). François Scimars de Bellisle, a French military officer, who lived among the Attakapas from late 1719 until February 1721, made several references to the tribe's anthropophagic practices in his memoirs, including the following account of cannibalism (Butler 1970:173; Allain and Cassidy 1968a).

> Nevertheless, they were able to kill but one, who was up in a tree to knock walnuts down. With their arrows they made him come down much more quickly than he had climbed up. When this man was dead, they loaded him on their horses and brought him to the place where we had stayed to wait for them. When they returned, they threw this [dead] Indian on the prairie. One of them cut his head off and another one cut the arms off, while they skinned him at the same time. Several of them ate the yellow fat, which was still raw, and finally they devoured him completely. [Folmer 1940/1941:219]

Scimars de Bellisle's reports of cannibalism among the Attakapas were verified by those of Captain Béranger, a French naval captain who encountered the tribe along the shore of Galveston Bay in August 1721. Scimars de Bellisle served as Béranger's translator during this expedition (Folmer 1940/1941:227-228).

Reports of the tribe's cannibalism, primitive state of cultural development and lack of desirable trade goods discouraged further Franco-Attakapas contacts for more than a decade. The increased use of French firearms among their traditional enemies, who engaged in trade with the French at Natchitoches, evidently drove the Attakapas to seek permanent commercial relations with the French (Folmer 1940/1941:217-228; Butler 1970:173). According to the "Memoir on the Indians" by Louisiana Governor Jean-Baptiste Le Moyne de Bienville, dated May 15, 1733, the Attakapas initiated these contacts during his predecessor's administration, probably after the French solicited the tribe's help in subduing the Natchez after the massacre of November 29, 1729.

> Mr. Périer had reported that these cannibal Indians who are in the western part, had come down to New Orleans to ask him to send men to their country to trade for their furs, their tallow, and their horses. He had noticed that the majority of these Indians were nomadic, but that they had assured him that if men came to trade with them, they would settle in villages like the other nations; and he had added that he would send Sieur de Monchervaux to investigate this nation whose trade might be very profitable. Mr. de Bienville, who was ordered to report on the result of these plans, states that Sieur de Monchervaux was not sent to investigate these nations.
>
> He learned from an individual who came from them that they are rather numerous, but that they are nomadic and separate into little bands to live by hunting and fishing.
>
> There is, furthermore, no ground to expect that a fur trade could be carried on with these Indians. They are so lazy that they hardly have anything with which to cover themselves. It is true that they have some horses, but the difficulty of bringing them would cancel the profit that might be derived from this trade.
>
> [Marginal note:] Approved. It might however be advisable to investigate the proposal. [Rowland and Sanders 1927, 1:204]

The ministerial admonition to "investigate the proposal" notwithstanding, Louisiana's administration evidently did nothing to explore the possibility of trade with the Attakapas tribe. The initial commercial contacts were consequently established by two adventurous individuals—Joseph Blanpain, a New Orleans property owner, and Joseph Le Kintrek *dit* Dupont, custodian of the New Orleans prison. On December 11, 1738, Blanpain and Le Kintrek entered into a partnership

ostensibly for the establishment of trade with the Attakapas tribe and the Opelousas tribe, the Attakapas' northern neighbors with whom the cannibals shared a common language. Circumstantial evidence in Texas and Louisiana from the 1770s, however, indicates that the primary purpose of the Blanpain-Le Kintrek commercial venture was actually a cover for smuggling with the Native American population of southeastern Texas, exchanging French firearms and other manufactured goods for Spanish cattle, horses, deer pelts and bear oil, the latter of which was used extensively in colonial cuisine. Alexandre Porter subsequently entered into the joint venture, evidently as a silent partner. Porter obliged himself to accompany Blanpain into Attakapas territory and to "help with the trade." Blanpain and Porter were to be assisted by three African slaves and four French "orphans" hired for this expedition. Gérard Pery, an influential Louisiana businessman, entered into the Blanpain-Le Kintrek venture on December 14, 1738; Pery provided the frontier traders with a dependable supply of French imports, while also furnishing Blanpain and Le Kintrek with an outlet for the pelts the Attakapas trade was expected to generate (Allain and Cassidy 1968b:32).

Blanpain's initial foray into the Attakapas and Opelousas tribal lands appears to have been successful, for, on January 30, 1740, he entered into an agreement with Jerome and Marie Elisabeth Dupont to represent the partnership at the principal Attakapas village for a period of six years. Under the terms of this agreement, which clearly contradicted the early agreement with Pery, Jerome Dupont was to send to François Gautreau, the royal warehouse manager at New Orleans, all of the royal deer hides obtained from the Attakapas territory. Meanwhile, the scant extant documentation suggests that Blanpain and Le Kintrek personally engaged in trade with the Opelousas. Blanpain and Le Kintrek renewed their contract "*aux Houpelousas*" on April 21, 1740. Though the daily operations of the Attakapas and Opelousas trading ventures are veiled in obscurity, the Blanpain-Le Kintrek partnership appears to have prospered, for Blanpain was compelled to produce 503 deerskins to satisfy one of his creditors (Allain and Cassidy 1968b:34).

The Blanpain-Le Kintrek partnership was dissolved on January 1, 1744. Shortly thereafter, Blanpain entered into a partnership with Fabry de la Bruyère, naval commissary in Louisiana's administration, to exploit the Attakapas trade. The new partners evidently hired Rémy Paquet to represent them in Attakapas territory. The Blanpain-Fabry de la Bruyère partnership was short-lived. Almost immediately beset by financial problems, the partnership was rescinded on March 19, 1744, but Blanpain and Fabry de la Bruyère required nearly two years to satisfy their creditors (Allain and Cassidy 1968b:34-36).

Following the dissolution of his ill-fated partnership with Fabry de la Bruyère, Blanpain appears to have operated as an independent trader along Louisiana's southwestern frontier. His apparently extensive familiarity with southeastern Texas, undoubtedly resulting from his aforementioned smuggling activities, was utilized by the Louisiana government in 1745, when he was recruited to search for the crew of a missing French ship along the upper Texas coastline (Allain and Cassidy 1968b:36).

Le Kintrek meanwhile established a trading post near the junction of bayous Teche and Courtableau. Le Kintrek and his son-in-law, Jacques Courtableau, appear to have maintained a trading operation in the vicinity of present-day Port Barre from the late 1740s until the mid-1760s.

Despite Le Kintrek's and Blanpain's apparent success in the Opelousas and Attakapas territories, only a handful of Frenchmen ventured into present southwestern Louisiana before the 1760s, primarily because of widely circulated reports of the hardships endured in Attakapas country by the survivors of the 1745 shipwreck of the French ship *La Superbe* (Allain and Cassidy 1968c:22-24; Shelby 1938:641; Cruzat 1928:179-208).

In the early 1760s, however, European settlement in the Attakapas territory began in earnest as a handful of French adventurers and retired military personnel procured huge land grants in the upper and central Teche Valley. These pioneers were followed in 1765 by large numbers of Acadian refugees.

The Acadian immigrants of 1765 had formed the nucleus of the resistance movement against the successful British attempt to deport Nova Scotia's French-speaking population in 1755. Taking up positions along the Petit Codiac River, near present-day Moncton, New Brunswick, these former guerrillas had conducted military raids deep into British territory following the onset of Acadian deportation. In addition, they had operated a privateer against British shipping. Forced to surrender in late 1758, these Acadians and their families were marched overland to Halifax, Nova Scotia, where they remained in concentration camps until November 1764. Departing Halifax aboard a chartered vessel, the former prisoners, led by Joseph Broussard *dit* Beausoleil, traveled to New Orleans via Saint-Domingue (present-day Haiti).

Arriving at New Orleans in late February 1765, 193 destitute Acadians sought the assistance of Louisiana's government. Because Louisiana had been partitioned into British and Spanish territories by the recently ratified Treaty of Paris (1763) and because the arrival of Louisiana's initial Spanish governor was expected momentarily, the colony's caretaker French administrators could provide the Acadians with little more than the implements and seed grain necessary to start their first crop. The Acadians, who were joined in the spring of 1765 by scores of their *confrères* from Halifax, consequently entered into a contract with retired French military officer Antoine Bernard d'Hauterive to raise cattle on shares near present-day St. Martinville. This arrangement, colonial administrators noted, would allow the Acadians to become self-sufficient quickly and it would also assure New Orleans of a dependable source of beef (Brasseaux 1987:74-75).

In late April, 231 Acadians departed New Orleans for the St. Martinville area. The Acadians were accompanied by Louis Andry, former French military engineer, who had been ordered to establish an Acadian village along Bayou Teche. No Acadian village, however, was ever established. The Acadians agreement with d'Hauterive unraveled within weeks of the refugees' migration to the central Teche Valley, and the Acadians, accustomed to living in dispersed rural communities, quickly moved to temporary camp sites near present-day Parks and Loreauville. The Acadian population again dispersed as a result of a mysterious epidemic during the late summer and

fall of 1765. By January 1766, there were no less than five distinct Acadian communities in the Teche Valley (Brasseaux 1987:76-77).

This dispersal initially impeded the Acadians' economic development. Because of the dissolution of their agreement with d'Hauterive, the refugees sought out an alternate source of cattle, and, by June 1765, the Acadians had entered into an agreement with pioneer Jean-Baptiste Grevemberg to acquire cattle on credit. The Acadians then quickly alienated Grevemberg by applying for patents to lands near present-day Loreauville that Grevemberg claimed as his own. The Acadian dispute with Grevemberg gave rise to a set of land grant regulations by Alejandro O'Reilly, Louisiana's second Spanish governor, in 1770 (Brasseaux 1987:92).

O'Reilly's regulations sharply restricted the size of Grevemberg's enormous land claim, which initially stretched from Bayou Teche in the Fausse Pointe area to the Vermilion River, encompassing approximately 27 square miles. On March 2, 1770, Grevemberg received a Spanish patent to a land grant extending 69 arpents[1] (235.7km^2) along the west bank of Bayou Teche by a depth of one-half league (136.64km^2). Prime lands on the opposite bank were obtained by Louis Grevemberg (son of Jean-Baptiste) by means of a Spanish land grant issued (Conrad 1990:202-204). The Grevemberg grants (Township 11 South, Range 6 East, sections 8 [Jean-Baptiste Grevemberg] and 17 [Louis Grevemberg]) included the present site of the Keystone lock and dam reservation (Figure 5).

Navigation on Bayou Teche, 1765-1913

By the 1780s, the Teche Valley began to prosper as pioneer families started to exploit the area's abundant agricultural resources. Throughout the late eighteenth century, the Attakapas district, encompassing the modern civil parishes of St. Landry, Lafayette, Vermilion, Iberia, St. Martin and St. Mary, produced significant quantities of cotton, beef, leather, indigo, tobacco, vegetables and poultry. New Orleans served as the natural outlet for the Teche Valley's agricultural surpluses.

Economic ties between the colonial capital and the central Teche Valley were initially forged by the Grevemberg family. Spanish colonial records indicate that as early as 1770, the Grevembergs functioned as "caboteurs" (water-borne peddlars), stopping at each landing to barter manufactured items purchased at New Orleans for produce. In a typical month, the Grevembergs made several circuitous trips to New Orleans via the Atchafalaya Basin, Bayou Plaquemine and the Mississippi River.

The Grevembergs were quickly joined by the most prosperous Teche Valley planters who, by the end of the century, had begun to transport their produce to market by means of pirogues, long, hollowed-out logs capable of transporting up to several tons of cargo (Comeaux 1972:9). Because numerous, extensive rafts blocked the mouth of the Atchafalaya River and a dangerous bar permitted

---

[1] *An arpent is an old French unit of land measure equivalent to 0.848398 acre, or 3415.587m^2.*

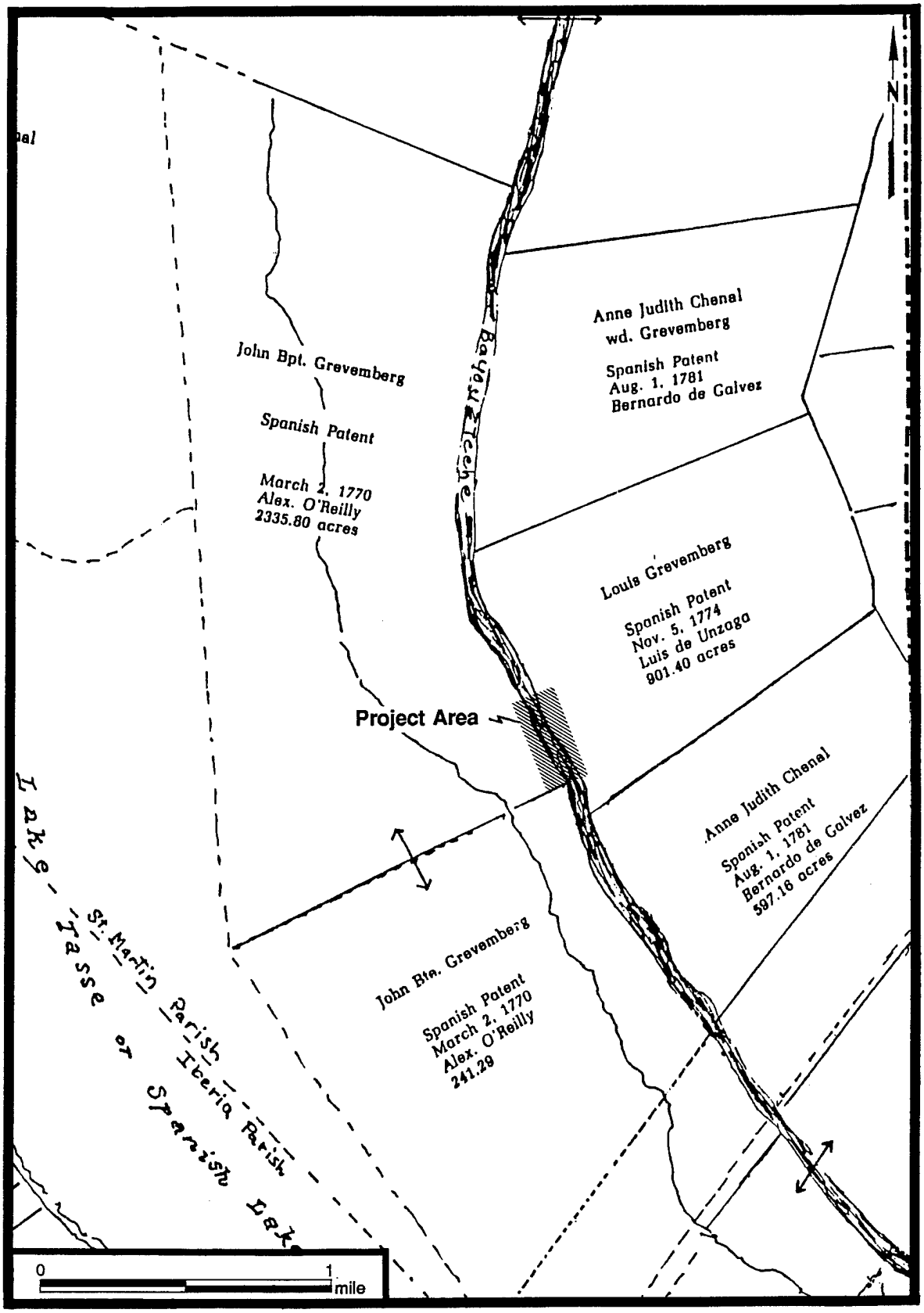


Figure 5. Landholdings around Keystone Lock and Dam site based on surveys made between 1807 and 1821.
(from Taylor 1980)

only the smallest sailing vessels to enter the Teche via its confluence with the Atchafalaya River and Berwick Bay, the circuitous route through the Atchafalaya Basin and Bayou Plaquemine was the shortest and safest water route to New Orleans (Prichard et al., eds. 1945:829; Comeaux 1976:153-163; Franklin Planter's Banner, December 12, 1850). The Bayou Plaquemine route, however, was navigable only when the Mississippi River was at flood stage—usually from mid-January to late May. Fully cognizant of the stream's value to local commerce, Attakapas district settlers periodically joined together, beginning in 1789, to dredge Bayou Plaquemine and to remove navigational hazards from the waterway (AGI, PPC, 202:135; Williams 1970:5-10). These efforts, however, bore little fruit.

Meanwhile, economic changes in the Attakapas country magnified the need for a dependable link with New Orleans. Before the turn of the nineteenth century, cotton emerged as the principal staple crop in the Teche Valley, and shipment of agricultural produce to New Orleans consequently increased dramatically. The volume of commerce would continue to rise despite the dramatic decline of cotton production between 1815 and 1823, when crops fell prey to "worms and the rot" (Franklin Planter's Banner July 1, 1847).

The decline of cotton was followed by the rise of sugar production along the Teche. Teche Valley sugar growers produced less than 100 hogsheads in 1813, and the volume of sugar production had increased to only 350 hogsheads ten years later. Production, however, grew geometrically after 1823, rising to 2,500 hogsheads in 1825, 16,781 hogsheads in 1839, 37,283 hogsheads in 1849, and 73,885 hogsheads in 1859 (De Bow's Review 1859:80).

The Teche Valley farmers' increased reliance upon a single staple crop created a corresponding need to deliver their produce to market just as prices for that commodity peaked. Numerous Attakapas country planters and merchants consequently purchased keelboats built in the upper Ohio Valley (Ship Registers and Enrollments 1941:1, 2, 16, 32, 37, 42, 45, 46, 92, 119, 124). Between 1816 and 1819, twelve of these vessels were registered with federal officials at the Port of New Orleans for use along Bayou Teche. These keelboats, which were generally capable of transporting approximately 29.75 tons of cargo, were sufficiently large to accommodate the transportation needs of most farms and plantations. However, the boats' means of propulsion—a single mast mounted amidships—was often rendered useless by the overhanging branches of giant live oaks lining the bayous and rivers of southern Louisiana. Keelboat crews were consequently forced to pole the vessels through the nearly stagnant waterways (Figure 6), a slow, tedious and exhausting process (Ship Registers and Enrollments 1941:1-124).

It is, thus, hardly surprising that Attakapas area planters quickly turned their attention to a revolutionary technology—steam-powered navigation—that had only recently proven itself on the lower Mississippi River. Planters François Duplessis, Jr. and Martin Duralde, Jr. pooled their resources to bring steam navigation to Bayou Teche. State legislation, approved by the general assembly in mid-February 1818, empowered Duplessis and Duralde to "establish, keep, and maintain a steam boat and ferry, to ply from bayou Plaquemine in the parish of Iberville, to the bayou of Cypre-mort, Portage Patin, or any other bayou within the distance of three leagues in that part of the

Attakapas, for the period of ten years" (State of Louisiana, 1818:28-29). Duplessis and Duralde then commissioned a New Orleans shipyard to produce the steamer *Louisiana.*

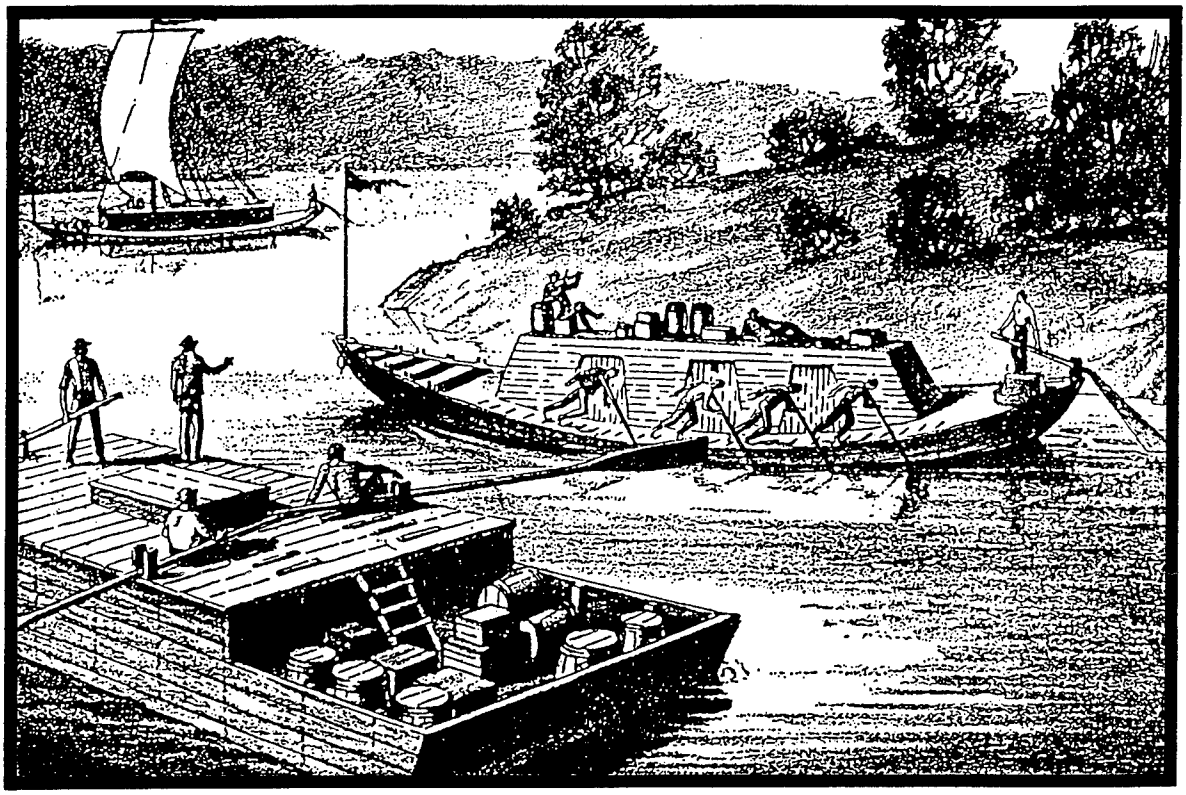


Figure 6. A flatboat and two keelboats traversing Louisiana's waterways.
(from Coastal Environments 1989:96 after Baldwin 1941:43)

Following its completion in late 1818, the steamboat, commanded by Duplessis, engaged in trade along the lower Mississippi River on its maiden voyage, before sailing to the Attakapas country via Bayou Lafourche and the Attakapas Canal (Ship Registers and Enrollments 1941, 1:81).

Numerous prominent Attakapas and Opelousas-area planters quickly organized to challenge the *Louisiana*'s near monopoly on the New Orleans trade. In early 1819 the Louisiana general assembly adopted and in February 1819 Governor Jacques Villeré signed "An Act to Incorporate the Attakapas Steam Boat Company" (State of Louisiana 1819:38-39).

Organizers of the Attakapas Steam Boat Company subsequently sold stock in St. Martin, St. Marys and St. Landry parishes to raise sufficient revenue to underwrite construction of the *Teche,* a 295-ton steamboat built in New Orleans. Once completed, the boat operated between New Orleans and landings along the lower Teche via Atchafalaya Bay and the Gulf of Mexico (State of Louisiana 1821:60).

To protect its investment, the company cleared obstructions along the route. The state government recognized the Attakapas Steam Boat Company's heavy investment in navigational improvements by conferring upon the firm in 1821 the "sole and exclusive right and privilege of navigating steamers from the mouth of the river Teche to St. Martinville" (State of Louisiana 1821:60).

The state monopoly on the Teche Valley trade, however, proved insufficient to keep the company solvent during the recession following in the wake of the War of 1812. Steamboat pioneer François Duplessis, Jr., was unable to fill the void created by the Attakapas Steam Boat Company's collapse by operating the *Volcano,* a 217-ton steamer between bayous Cypremort and Plaquemine. Because Duplessis's vessel did not service the central and upper Teche regions, St. Martin Parish farmers and planters eagerly anticipated the establishment of steamboat service in their area. This pent-up demand for steam transportation was manifested in the great outpouring of joy at St. Martinville on April 19, 1825 when Captain Robert W. Curry guided the *Louisville,* a tiny 48-ton steamboat, from the Mississippi River to St. Martin Parish's seat of justice by way of Bayou Plaquemine. Curry's voyage established St. Martinville as the entrepot for the upper Teche Valley (St. Martinville Attakapas Gazette, April 16, 1825; Franklin Planter's Banner, April 27, 1848).

Curry's voyage marked the beginning of a new era in steam transportation along Bayou Teche. The *Louisville* had navigated Bayou Plaquemine at the height of the Mississippi River's flood stage. Steamboat captains had previously believed such a feat impossible because of the tremendous current coursing through Bayou Plaquemine's narrow channel. Captains had consequently unloaded their cargoes at the head of Bayou Plaquemine, on the eastern edge the Atchafalaya Basin, for transportation overland to the town of Plaquemine where the goods were placed on another boat and transported to New Orleans. Although the badly underpowered vessels of the early Antebellum period were compelled to rely upon teams of oxen to battle the current during the return voyage upstream, the *Louisville* had demonstrated that direct waterborne transportation between the central Teche Valley and New Orleans was possible via Bayou Plaquemine during the "high water" period (Conrad 1972:118).

Captain Curry's historic 1825 voyage was made possible in part by sustained efforts to improve navigation on Bayou Plaquemine throughout the early 1820s. Legislation adopted by the Louisiana general assembly in 1819 directed voters in St. Mary, St. Landry and St. Martin parishes to elect five managers to advertise for bids and then to award state contracts for navigational improvements on Bayou Plaquemine. The contractor was to construct a 30-foot-wide cordelle road along the bayou's left, or southern, bank to enable oxen teams to tow vessels, including underpowered steam vessels, against the surging springtime current. The contractor was also obliged to remove all navigational hazards, including stumps, driftwood, submerged logs and overhanging limbs, from the main navigational channel. Finally, "such projecting points as may render the navigation thereof unsafe or difficult" were to be removed. Costs for the clearing operation were not to exceed $6,000 (State of Louisiana 1819:38-39).

The Bayou Plaquemine commissioners awarded the contract in 1821, but, although work was completed the following year, steamboat captains were slow to take advantage of the navigational improvements on the key communications link between the Mississippi River and the Teche region, evidently because of fears regarding the treacherous springtime currents. However, once Captain Curry had proven that Bayou Plaquemine was now navigable to steam-powered craft, major commercial and agricultural interests in the Teche Valley mobilized to maintain improvements in the stream.

In 1827, Louis Gary, Neuville DeClouet, Agricole Fusilier, Alexandre Mouton, André Martin, François Duplessis, Jr., George King, Baptiste Vanhille and Luke Lessassier established the Plaquemine Navigation Company for the purpose of constructing a floating spur to prevent driftwood from entering Bayou Plaquemine. Following the spur's completion in 1828, the company charged a toll of $1.00 per ton of cargo from every vessel navigating the waterway. After some initial success, the company's expenditures exceeded its income and, in 1833, the state government was obliged to assume responsibility for maintenance of Bayou Plaquemine's driftwood spur.

Construction and maintenance of the driftwood spur did much to promote steam navigation. By directing logs away from the bayou, the number of snags in the waterway was greatly reduced, thus substantially lessening navigational hazards to the era's thin-hulled boats. As a consequence, the volume of waterborne trade between the Teche Valley and New Orleans gradually increased (State of Louisiana 1832:passim).

From 1825 to 1830, Captain Curry's steamboats enjoyed a virtual monopoly over the waterborne Teche trade. In the 1830s, however, Curry's position was challenged by Mississippi riverboat captains who entered their boats into the Teche trade only in late winter and early spring when the Attakapas sugar production peaked. Not only did sugar production, and hence the volume of Teche cargo, decline in late spring and early summer, but the water level in Bayou Plaquemine customarily became unnavigable as the Mississippi River's vernal floodtide abated (Conrad 1986:213).

As a consequence, Attakapas planters were compelled to rely upon Gulf steamers as well as sailing vessels during the summer and fall months. Because of this increasing reliance upon ocean-going vessels, New Iberia, located at the head of sea-going navigation on Bayou Teche, quickly emerged as the leading port of the upper Attakapas region. According to Dr. Alfred Duperier, an early settler,

> New Iberia being the real terminus of deep water navigation on the Teche, began to assert its commercial importance in the forties [1840s]. The interruption of navigation through Plaquemine during the low water stage of water in the Mississippi created a demand for a class of gulf steamers of large carrying capacity. These steamers, not being able to ply above New Iberia, landed their large cargoes, destined for all points south and west on the Vermilion and Calcasieu,

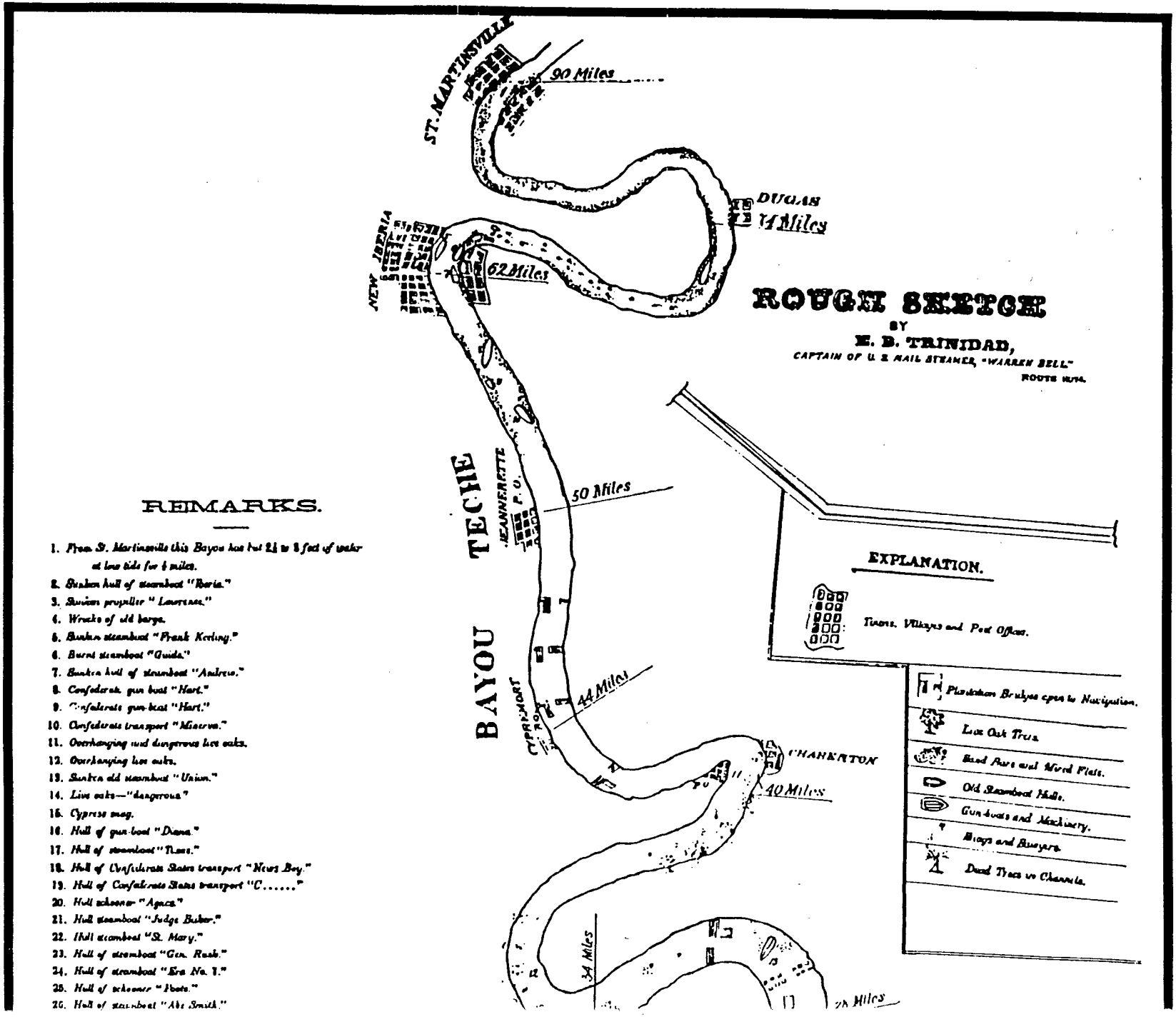
> at New Iberia. It was then that she became the radiating point for the trade of a large territory, extending some sixty miles in all directions. [Conrad 1986:73-113]

New Iberia also served as the effective head of navigation for bayou steamers for most of the year. St. Martinville had traditionally been considered the head of navigation on the Teche, but, because of cataracts at the site of Keystone, large boats could not navigate the upper bayou. In addition, the portion of the bayou above the plantation had a channel only "4 feet deep at mean low water." This shallow channel, which "was obstructed with logs, snags, fallen and overhanging trees," usually was navigable only during the bayou's high water stages (United States War Department 1911, 1:539; 1915:835; 1931:988). As a consequence, most of the waterborne commerce on the upper bayou was transported aboard flatboats.

The volume of New Iberia's commerce carried aboard steamers increased sharply in the late 1850s, when the New Orleans, Opelousas and Great Western Railroad laid tracks from Algiers to Brashear City (present-day Morgan City). With the establishment of a rail terminus on the lower Teche, steamboats, at least four of which stopped regularly at New Iberia, could operate on a year-round basis. Moreover, as the steamboats no longer had to ply the snag-infested waters of the Atchafalaya Basin, safe delivery of cargo was virtually assured; hence, the volume of cargo carried by steamers increased. In fact, the volume of merchandise carried by steamboats to Brashear City grew to such an extent that, in 1857, 45 very prominent St. Mary Parish planters and merchants petitioned the general assembly to construct a dam across flood-prone Bayou Plaquemine (Citizens of St. Mary Parish 1857:1-2).

The Teche Valley's steamboat industry was completely disrupted by the Civil War. At the beginning of the conflict, most of the steamers employed in the Bayou Teche trade were confiscated by Confederate authorities and transformed into gunboats. These gunboats fell prey to the United States Navy during the Union invasions in the spring and fall of 1863. By 1870, the wrecks of 17 steamboats, 12 flatboats and barges, and four schooners were strewn along the course of Bayou Teche from New Iberia to Brashear City. Some of these wrecks lined the banks, while others were submerged in the main navigational channel (Figure 7). As a consequence, navigation of the Teche after the war was extremely hazardous for captains of the few steamboats remaining in the area (Wilby 1991:62-104).

These navigational hazards slowly gained the attention of the federal government, which was preoccupied with Louisiana's tumultuous political climate. Acting under authority of the River and Harbor Act of March 2, 1829 and at the direction of his superiors in Washington, Brevet Major C. W. Howell of the Army Corps of Engineers ordered a survey of Bayou Teche. Howell initiated the project by gathering all available maps of Bayou Teche and by organizing a field expedition under the command of civil engineer W. D. Duke. Departing New Orleans for St. Martinville on May 3, 1870, the field workers completed the survey on May 21 at a cost of $700.00 (Wilby 1991:5-7).



REMARKS.

1. From St. Martinsville this Bayou has but 2½ to 3 feet of water at low tide for 4 miles.
2. Sunken hull of steamboat "Iberia."
3. Sunken propeller "Lawrence."
4. Wrecks of old barges.
5. Sunken steamboat "Frank Keeling."
6. Burnt steamboat "Guide."
7. Sunken hull of steamboat "Andrew."
8. Confederate gun boat "Hart."
9. Confederate gun boat "Hart."
10. Confederate transport "Minerva."
11. Overhanging and dangerous live oaks.
12. Overhanging live oaks.
13. Sunken old steamboat "Union."
14. Live oaks—"dangerous."
15. Cypress snag.
16. Hull of gun-boat "Diana."
17. Hull of steamboat "Rose."
18. Hull of Confederate States transport "Nines Boy."
19. Hull of Confederate States transport "C....."
20. Hull schooner "Agnes."
21. Hull steamboat "Judge Baker."
22. Hull steamboat "St. Mary."
23. Hull of steamboat "Gen. Rusk."
24. Hull of steamboat "Era No. 1."
25. Hull of schooner "Poste."
26. Hull of steamboat "Abe Smith."

16. *Cypress snag.*
16. *Hull of gun-boat "Diana."*
17. *Hull of steamboat "Time."*
18. *Hull of Confederate States transport "Mews Boy."*
19. *Hull of Confederate States transport "C....."*
20. *Hull schooner "Agnes."*
21. *Hull steamboat "Judge Buhor."*
22. *Hull steamboat "St. Mary."*
23. *Hull of steamboat "Gen. Rusk."*
24. *Hull of steamboat "Era No. 7."*
25. *Hull of schooner "Poste."*
26. *Hull of steamboat "Abe Smith."*
27. *Individual snagmill—Boss's—obstructing completely.*
28. *Cypress snags and rafts.*
29. *Live oak snags, bridge pier.*
30. *Bridge pilings and snags.*
31. *Scale's pontoon bridge.*
32. *C. S. gunboat "Cotton," with its very heavy machinery.*
33. *Live oaks overhanging.*
34. *Cypress trees in the channel.*
35. *C. S. gunboat "Fly Catcher."*
36. *C. S. schooner "Mary Brown."*
37. *C. S. schooner "Alligator."*
38. *C. S. live oak obstructions.*
39. *C. S. mud-digger "Turtle."*
40. *C. S. torpedo machine.*
41. *Overhanging live oaks.*

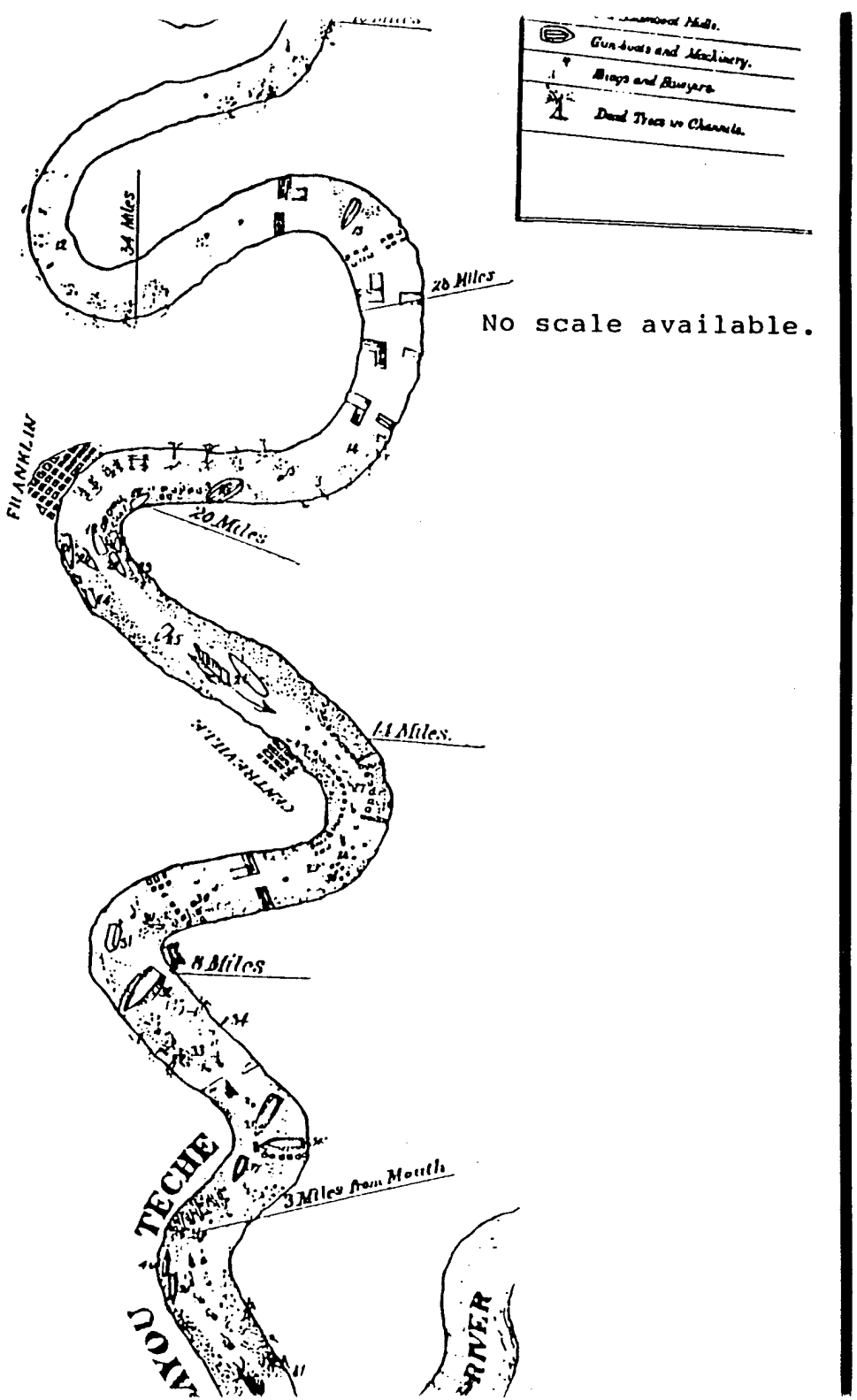
1st. *Bayou Teche is the most remarkable stream in Louisiana; it is occupied by sugar plantations, partly owned by Northern capitalists who have purchased within the last four years. The sugar crop of 1868 will figure about 12,000 hogsheads and the cotton crop about 8000 bales.*

2d. *The almost complete obstruction of this stream is a great drawback on commerce and agriculture. The channel is filling up rapidly. With an appropriation of fifty or sixty thousand dollars it could be thoroughly cleared out.*

Respectfully,

E. B. TRINIDAD,

Captain Commanding U. S. Mail Boat, Route 9074.



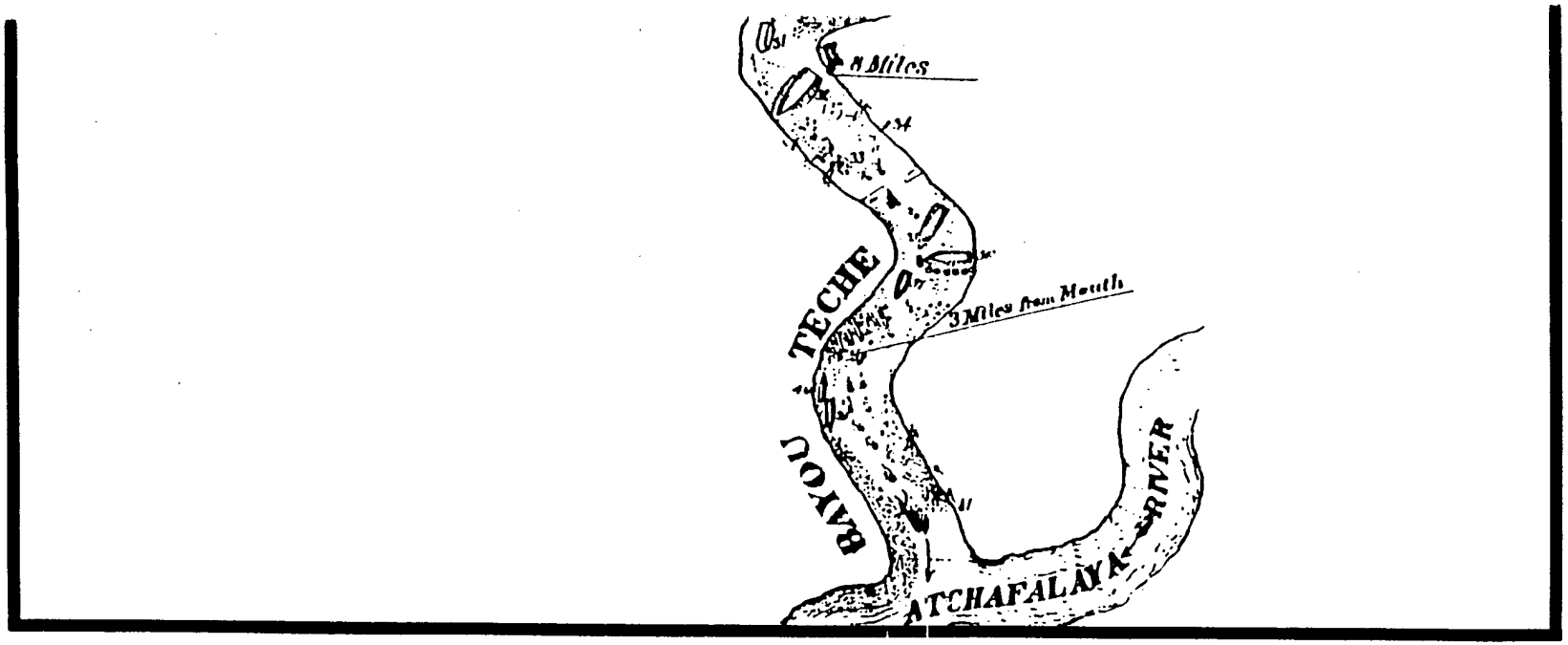


Figure 7. Obstructions and sunken vessels shown on E.B. Trinidad's "Rough Sketch" - ca. 1868.
(from Goodwin and Associates 1985:Figure 25)

Following passage of the River and Harbors Act of July 11, 1870, the Corps took steps to remove all navigational hazards from the Teche. C. W. Howell arranged these hazards into two classes: "First. Such as are in the bed of the bayou, including wrecks, snags, piles, and sunken logs. Second. Those on the banks, including overhanging trees, projecting logs, and overhanging and sunken logs." The overhanging limbs were a particularly annoying source of concern to steamboat captains for they were the "cause of frequent damage to smokestacks and upper works of steamers" (United States War Department 1870:348).

The work of cleaning the bayou was begun by Daniel M. Kingsbury, commander of the United States wrecking flat *Bayou Teche,* on February 15, 1871. Under Kingsbury's expert supervision, the bayou's original navigability was rapidly restored, as snags were removed and as sunken wrecks were destroyed with explosive charges (Wilby 1991:62-104). Work on the project was suspended in June 1871 because of high water levels which prevented workmen from destroying underwater obstructions. When suspended, the project had "resulted in clearing the bed of the stream of all obstructions found between [Bayou Teche's] mouth and New Iberia" (United States War Department 1871, 1:516-517). Kingsbury's crew completed the clearing of the bayou above New Iberia in 1872 (United States War Department 1910:500-501).

After the clearing of Bayou Teche, steamboat traffic increased, but the number of boats involved in the Teche trade and the tonnage of cargo freighted to New Orleans would never match their pre-Civil War levels. The area's growing dependence upon the railroad presaged the demise of the steamboat industry. The public clearly preferred the safety, convenience and regular schedule of the "iron horse." Steamboats, on the other hand, rarely maintained their schedules, the captains preferring to lay in at any and all plantation landings along the Teche in order to take on cargo. Moreover, steamboat clerks were quite unscrupulous about booking passenger accommodations. As one Antebellum steamboat passenger lamented, Captain Curry's clerk had booked "three [passengers] for each bed and four for each plate on the boat." According to Frederick Olmsted, seasoned travelers consequently entrenched themselves in their cabins and warded off with a large caliber pistol all challengers for the vessel's best accommodations. Latecomers were forced to sleep under the stars; the stargazers, however, may well have enjoyed the better accommodations, for the Teche steamboats were frequently cramped, dirty and infested with bedbugs. In addition, the food served the traveling public was often less than appetizing (Franklin Planter's Banner April 11-18, 1850).

Travel aboard Antebellum steamboats was also dangerous. According to contemporary observers, Teche Valley pilots frequently whiled away their off-duty hours by drinking and playing cards with the passengers in the bar. Fatigued and often inebriated, the pilots returned to duty to steer their craft over dangerous shoals and snags. In fact, between 1825 and 1860, at least 19 vessels, 89 lives and thousands of dollars in goods were lost along the Teche and in the Atchafalaya Basin as a result of mishaps. Ocean-going steamers were not much safer, as they were frequently top-heavy and thus easy prey for the violent thunderstorms for which the Gulf Coast is noted (Franklin Planter's Banner, February 28, 1850).

Finally, because of the numerous shoals in the Atchafalaya Basin, steamers were accompanied by lighters, very small steamboats to which some of the larger vessels' cargoes were transferred in dangerously shallow waters. This transference of goods not only produced delays, but it also increased shipping costs (Franklin Planter's Banner March 8, 1851).

Despite the aforementioned liabilities, steamboats remained a significant force in local commerce until the 1890s, primarily because of the initiative of the local steamboatmen and the disruptive influence of the Civil War. Although a roadbed had been laid along much of the lower Teche prior to 1861, tracks were not laid to New Iberia by the Great Western's successor, Morgan's Texas and Pacific Railroad, until 1879. From the war's conclusion until 1877, steamboating at New Iberia had been dominated by the Attakapas Mail Transport Line and its successor, Captain John Newton Pharr's Teche Mail Steamers (Conrad 1986:215).

Pharr, a veteran Teche steamboatman who had operated the *Rusk* in the Atchafalaya Basin during the early Civil War years, quickly emerged as the dominant force in the local steamboat business by 1880. Shortly after purchasing two large and luxuriously appointed boats, the *René Macready* and the *Mary Lewis,* in 1876, Pharr acquired exclusive rights to transportation of the railroad's freight from Brashear City to New Iberia (Conrad 1986:216-217).

From 1877 to 1879, Pharr's position as leader of the local waterborne freight carriers was challenged, though never seriously threatened, by Captain Abe Smith. Smith's Teche and Atchafalaya Line enjoyed the unflagging support of the *Louisiana Sugar Bowl,* New Iberia's weekly newspaper, which repeatedly attacked the evils of the Morgan-Pharr line "monopoly." The paper's opposition to the "monopoly" was particularly intense during the spring of 1879, when the Pharr line attempted to snuff out its competition by slashing its freight rates by 75 percent. Pharr's price war, however, was futile, for not only did Smith's line survive for another year, but the completion of the railroad to New Iberia in 1879 deprived Captain Pharr of his mail contract and the bulk of his freight as well. As a consequence, Pharr was forced to retire one of his boats and drastically reduce the number of his employees (New Iberia Louisiana Sugar Bowl, December 28, 1876-October 28, 1880).

With the reorganization of the Pharr line and the dissolution of its major competitor, Smith's line, the only waterborne service to New Iberia was Captain T. R. Muggah's 10-day New Orleans packet, the *John M. Chambers.* In late October 1880, however, Captain L. T. Belt established the Belt Line which operated two packet boats out of New Iberia. Despite initial success in the Teche trade, the Belt packets were unable to compete with the railroad, and packet boats disappeared from the Teche by 1915 (New Iberia Louisiana Sugar Bowl, February 26, 1880; October 28, 1880).

The extinction of the packet boats ushered in the final chapter of steam navigation on Bayou Teche. Unable to compete with the railroad for the agricultural produce market, steamboat captains were compelled to undertake jobs which the railroad was either unwilling or unable to undertake. Thus, in the late 1880s and throughout the 1890s, local steamboatmen concentrated exclusively on excursions and "jobbing" as towboats. By 1900, however, the excursion craze of the late nineteenth century had faded and the steamboat skippers had begun to provide a variety of charter services. The

services provided by the Chautin Brothers' *Buck Lindsay* and *J. N. Pharr,* which operated on the Teche in the 1910s and 1920s, best exemplify the kind of jobbing done by steamboat owners in the twilight years of steam navigation on the Teche. Not only did the Chautin Brothers' boats carry freight to plantations lining Bayou Teche, but they also towed large rafts of logs from the Atchafalaya River Basin to Teche Valley sawmills (Conrad 1986:219).

Though jobber boats remained on the Teche until the mid-1930s, they were gradually replaced by company-owned or leased vessels. For example, from 1907 to 1922, the B. C. Taylor line of steamboats, which were under contract to the Stirling Plantation manager, freighted coal, fertilizer and cooperage materials to and rice, sugarcane and molasses from plantations along Bayou Teche. Moreover, from 1915 to 1922, the Taylor boats delivered annually approximately 1.5 million barrels of fuel oil to local sugar mills (Conrad 1986:219).

The Consolidated Companies of Plaquemine and the Interstate Wholesale Grocery Company of Thibodaux also operated steamboats on the Teche in the early twentieth century. Between the 1920s and 1940s, Consolidated's *Carrie B. Schwing* and *Kurzweg,* and the Interstate's *Interstate* regularly delivered groceries to wholesalers along the Teche (Conrad 1986:219).

Finally, the *Amy Hewes,* owned and operated by the Hewes Lumber Company of Jeanerette, served as a logging boat on the Teche, transporting huge rafts of cypress logs from the Atchafalaya Basin to local saw mills. After 24 years of service, the *Hewes* last called upon New Iberia in 1943. The final departure of the *Hewes* closed the last chapter on steamboating at New Iberia (Conrad 1986:219).

Keystone Lock

The economic factors contributing to the demise of the steamboats lead to the creation of the Keystone Lock and Dam on upper Bayou Teche. With the completion of the railroad from Brashear City to Vermilionville (present-day Lafayette) in 1880, the regional lines of communication moved away from Bayou Teche, which had been the area's principal commercial artery since colonial times. The town of St. Martinville, which had been the commercial hub of the upper Teche, was economically devastated by the coming of the iron horse, and the community consequently frantically cast about for new economic opportunities, turning first to tourism through the development of its first Evangeline attractions, and later to navigational improvements designed to make the upper Teche navigable for barges and other shallow-draught cargo vessels. Improved navigability of Bayou Teche, it was thought by local business interests, would help attract industry to the St. Martinville and Arnaudville areas.

Construction of the navigational improvements necessary to attract new industry was undertaken by the federal government under authority of the congressional acts of September 19, 1890 and March 2, 1907. These constituted the government's initial response to growing regional concerns regarding the navigability of the upper Teche. After inspecting the upper reaches of the waterway, the Corps of Engineers reported that

> The Teche is navigable throughout the year as far up as St. Martinsville [*sic*], although at low water it is considerably obstructed by snags, fallen trees, and sunken logs, which should undoubtedly be cleared out. Some work of this character was done on this portion of the bayou a few years ago, but as such obstructions will necessarily be brought into the stream by high water, the work can never be permanently completed, and therefore should have a small annual appropriation for keeping it clear. [United States War Department 1889 2:1532]

The act of September 19, 1890 authorized the improvement of the stream, but the Corps of Engineers determined in 1891 that the portion of the bayou above St. Martinville was "unworthy of further improvement." The federal government consequently focused its efforts on improving navigation between the mouth of the Teche and St. Martinville through removal of obstructions and by dredging (United States War Department 1938, 1:799).

The 1890 navigational project was fundamentally modified by the River and Harbors Act of 1907. The 1907 legislation mandated the creation of a six-foot navigational channel from the mouth of Bayou Teche to Arnaudville—a distance of 106 miles—"by dredging, removal of snags, and the construction of a lock" (United States War Department 1912, 1:656). Responding to initial surveys, the 59th Congress funded $111,000 for this project; the appropriation was increased to $195,000 in 1911.

Implementation of the 1907 navigational project was contingent upon "all lands necessary for lock and dam purposes, and canal feeders being deeded to the United States free of cost, and upon the United States being secured against possible claims for damages resulting from the overflow of lands by reason of the lock and dam improvement" (United States War Department 1912, 1:656). Because the recent government survey had indicated that the federal government would need to utilize both banks of Bayou Teche to build and operate the proposed lock and because it was widely believed that the "the locks will be of general benefit to the people of the Teche Country," Keystone-area landowners Robert Pettibone, Kate Pettibone Dickson, Desire Boudreaux, and Eulalie Lagrange Boudreaux approached the Corps of Engineers in 1907 with offers to donate property along Bayou Teche above the Fausse Pointe bend (St. Martin Parish, Conveyance Book 70, p. 559, #34260; p. 563, #34261). The Pettibone donation consisted of the following tracts of land: 3.7 acres on the east bank of Bayou Teche, extending from Louisiana Hwy. 347 to the bayou bank, in Township 11 South, Range 6 East, section 8; 7.29 acres on the west bank of Bayou Teche, in Township 11 South, Range 6 East, section 16; and a strip of land "24 feet in width and 416 feet in length, containing 0.24 acre, more or less, in Section 17, Township 11 South, Range 6 East" (United States Corps of Engineers).

The east-bank donation included a strip of land measuring 100 feet wide "from low-water mark in Spanish Lake to Bayou Teche," donated specifically "in order that a canal might be excavated through it, connecting with Spanish Lake, and that this lake might be used as a reservoir

for the Keystone Lock pool." This last parcel of land had not been used by the federal government by 1922, and, under authority of Section 5 of the River and Harbor Act of 1902, Charles E. Smedes, who had acquired title to Keystone Plantation, petitioned the Secretary of War for return of the property. Smedes' petition was conditionally accepted on May 10, 1922, and he formally acquired title to the property for $50.00 in June 1926 (United States Corps of Engineers).

The Boudreaux donation included 1.04 acres on the east bank of Bayou Teche, adjoining the Pettibone and Dickson donation (St. Martin Parish, Conveyance Book 70, p. 563, #34261). The United States attorney general sanctioned the proposed donations on April 23, 1909, and ownership of the lands, measuring 12.27 acres, was formally conveyed to the federal government on May 1 (St. Martin Parish Conveyances, Book 70, pp. 559-563, #34260-34261). To comply with the last provision of the enabling legislation, in September 1909, local landowners secured personal bonds in the amount of $10,000 "covering a period of 10 years" (United States War Department 1912:656; United States War Department 1910:1610-1611).

Work on the lock and dam proceeded soon after all the legislative conditions had been met. From October to December 1909, numerous test borings were made at the lock site at a cost of $599.40. Plans and specifications for a concrete dam and a 36-foot-wide lock were finalized once the borings had been analyzed. Plans were also drawn for a frame lockkeeper's house to be erected near the lock. In 1911, the original plans were modified to reduce costs. "A reinforced concrete chamber wall was substituted for a solid-wall construction," and a "timber crib dam with concrete abutment" was substituted for a concrete retaining wall (United States War Department 1911:540).

Once the plans were finalized, the federal government advertised for bids. Only one contractor responded—with a bid exceeding the project's fiscal limitations. This bid was consequently rejected, and a second bid request was posted. Again the bids were rejected as excessive. When the bids indicated that the initial cost projections had been unduly conservative and that construction of the lock, dam and keeper's dwelling would probably cost approximately $200,000, federal authorities decided to contract the labor necessary to build the structures. Excavation of the lock and abutment sites began on November 21, 1910. Laborers soon cleared the construction site and constructed "suitable quarters for employees . . . on the United States reservation" (United States War Department 1911:540). Two derricks were then erected for the excavations, a cableway was then constructed "for distributing the material excavated," and a site measuring 400 by 400 feet opposite the upper end of the lock—a spot originally designated as the location of the lockkeeper's dwelling—was designated as the site of the project's spoil bank. In the initial stages of the excavations, laborers transported excavated materials from the abutment site to the spoil bank by wheelbarrows. Rail tracks were subsequently laid and "the material from one derrick was distributed with dump cars" (United States War Department 1911:540). By the end of 1911, 15,886 cubic yards of material had been removed from the lock pit, and an additional 1,700 cubic yards of material had been excavated from the abutment site (United States War Department 1911:540).

Once the excavations were complete, workers began to lay the foundations for the lock and dam. The official engineering reports indicate that work crews drove "211 linear feet of sheet piling and 41,080 linear feet of round piling, completing the lock foundation; 800 linear feet of round piling in the foundation for the dam; and 3,800 feet of round piling and 110 feet of sheet piling in the abutment" (United States War Department 1912:1966).

While the pile-driving activities were under way, laborers installed a concrete mixing plant on the government reservation. Still other workers worked to complete the concrete abutment, to lay steel reinforcement beams in the lock floor, and to build the lockkeeper's frame dwelling. Completion of the latter projects was delayed in 1912, when "the railroad confiscated all material en route for use in levee protection" along the Mississippi River (United States War Department 1912:1966). Construction of the lock and dam was completed on June 30, 1913, "and the lock was placed under status of finished work and operated under the indefinite appropriation" after July 1, 1913. Upon completion, the complex included a 175-foot-long dam, a lock measuring 36 by 160 feet, pumping equipment capable of eight feet of lift, and a frame lockkeeper's residence. Construction costs for the facility totaled $257,720.48 (United States War Department 1914:2248-2249; 1927:874).

While the lock and dam were under construction, engineers determined that these facilities alone would not satisfy the Congressional mandate to improve navigation on the upper Teche. In 1910, the Corps of Engineers consequently recommended numerous additional improvements to establish and maintain a six-foot navigational channel above New Iberia. These recommended improvements included construction of the Fusilier Dam and Waste Weir, a 73-foot-long dike and 28-foot-long spillway across Bayou Fusilier, 135 feet from the junction of bayous Fusilier and Bourbeux; a drainage canal (later called the Spanish Lake Canal) from Spanish Lake, entering the Teche approximately one mile above Keystone Lock; regulating gates at the "head of this canal"; and construction of two small levees along Spanish Lake to enable the Corps of Engineers to raise the water level in that body by four feet "to provide storage capacity" for the lock (United States War Department 1927:874). The suggested improvements to the original lock and dam proposal were funded by Congress in 1911.

Upon their completion, the lock and dam drew their official identity from Keystone, the local place name derived from the now defunct Keystone Plantation. Keystone Plantation had been established during Reconstruction by Colonel William H. Brown, a native of York, Pennsylvania, and a former Union military officer. After the Civil War, Brown bought up tracts of land along Bayou Teche and consolidated them into Keystone Plantation, named in honor of his native state. Brown suffered a stroke while watching a horse race on September 28, 1878, and died shortly afterward. His plantation had entered the possession of Robert T. Pettibone and Kate Pettibone Dickson of Wilkes-Barre County, Pennsylvania, by the time of the lock's construction (Conrad 1986:158-159, St. Martin Parish, Conveyance Book 70, p. 659, #34260).

The name was appropriate because the lock, dam and support structures collectively constituted the keystone of the navigational system Teche Valley businessmen and farmers hoped

would usher in a new era of local economic prosperity. These high expectations initially seemed justified, for, between its completion on June 30, 1913, and the end of the 1913 calendar year, 7,098 short tons of cargo passed through Keystone Lock. In addition, after July 1, 1913, Congress had provided continuous funding for the upkeep of the lock, dam and ancillary support structures, as well as for the salaries of the facility's staff, through Section 6 of the River and Harbor Act of 1909 (United States War Department 1915:836). This funding is reflected in the 1914 budget (Table 1).

Table 1. 1914 budget for Keystone Lock.

1 lock master, at $75 per month and quarters	$900
1 lock tender, at $60 per month and quarters	$720
For laborers when necessary, supplies, fuel, and incidental expenses	$600
Supervision of dam at head of Bayou Fusilier with gauge readings	$300
Contingencies	$480
Total	**$3,000**

Keystone Lock's support staff was annually engaged in continuous battle against the elements, and, by the end of 1915, maintenance costs had increased the lock's annual expenditures to $3,520.13—a 17 percent rise in one year (United States War Department 1915:835). Maintenance work was particularly meticulous while the lock was under the direction of Assistant Engineer T. E. L. Lipsey, as the following excerpt from the 1916 annual report suggests:

> Repaired and painted all lock buildings, filled in portions of esplanade area and placed cement walks around same; planted trees around reservation and fenced in reservation on west side, at a cost of $100; installed ladders and placed life buoys on lock walls; cleaned and painted all ironwork of lock, and built small set of shipways; printed and published a set of rules and regulations governing operation of lock; constructed by hired labor dynamite pontoon for dredge *Grosstete,* cost $74.20.

Maintenance projects in other fiscal years included painting the gates and gate-operating mechanisms; tarring the upper side of the dam, fender cribs and fender piling; repairs to the crest of the dam; and minor repairs to "the lockmaster and laborer's quarters." Maintenance work on the two known dwellings on the government reservation usually involved replacement of window screens, repairs to the galleries, repairs to cisterns, repairs to the roofs and painting various rooms (United States War Department, 1917:917, 2546).

On rare occasions, Keystone Lock's maintenance budget was supplemented with funds for minor capital improvements projects. In 1917, for example, Congress funded construction of lock fuel barges *No. 5* and *No. 6* for use at the lock. Additional funds made possible the remodeling of fuel barge *No. 1* and repairs to snag boat *Pigeon,* the barge *Chene,* the launch *Amite* and barge *No. 1*—all of which were used in association with the lock's regular activities. As with the lock and dam, construction of, and repairs to, the aforementioned vessels was undertaken with laborers employed directly by the federal government (United States War Department 1917:2546).

The documentary record suggests that maintenance work on Keystone Lock and Dam peaked during the first five years of the facilities operations. The increased maintenance activity reflected in the increase in traffic through the lock. After registering significant declines in 1914 and 1915 as a result of declining Louisiana exports of raw agricultural materials to European markets at the outset of World War I, tonnage passing through the lock surged between 1916 and 1919 due to increased agricultural exports from south Louisiana when Fortress America actively supported the Allied cause (Table 2).

A detailed analysis of the freight traffic transported through the lock in 1916, which registered the second highest annual tonnage total during this period, indicates that most of the cargoes consisted of agricultural and forest products, particularly sugarcane, and fuel oil used at sugar mills along the upper Teche (Table 3).

Following the conclusion of World War I, volume of tonnage passing through Keystone Lock declined dramatically, from 10,228 short tons in 1919 to 6,481 short tons in 1920, and only 3,786 short tons in 1921. Despite brief sporadic upswings in bayou traffic, as in 1922 and 1923, the volume of goods transported by boat on the upper Teche steadily declined throughout the 1920s and early 1930s. Boats plying the upper Teche carried only 18 short tons of cargo through Keystone Lock in 1933. As during the war years, the commodities carried during these lean years consisted principally of agricultural commodities, forest products and fossil fuels including "cane (sugar), sugar, hay and feed, lard compound, logs (rafted), fuel oil, and flour" (United States War Department 1928:912-914).

The decrease in shipping occurred in the face of major efforts to make the stream navigable for a wide variety of vessels. In 1916, dredging and snag removal opened a channel six feet by 50 feet from Arnaudville to Keystone Lock. Congressional legislation of March 2, 1919, authorized the Corps of Engineers to create a channel six feet deep by 60 feet wide from Keystone Lock to New Iberia, and an eight-feet-deep by 80-feet-wide navigational channel from New Iberia to the mouth of Bayou Teche. This ambitious project was completed by contractors in 1920 (United States War Department 1927, 1:875-876; 1937:743-744; 1938:799). Although use of the Teche did not immediately increase, the navigational project did create the infrastructure for the increase in shipping that was expected to occur.

In the mid-1930s, the volume of cargo carried through the lock increased dramatically, rising from 408 short tons in 1934 to 58,714 short tons in 1936. The rapid rise in tonnage was caused

primarily by the transportation of large quantities of fuel oil to sugar mills on the lower Teche and oyster shells for road construction in the parishes of the upper Teche Valley (United States War Department 1936 2:640). The wild fluctuations in tonnage passing through Keystone Lock is reflected in the number of lockages for the period, as is indicated in the following statistics: 645 in 1916, 408 in 1917, 319 in 1929, 219 in 1930, 191 in 1931, 133 in 1933, and 513 in 1936.

Table 2. Overview of maritime traffic at Keystone Lock, 1913-1936.

Year	Short tons	Value	Passengers
1913	7,098	$38,966.00	293
1914	4,637	$39,944.00	497
1915	5,106	$59,401.00	300
1916	10,971	$165,336.00	143
1917	10,172	$343,155.00	43
1918	10,957	$418,461.00	26
1919	10,228	$660,245.00	103
1920	6,481	$485,370.00	26
1921	3,786	$478,867.00	134
1922	4,356	$312,323.00	38
1923	4,201	$207,920.00	42
1924	2,567	$247,892.00	55
1925	2,176	$203,490.00	24
1926	3,013	$233,071.00	116
1927	2,221	$94,014.00	190
1928	3,172	$32,660.00	38
1929	1,692	$19,320.00	0
1930	282	$4,282.00	49
1931	1,624	$83,951.00	6
1932	678	$63,004.00	52
1933	18	$819.00	15
1934	408	$12,056.00	0
1935	28,150	$109,147.00	0
1936	58,714	$396,588.00	0

Table 3. Analysis of the freight traffic carried through Keystone Lock in 1916.
(from United States War Department 1917:2547)

Commodity	Tons	Value
Cement	60	720
Farm and dairy products	12	3,100
Fuel oil	604	4,832
Iron and steel products	303	18,180
Livestock	3	600
Miscellaneous merchandise	625	62,500
Miscellaneous	9	1,350
Molasses	10	500
Oysters	134	3,350
Refined oil	49	1,617
Rice	347	11,104
Shingles	85	2,125
Sugar	41	3,280
Sugarcane	6,710	$26,840
Total	10,971	$165,336

Data indicate that a disproportionately small percentage of the Bayou Teche tonnage passed through Keystone Lock, although figures are not available for each year of lock and dam operation (Table 4). For example, while 615,106 tons passed through Bayou Teche in 1913, only 1.15% of that passed through Keystone Lock and Dam. Jumping ahead to years of greater figures, 748,546 tons passed through Bayou Teche in 1936, whereas only 7.84% of this passed through Keystone—a higher percentage than in 1913, but still low relative to the total tonnage for Bayou Teche.

Table 4. Commerce in tons for Bayou Teche and Keystone.

Year	Bayou Teche	Keystone	% of Total
1892	64,866		n/a
1893	155,080		n/a
1894	383,154		n/a
1895	279,928		n/a

Table 4 (cont.). Commerce in tons for Bayou Teche and Keystone.

Year	Bayou Teche	Keystone	% of Total
1896	293,685		n/a
1897	303,029		n/a
1898	238,783		n/a
1899	272,975		n/a
1900	212,109		n/a
1901	335,583		n/a
1902	408,454		n/a
1903	450,542		n/a
1904	362,706		n/a
1905	701,243		n/a
1906	706,091		n/a
1907	580,216		n/a
1908	515,679		n/a
1909	999,125		n/a
1910	857,804		n/a
1911	810,459		n/a
1912	613,367		n/a
1913	615,106	7,098	1.15
1914	539,150	4,637	0.86
1915	510,695	5,106	1.00
1916	555,776	10,971	1.97
1917	693,622	10,172	1.47
1918	550,370	10,957	1.99
1919	581,120	10,228	1.76
1920	571,206	6,481	1.13
1921	279,159	3,786	1.36
1922	601,562	4,356	0.72
1923	357,022	4,210	1.18
1924	277,584	2,567	0.92
1925	241,468	2,176	0.90
1926	143,763	3,013	2.10
1927	74,476	2,221	2.98
1928	121,455	3,172	2.61

Table 4 (cont.). Commerce in tons for Bayou Teche and Keystone.

Year	Bayou Teche	Keystone	% of Total
1929	181,593	1,692	0.93
1930	119,207	282	0.24
1931	77,236	1,624	2.10
1932	116,838	678	0.58
1933	105,538	18	0.02
1934	139,292	408	0.29
1935	259,951	28,150	10.83
1936	748,546	58,714	7.84
1937	1,454,684	not available	
1938	912,791	not available	
1939	983,038	not available	
1940	1,187,270	not available	
1941	1,051,977	not available	
1942	1,009,404	not available	
1943	630,942	not available	
1944	547,696	not available	
1945	531,712	not available	
1946	509,917	not available	
1947	614,471	not available	
1948	798,677	not available	
1949	955,710	not available	
1950	1,240,751	not available	
1951	910,304	not available	
1952	785,265	not available	
1953	395,585	not available	
1954	267,151	not available	
1955	323,195	not available	
1956	321,930	not available	
1957	554,847	not available	
1958	402,320	not available	
1959	544,664	not available	
1960	491,203	not available	
1961	713,958	not available	

Table 4 (cont.). Commerce in tons for Bayou Teche and Keystone.

Year	Bayou Teche	Keystone	% of Total
1962	665,771	not available	
1963	674,623	not available	
1964	711,675	not available	
1965	704,244	not available	
1966	835,487	not available	
1967	712,792	not available	
1968	668,086	69,590	10.42
1969	729,760	35,626	4.88
1970	649,077	43,650	6.72
1971	525,290	62,000	11.80
1972	660,119	76,550	11.60
1973	652,217	92,850	14.24
1974	615,798	30,200	4.90
1975	609,664	32,600	5.35
1976	533,397	18,100	3.39
1977	745,203	45,750	6.14
1978	631,770	85,000	13.45
1979	371,737	87,100	23.43
1980	425,491	58,000	13.63
1981	457,211	66,000	14.44
1982	724,387	44,000	6.07
1983	681,349	30,600	4.49
1984	573,090	30,000	5.23
1985	854,452	30,100	3.52
1986	1,006,243	18,000	1.79
1987	1,050,445	26,000	2.48
1988	1,712,408	12,000	0.70
1989	1,147,593	3,000	0.26
1990		5,310	n/a
1991		3,700	n/a
1992		0	n/a
1993		0	n/a

Commodities passing through Keystone and Bayou Teche were also variable (Tables 5 and 6). For example, between 1914 and 1929, timber comprised the primary product on both Bayou Teche and Keystone. In 1929, marine shells gained in importance as a commodity on the bayou, but this is not reflected in the traffic through Keystone where timber remained the principal commodity, although in decline. Between 1936 and 1950, there was a major increase in commerce, largely owing to transportation of crude oil and liquified gasses. Data available for Keystone in 1936 support a similar shift in commodity importance; however, figures for the subsequent years to 1967 are not available for Keystone.

Table 5. Commodity tonnage for Keystone Lock.

Year	Sugar	Rice	Crude Oil & Liquid Gases	Fuel Oil & Gas	Rafted Logs and Lumber	Marine Shells	Total Itemized Tonnage	% of Total Tonnage
1914	2478	105	0	21	1657	0	4637	91.89
1920	0	192	0	10	4090	0	6481	66.22
1924	81	0	0	19	1244	0	2567	52.36
1929	0	0	0	5	1658	0	1692	98.29
1936	0	0	44,739	5851	34	7819	58,714	99.54
1970	data not available						43,560	
1980	0	0	0	0	0	52,000	58,000	100
1989	0	0	0	0	0	3600	3600	100

By 1960, however, commerce on the bayou had declined to levels equivalent to 40 years previously. This reflects the decreased shipping of crude oil and liquified gasses. From 1960 to 1980, there was a more balanced mix of commodities on the bayou with nearly equal tonnage of crude oil and liquified gasses, marine shells and sugar, followed by fuel oil and gas. Timber disappears after 1960. Data from 1970 show that less than seven percent of the cargo on Bayou Teche passed through Keystone Lock. The 1980 data for Keystone reflect an increase to nearly 14% of the bayou's total tonnage, with cargo essentially limited to northward bound marine shell.

The type of vessels using the lock also changed markedly over time. In 1916, the 645 vessels utilizing the lock consisted of 28 steamboats, 331 gas-powered boats, 236 barges and 50 unclassified vessels (United States War Department 1916:2547). Between 1917 and 1936, however, steamboats virtually disappeared from the upper Teche, accounting for only two lockages in a typical year. The number of gas-powered boats and barges also declined during this period, falling from 567 in 1916 to 352 in 1936, but their tonnage paradoxically increased as larger vessels began to ply the shallow waters of the upper Teche (United States War Department 1918:2601; 1936 2:640).

Table 6. Commodity tonnage for Bayou Teche.

Year	Sugar	Rice	Crude Oil & Liquid Gases	Fuel Oil & Gas	Rafted Logs and Lumber	Marine Shells	Total Itemized Tonnage	% of Total Tonnage
1914	44,234	1723	0	19,594	414,948	100	539,150	89.14
1920	40,000	5017	0	13,950	476,550	0	571,206	93.75
1924	23,704	1715	0	21,293	211,099	936	277,584	93.21
1929	37,554	3250	0	25,162	87,977	11,260	181,593	90.97
1936	15,977	16,450	555,723	14,839	62,123	67,059	748,546	97.81
1939	41,694	6875	825,939	31,290	40,168	13,283	983,038	97.58
1944	10,000	0	501,242	10,051	17,171	6920	547,696	99.58
1950	26,458	0	1,003,463	21,087	48,608	134,595	1,240,751	99.47
1960	21,207	0	147,942	34,752	59,950	151,519	491,203	84.56
1970	112,152	0	223,933	41,320	0	219,464	649,077	91.96
1980	118,790	0	124,185	16,380	0	105,515	425,491	85.75
1989	286,618	0	624,647	74,208	0	17,192	1,147,593	87.37

The quality of maintenance work also appears to have fluctuated during the two decades preceding World War II. The maintenance work performed upon the lock and dam was considered most satisfactory during the early years of the lock's operation. Maintenance work in the late 1920s and early 1930s also consistently received satisfactory reports, including 1927, when the lock's personnel were obliged to repair the damage wrought by the destructive Mississippi River flood, which inundated the entire upper Teche Valley (United States War Department 1927, 1:875-875).

Despite the increase of the facility's maintenance allocation provided by the War Department Appropriations Act for Rivers and Harbors of June 26, 1934, the lock, dam and ancillary structures exhibited symptoms of neglect by the late 1930s. The Corps of Engineers reported in 1938 that "the auxiliary dam across Bayou Vermilion [actually Bayou Fusilier] . . . had decayed and is no longer effective" (United States War Department 1938:799). The 1940 annual report indicated that "the lock and dam are in poor condition" (United States War Department 1940:877).

Because of the onset of World War II, the federal government moved slowly to repair the Keystone complex. Nevertheless, extensive repairs were undertaken in 1941 (Figure 8) and by 1945, the level of annual expenditures for maintenance were twice the levels of the early 1930s. In addition, in 1944, $2,500 was expended to construct movable crest gates on Keystone dam to raise the level of upper Bayou Teche by 1.5 feet. The increase in the water level was deemed necessary "to increase flow through Ruth Canal into Vermilion River" (United States Department of the Army 1975 2:11-6). As always, maintenance and construction work was performed by "hired labor" (United States War Department 1946, 1:687-688).

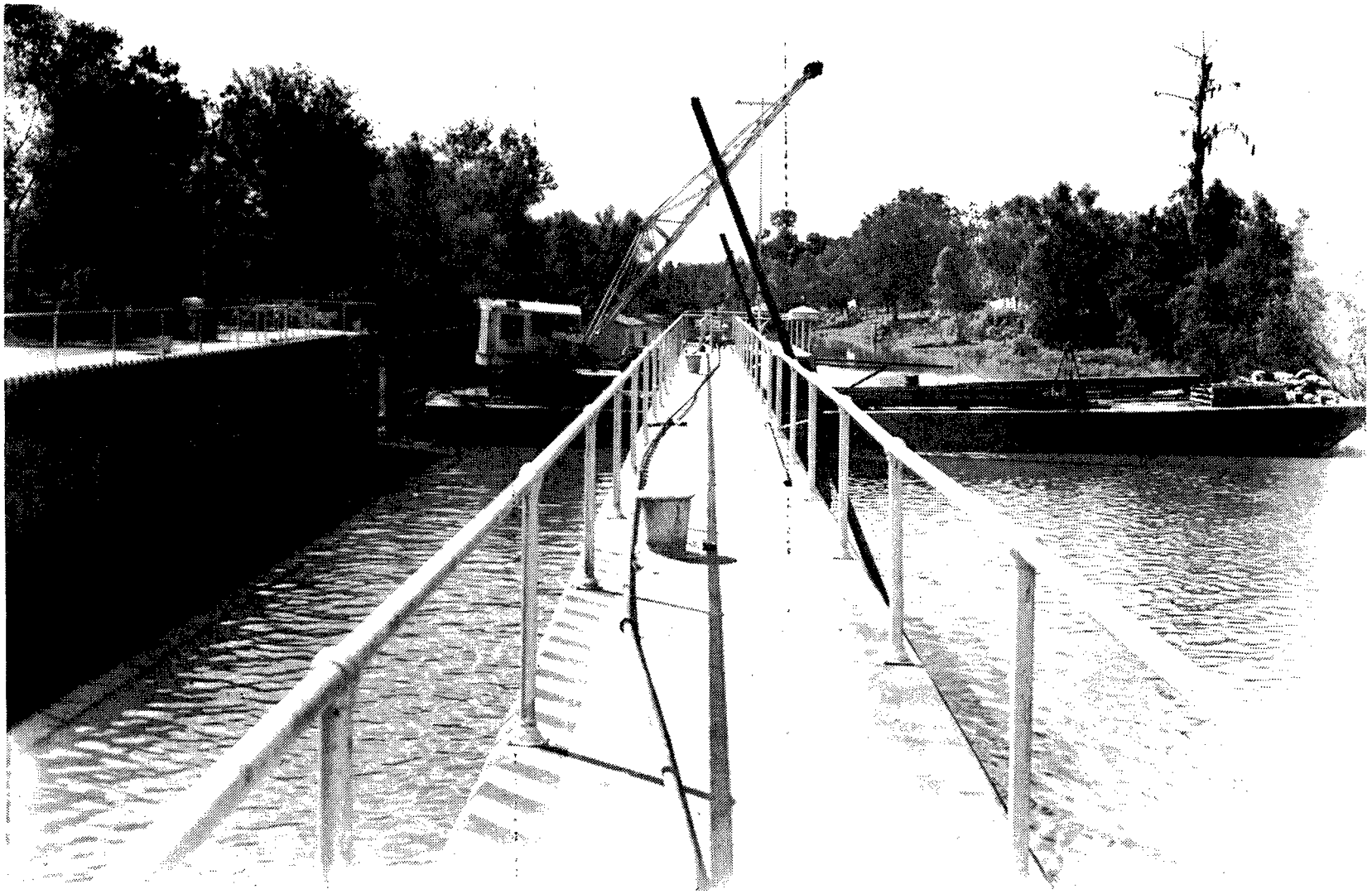


Figure 8. Photograph of 1941 repairs to Keystone Lock and Dam.
(Courtesy of NOD)

"Hired labor" continued "operation and maintenance of Keystone Lock and facilities, condition and operation studies, and stream gauging" until the 1980s (United States Department of the Army 1980:11-7). Sporadic repair and improvement projects continued throughout the remainder of the facility's existence. For example, Congress appropriated $126,000 in 1949 for "reconstruction or replacement of Keystone dam." Work on the plans evidently began in 1951 and was completed in 1955. The plans called for replacement of the dam cap with a new concrete top to maintain the water level established with the installation of the movable crest gates in 1944. Work on the project began on September 19, 1956 and ended on March 27, 1957 (United States War Department 1950, 1:983; 1952, 1:801; 1957, 1:484; 1961 2:580). In 1951, the Keystone Lock reservation's water system was repaired at a cost of $3,253 and an electrical system was installed for $457.00 (United States War Department 1952, 1:800).

The lock was temporarily deactivated for repairs in 1969 and 1970. Between April 2 and April 11, 1969, "hired labor" replaced approximately 300 tons of "riprap bank protection along the northeast and southwest banks upstream from the dam" (United States Department of the Army 1969:392). The renovation work continued into the next fiscal year. In 1970, Keystone Lock was "dewatered" to permit "hired labor" to install "new timber gates at [the] south end and make miscellaneous repairs." New gates were installed and unspecified other repairs to the lock were made. The work was completed on July 31, 1970, and the lock was subsequently "reopened to navigation" (United States Department of the Army 1972 2:11-8).

The repair work undertaken in 1969 and 1970 extended the life of Keystone Lock by more than two decades. During the 1980s, the "average annual traffic" on Bayou Teche was 863,267 tons, consisting primarily of sugar and crude oil. However, as illustrated previously in Table 4, the percentage of cargo passing through Keystone Lock declined steadily during the 1980s, dropping from 66,000 tons, or 14.44% of Bayou Teche tonnage, in 1981 to 3,000 tons in 1989, less than one percent of the cargo on Bayou Teche that year.

In recent years, use of Keystone Lock has declined significantly. In 1989, the last resident lockmaster, Paul Champagne, retired, and Keystone Lock was placed on an "on call" status, comparable to that of many movable bridges across Bayou Teche (Rudy Champagne personal communication 1996). As a result of the inconvenience involved in securing lockages under this system, traffic through Keystone lock declined in the 1990s, with no tonnage at all recorded for 1992 or 1993 (refer to Table 4). As a result, the future of the facility becomes increasingly doubtful in light of modern political and fiscal realities.

Comments on Use of Keystone: Many factors played into the variable tonnage and materials which passed through the lock and dam. Farmers in the area had diverted their produce to the railhead at St. Martinville for a generation before construction of the lock. Also, there was considerable effort in cutting away the brush for the passage of ships on the upper Teche, further discouraging commercial navigation on the upper bayou. Finally, with the exception of the World War I years, the area's sugar farmers were in the midst of a severe depression extending from the

turn of the century to 1941, also discouraging commercial navigation as production of sugar was scaled back.

Following World War II, oil pipelines, the rise of commercial trucking and, very importantly, the opening of the interstate highway system made the lock and commercial navigation on the bayou largely irrelevant. Given these factors, it is therefore significant that Keystone Lock witnessed as much commerce as it did. While the facility may not have lived up to perhaps unrealistic expectations, it has left its mark on the landscape and in the history of the region.

Standing Structures: The documentary record casts considerable light upon the structures that stood on the Keystone Lock and Dam reservation over the course of its existence. The identities of the standing structures and the dates of the pertinent documentary references are set out below in Table 7.

Table 7. List of structures and construction dates at Keystone Lock and Dam.

Structure	Date
Lockmaster's quarters (frame building)	1913
Lock tender's quarters	1913
White-washed wooden fence	1917
Gasoline storage tank	1917
Concrete walkways around the lock	1917
Screened windows on lockmaster's quarters	1917
Lock laborer's house (same as lock tender's, above?)	1917
Oil house	1917
Four cisterns	1917
Old shed removed behind lock	1917
Galleries of lockmaster's quarters	1917
Kitchen of lock laborer's quarters	1917
Two lockmaster's houses (probably quarters for the lockmaster and lock laborer described above) and several outbuildings	1918
"House" to cover gasoline storage tank	1918
Blacksmith shop, with "new workbench and forge stand, tool lock, and forge	1918
Ice box	1918
"Tore down old quarters"	1918
Built small storehouse at edge of bayou	1918
Repaired storeroom	1918
Stable	1918
Oil room	1918
Porches of dwellings repaired	1920
Unspecified fences repaired	1929
Unspecified fences repaired	1930
Residence and office	1949

Structure	Date
Wash shed	1949
Wash house	1955

(Sources: United States War Department 1912, 2:1966, 2202-2203; 1917, 2:2546; 1918, 2:2601; 1920, 1:981; 1929, 1:914; 1930, 1:991; 1952, 1:982; United States Corps of Engineers)

A 1937 plat of the government reservation at Keystone indicates five standing structures (Figure 9). One of the structures, evidently a "T"-shaped residence with rear and side porches, was set back from the west bank of the bayou, about 175 feet from the water's edge. A 1947 aerial photograph depicts one of the structures on the western bank as well as a boathouse on the eastern shoreline (Figure 10)

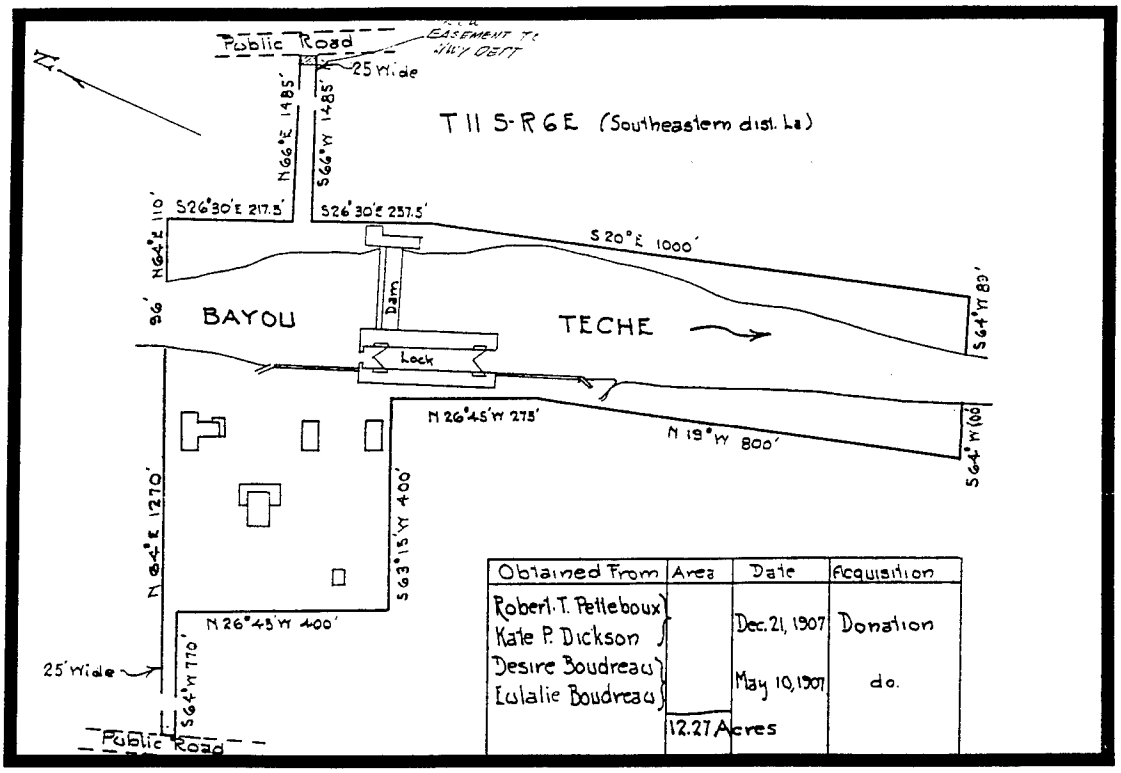


Figure 9. 1937 map of the Keystone Lock site.
(Courtesy NOD)

More detailed information exists for the structures either demolished or sold by the federal government during the post-World War II era. Extant property descriptions provide considerable insight into the size and construction of buildings erected on the property over the course of the early twentieth century.

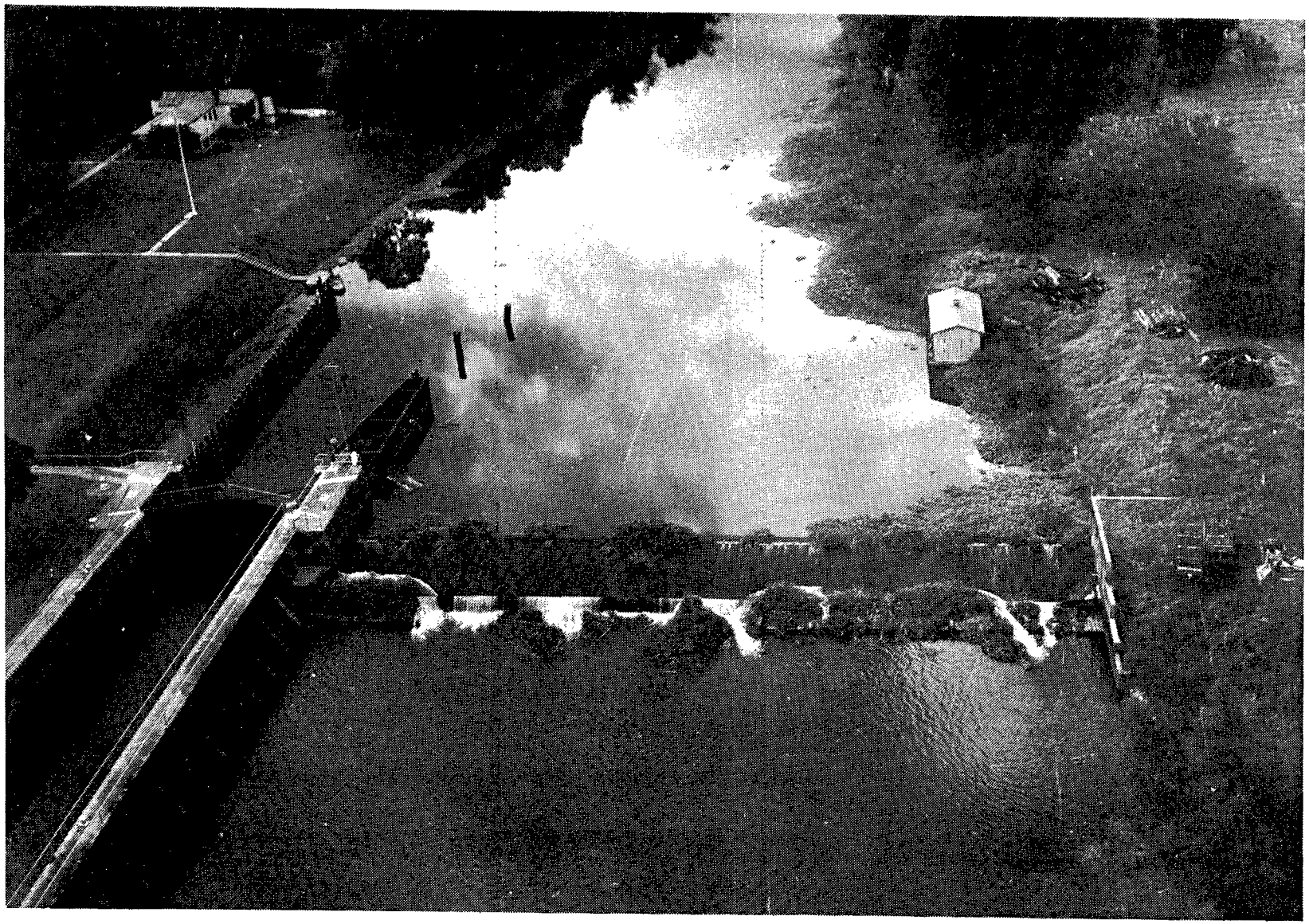


Figure 10. Aerial photograph of Keystone Lock and Dam - 1947.
(Courtesy NOD)

Records regarding the disposition of Building No. 277 (a residence) in 1955, for example, indicate that this structure measured "16' x 34'—16' x 41'" and included an eight-foot, screened, wrap-around porch on the front and sides of the structure, and a six-foot, screened rear porch. This frame dwelling was set on concrete piers. The structure, which contained six rooms and a bath, had a tin roof, paneled exterior doors, hardwood pine interior walls and floors, and cypress exterior walls. The residence was flanked by a six-by-ten-foot cypress cistern standing on wooden block. The cistern and dwelling were "in poor to fair" condition at the time of their sale to Robert Babineaux of St. Martinville for $750 on August 11, 1955. At the time of its sale, the interior walls and sills were "badly damaged by termites."

Building No. 477, a derelict boathouse, was sold to Marcel P. Hébert of Breaux Bridge for $25 on March 23, 1955. This wood-frame structure sheathed with roofing tin, measuring 12 by 24 feet, stood on wood pilings. It had a metal door and metal roof. At the time of its appraisal in 1955, it was also in "poor to fair" condition.

In 1949, Building No. 282 of unspecified usage was demolished and replaced, with salvaged materials, with a "wash shed." Construction of this wash shed at the rear of Building No. 281 was deemed necessary to "improve the general appearance of the grounds and add to the uniformity as there is an existing wash shed in the rear of the adjacent residence building No. 280." Construction of the wash shed was undertaken by the lock's staff (United States Corps of Engineers).

A plat of the Keystone government reservation dated 1957 indicates the presence of six standing structures. Two of these structures appear to be residences with either rear ell-shaped porches or wash sheds. Four other unspecified structures are arranged haphazardly near the western and northern fence lines (United States Corps of Engineers). Two of these structures were evidently Building No. 278 and Building No. 283. Building No. 278, an incinerator, measuring three feet by four feet by six feet, was of brick construction, with a chimney, an iron door, and iron grates. Building No. 283 was a single-story, wood-frame structure, with a concrete foundation and floor. It measured 14 by 29 feet. Both structures were deemed "surplus to the needs of [the] installation" and were razed in 1959 because, due to their construction, they were deemed to have no "salvage value" (United States Corps of Engineers).

On March 12, 1980, in conformity with ER 405-1-750 and Executive Order 11954, Keystone personnel compiled an inventory of the standing structures on the government reservation. Table 8 indicates the number, size and disposition of the buildings.

Building No. 279 was primarily a shop and storage unit, with 256 of its 900 square feet devoted to office space. In May 1986, the structure was utilized by "a two-man aquatic growth team and a two-man survey crew...5 days a week." Two full-time employees utilized Building No. 280 (a former residence) as an office. Building No. 285, a storage shed, was infested with termites and needed to be replaced. This storage shed housed an inoperable emergency generator. Inspectors also noted "two unnumbered fuel tanks" (United States Corps of Engineers).

Table 8. Standing Structures at Keystone Lock in the early 1980s.

Property Designation	Type	Area in Sq. Feet	Status/Disposition
No. 279	Office, Storage & Shop	900	In use
No. 280	Housing	2913	Occupied
No. 281	Housing	1048	Vacant, to be sold
No. 285	Storage	404	
No. 405	Wash House	80	To be sold
No. 604	Wash House	80	
No. 744	Carport	240	To be sold
No. 745	Carport	240	

The property inventory of May 1988, the most recent on record at the Corps of Engineers regional headquarters in New Orleans, indicates that several buildings had either been sold or dismantled, as specified in the 1982 inventory. Only buildings No. 279, 280, 285, 406 and 745 remained.

Summary: The history of the Keystone Lock and Dam is intrinsically meshed with the history of navigation, commerce and transportation conditions of the region. Its operation spanned a period nearly equivalent to the century, beginning in 1913 and continuing, in a much decreased capacity, into the 1990s. With its functional utility practically gone, the complex must now be considered in terms of its historical value. That topic is pursued in the following chapter.

CHAPTER FOUR
THE KEYSTONE LOCK AND DAM EXAMINATION

By
Jack R. Bergstresser, Sr.

Overview

When compared to navigational facilities on larger streams such as the Warrior River in Alabama or the Monongahela in Pennsylvania and West Virginia, the Keystone Lock and Dam is relatively small. Its size reflects the function it served as the only lock and dam on a comparatively small waterway—the Bayou Teche (Figure 11). The facility is located about 70 miles upstream from where the bayou opens to its maximum width of 350 feet before emptying into the Lower Atchafalaya River. At this point, nearly two-thirds of the distance between its convergence with the Lower Atchafalaya and its navigable head at Arnaudville, the Bayou Teche has narrowed considerably. Two miles upstream from Keystone, at St. Martinsville, its width has diminished to only 70 feet. A lockkeeper and his assistant would be all the crew necessary to insure that a small, simply designed facility such as the Keystone Lock and Dam could efficiently serve all traffic moving along such a narrow waterway.

Description of the Lock and Dam

The original facility at Keystone, which has not been significantly altered since it opened in 1913, consisted of a 175 foot long dam as well as a lock with a usable width of 36 feet and length of 160 feet (Figure 12). The lock's 160 foot chamber and gate bays at its north and south ends are of "U-type monolithic concrete construction with no provisions for expansion joints" (United States Department of the Army 1972). The reinforced concrete walls comprising the east and west sides of the chamber are strengthened by 14 reinforced concrete buttresses.

Because the lock gates at the north and south ends of the chamber are constructed of wood, they occasional have been rebuilt over the years (Figures 13 through 16). The originals were of the "straight-leaf mitering type and were built of solid timbers 18 inches thick" (United States War Department 1913, 2:2198).

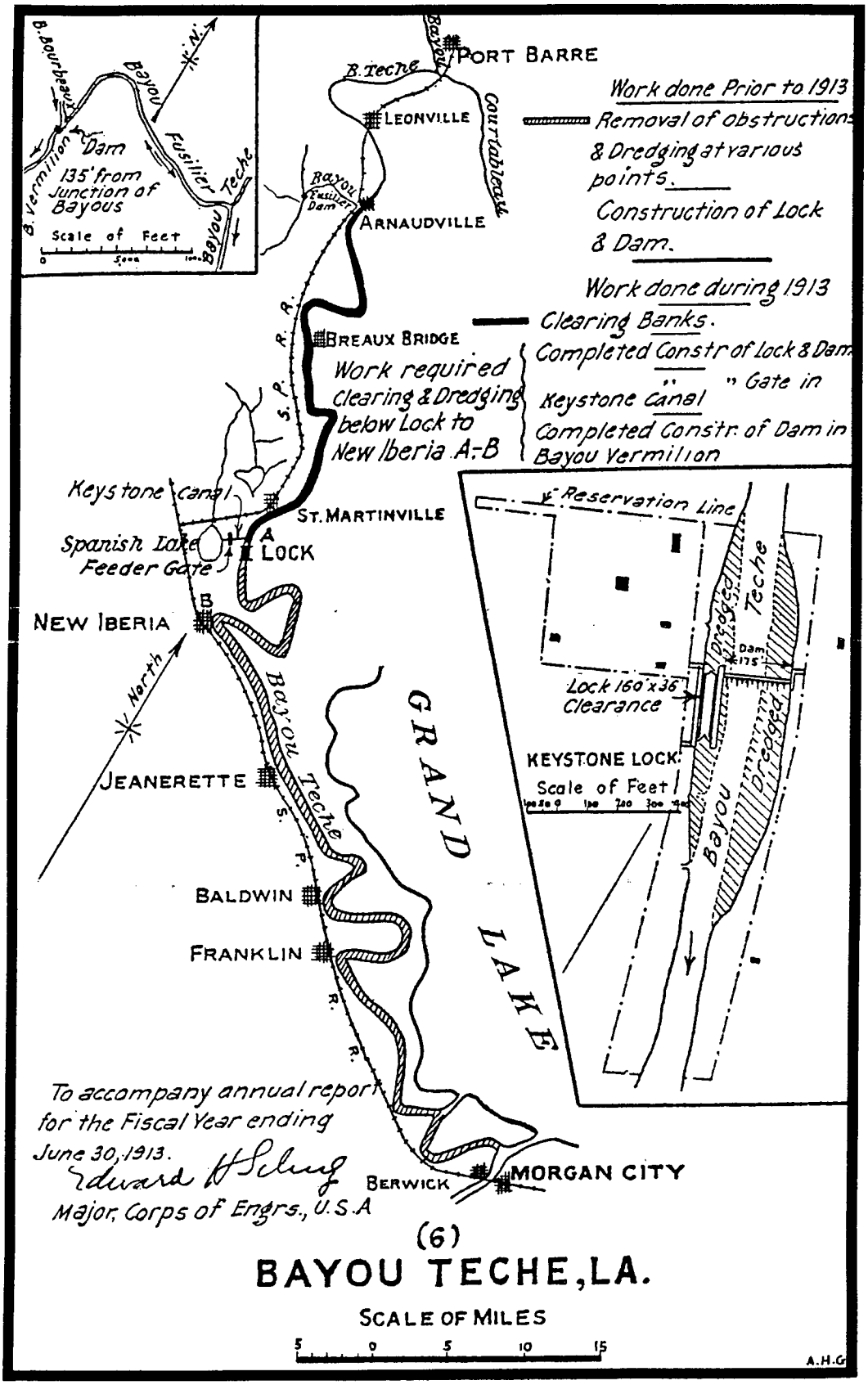


Figure 11. Depiction of Bayou Teche in 1913 shortly after completion of Keystone Lock and Dam.
(from United States War Department 1913)

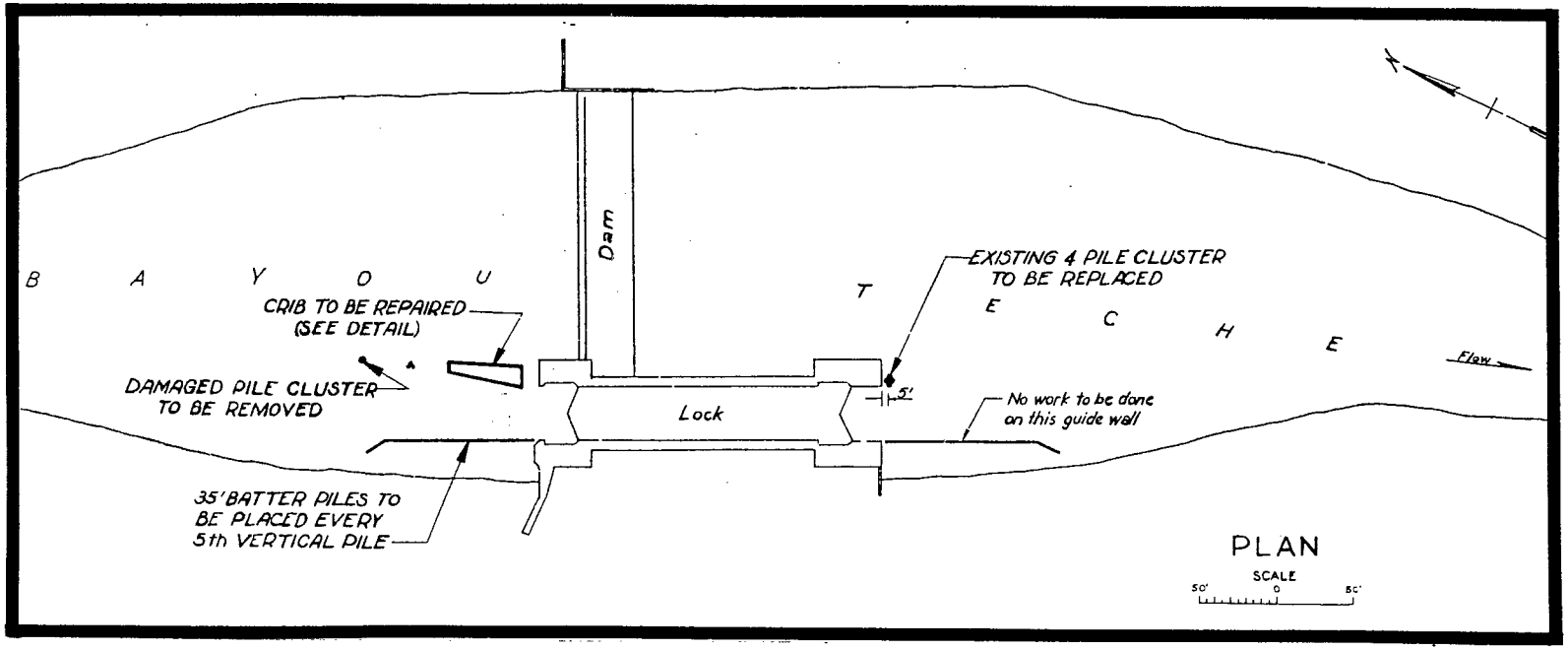


Figure 12. Plan view of Keystone Lock and Dam 1954.
(Courtesy NOD, from "Repairs to Fender System"
Corps of Engineers drawing dated November 22, 1954)

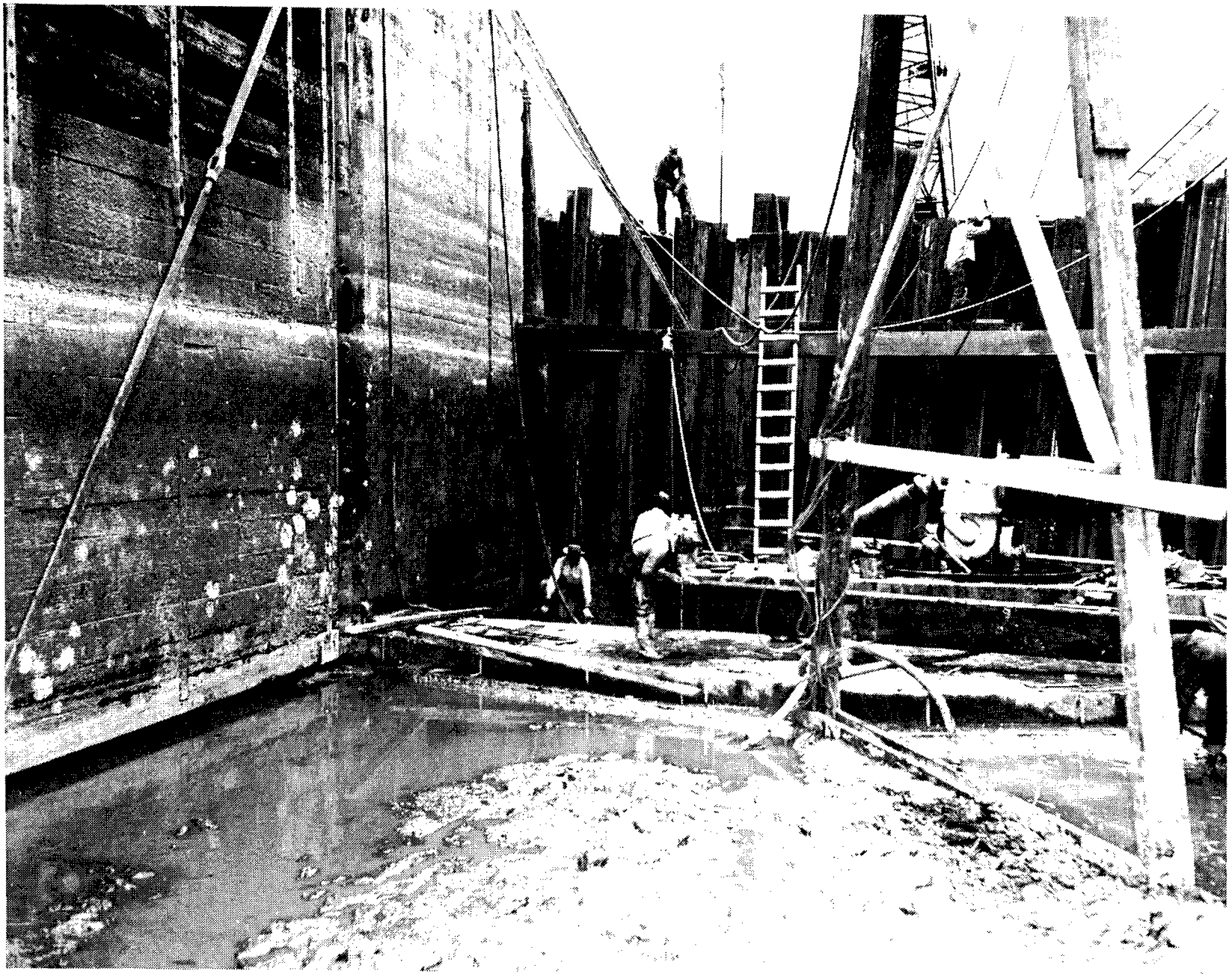


Figure 13. Photograph of 1941 repairs to Keystone Lock and Dam.
(Courtesy NOD)

Figure 14. 1948 Keystone Lock gate detail.
(Courtesy NOD)

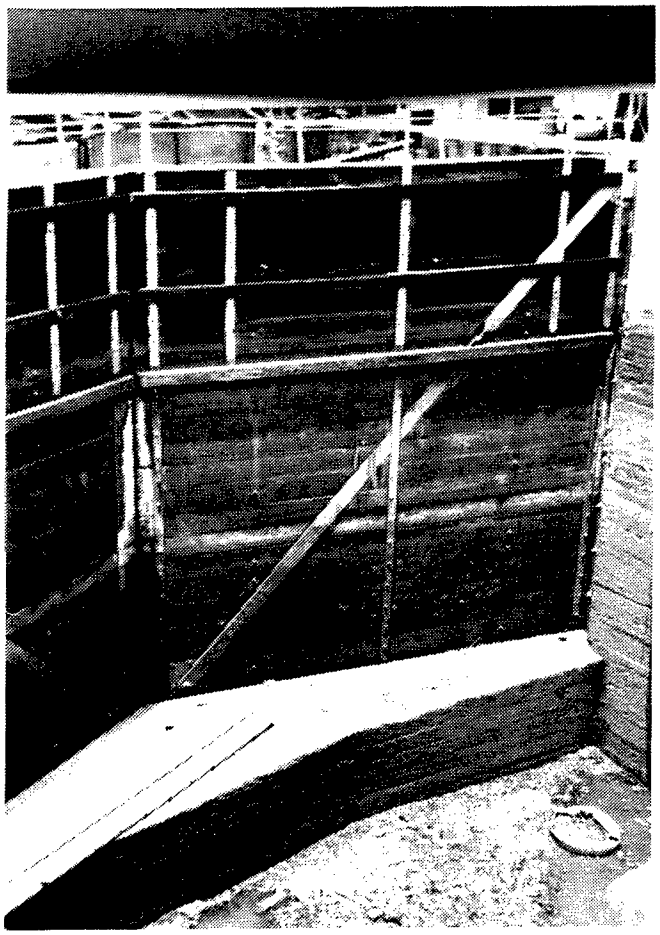


Figure 15. North lock gate after lock chamber drained during 1972 dewatering.
(Courtesy NOD)

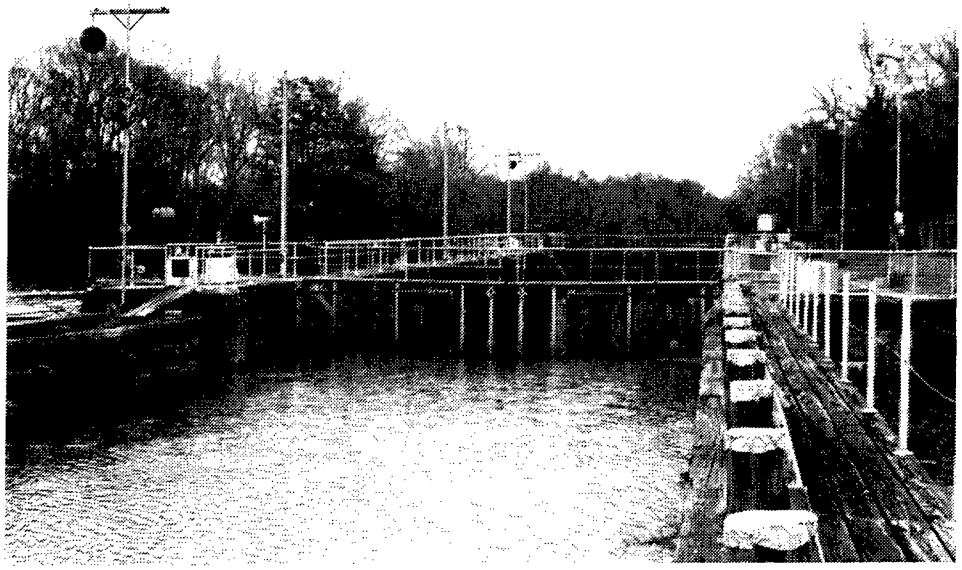


Figure 16. Tailbay and north gate viewed from wooden guide wall - 1996.

Access to the bayou side chamber wall is provided by steel grate walkways mounted on top of the wooden gates (Figure 17). Steel handrails are provided for safety during crossing.

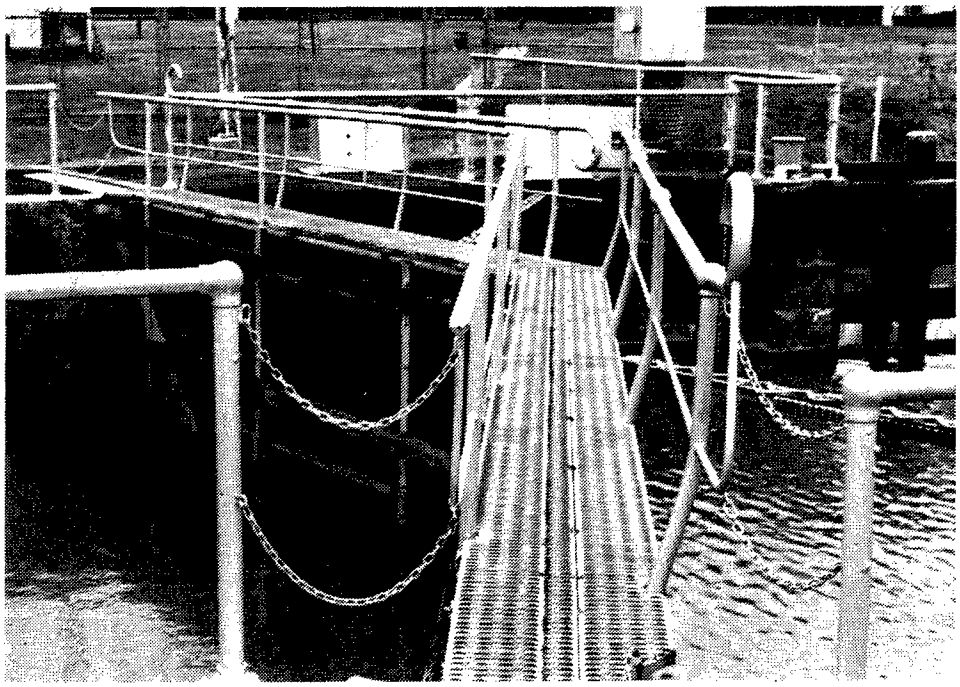


Figure 17. Photograph of the walkway atop the north end of tailbay lock gates, facing west - 1996.

While their wooden members have been replaced when needed, the gates' mechanisms for opening and closing, consisting of rack and pinion gear arrangements, have been retained (Figures 18 and 19). When first constructed, the gate machinery was operated by hand capstans, but in 1963 the manual system was replaced by a ½ horsepower, 115 volt "Boston Ratiomotor electric motor" (United States Department of the Army 1972) (Figure 20). The capstan located at the southwest corner of the lock was also converted from manual to electric in 1963. This device was used to pull barges from the forebay into the lock chamber.

Filling and emptying the lock chamber was accomplished by a system of valves, wall culverts and side ports (Figure 21). With a five foot head, the filling process could be completed in six minutes (United States War Department 1913, 2:2198; United States Department of the Army 1972). During the filling stage, water was allowed to enter via two "cylindrical drum type gates" or valves located at the north, or upstream end, of each chamber in the tailbay, directly upstream of the lock gates (Figure 22).

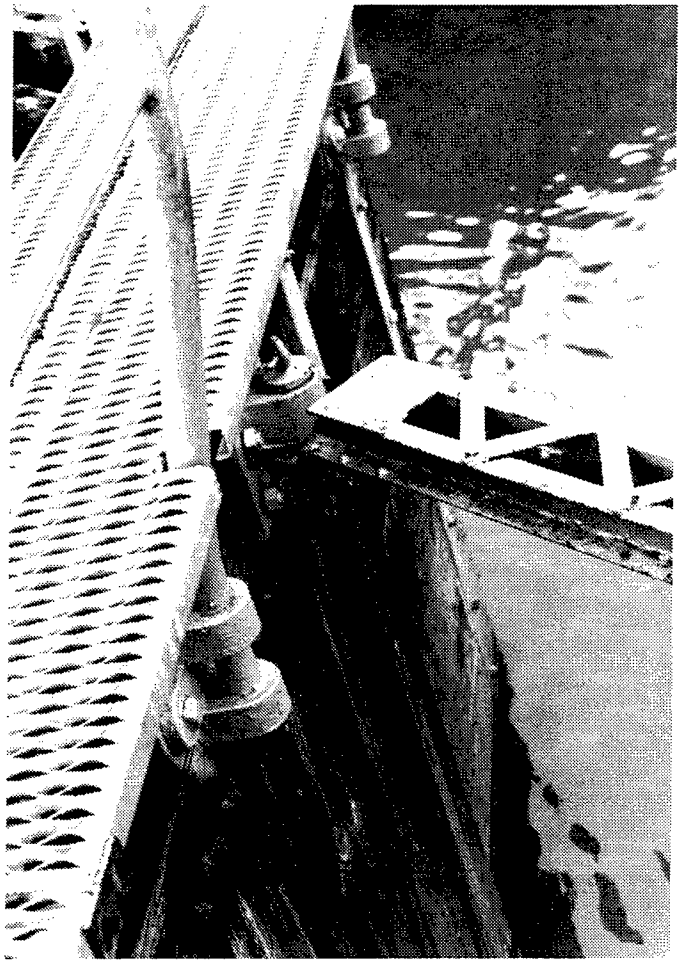


Figure 18. The end of the gate opening and closing arm - 1996.

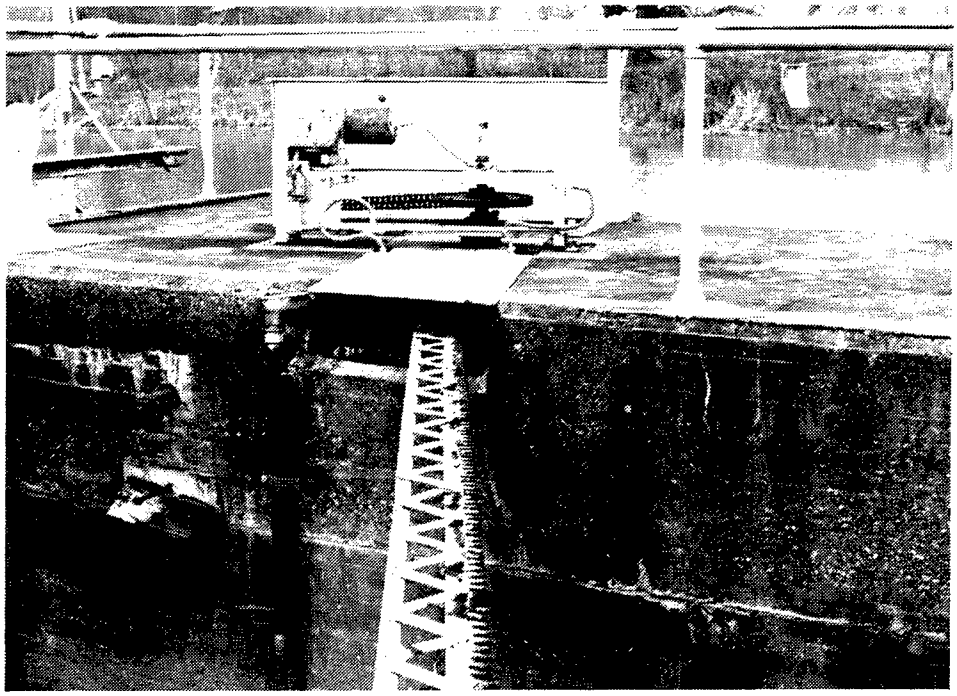


Figure 19. Fabricated steel arm extending into housing containing rack and pinion gear activated to open and close the lock gate - 1996.

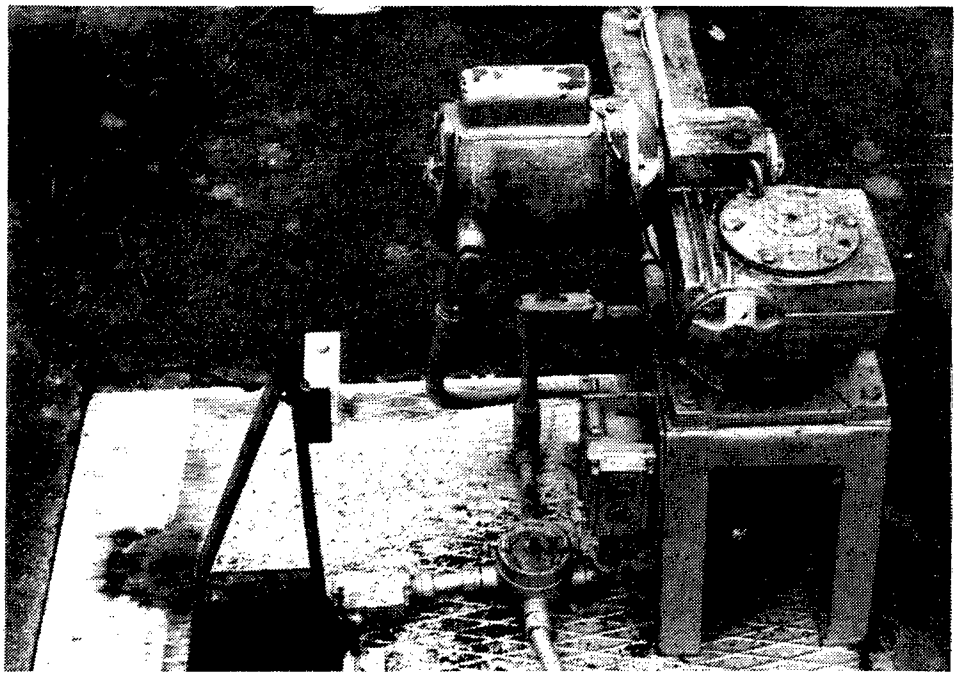


Figure 20. One of the four "Boston Ratiomotors" installed in 1963 - 1996.

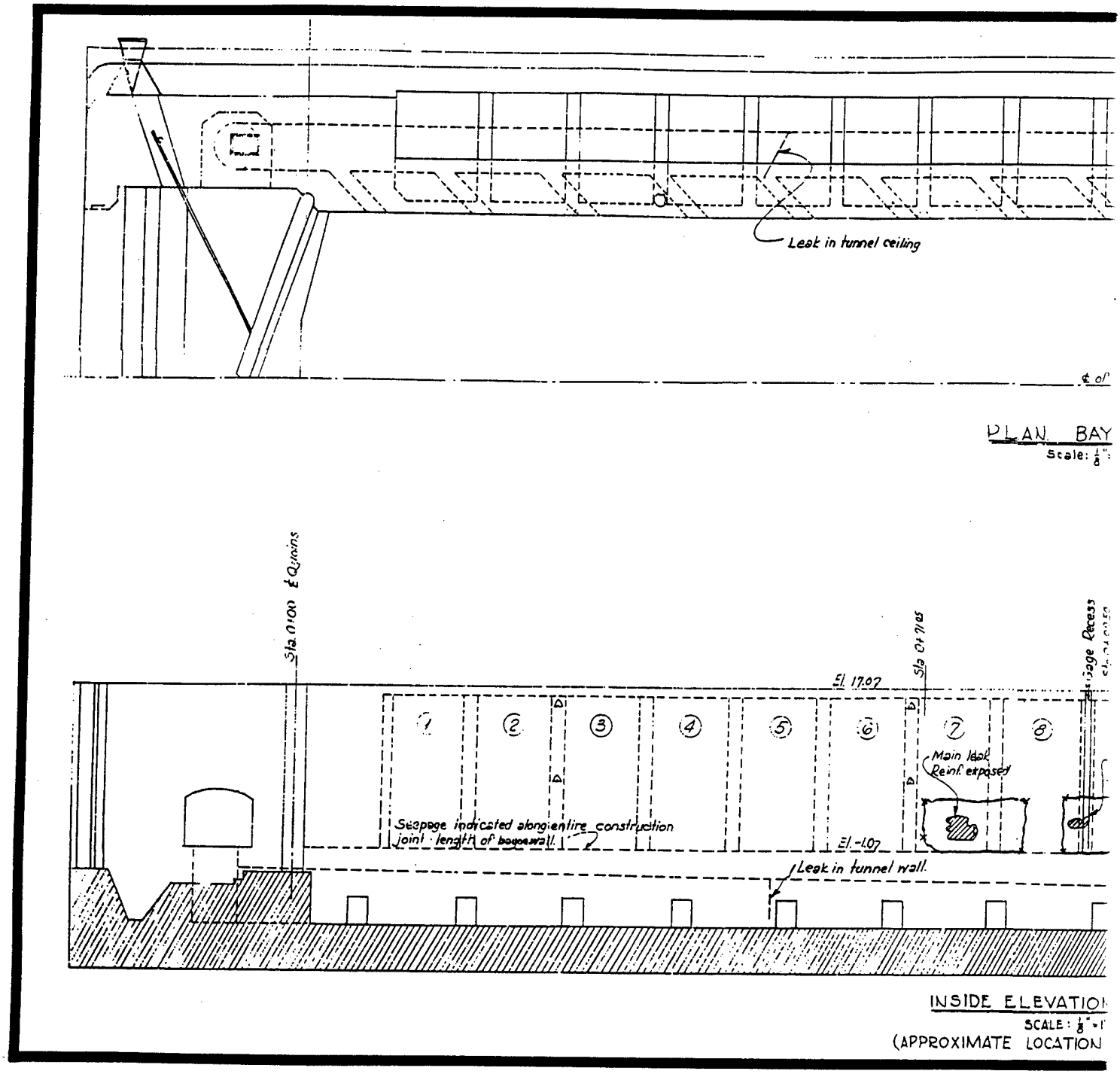
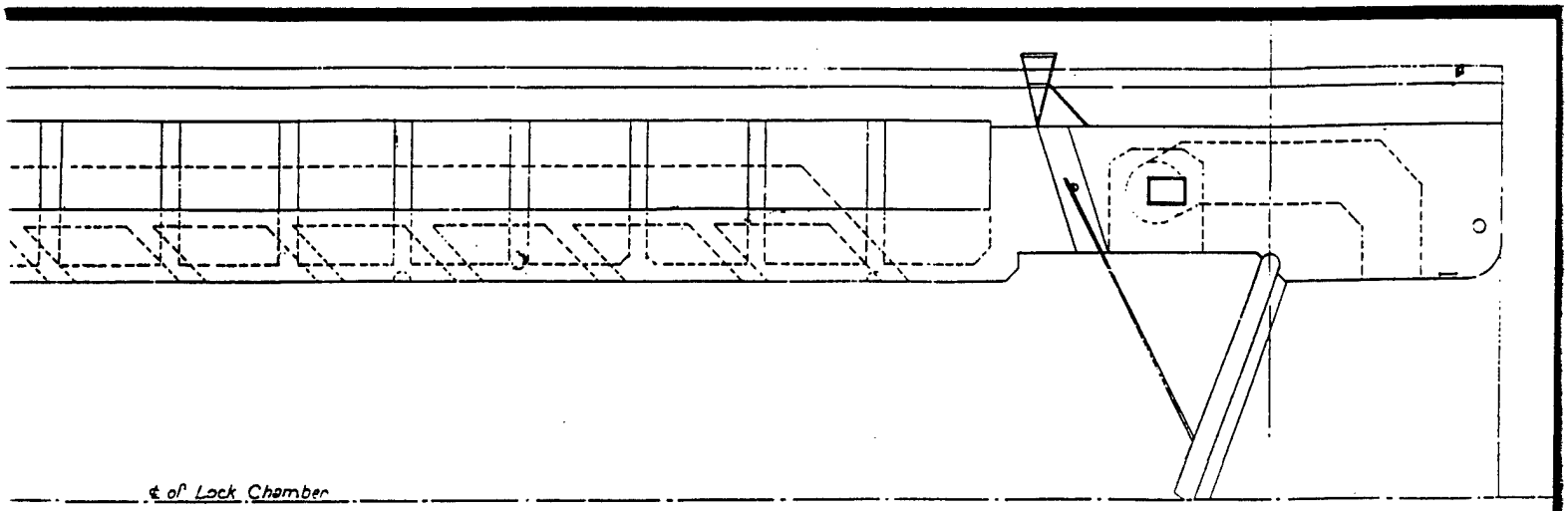
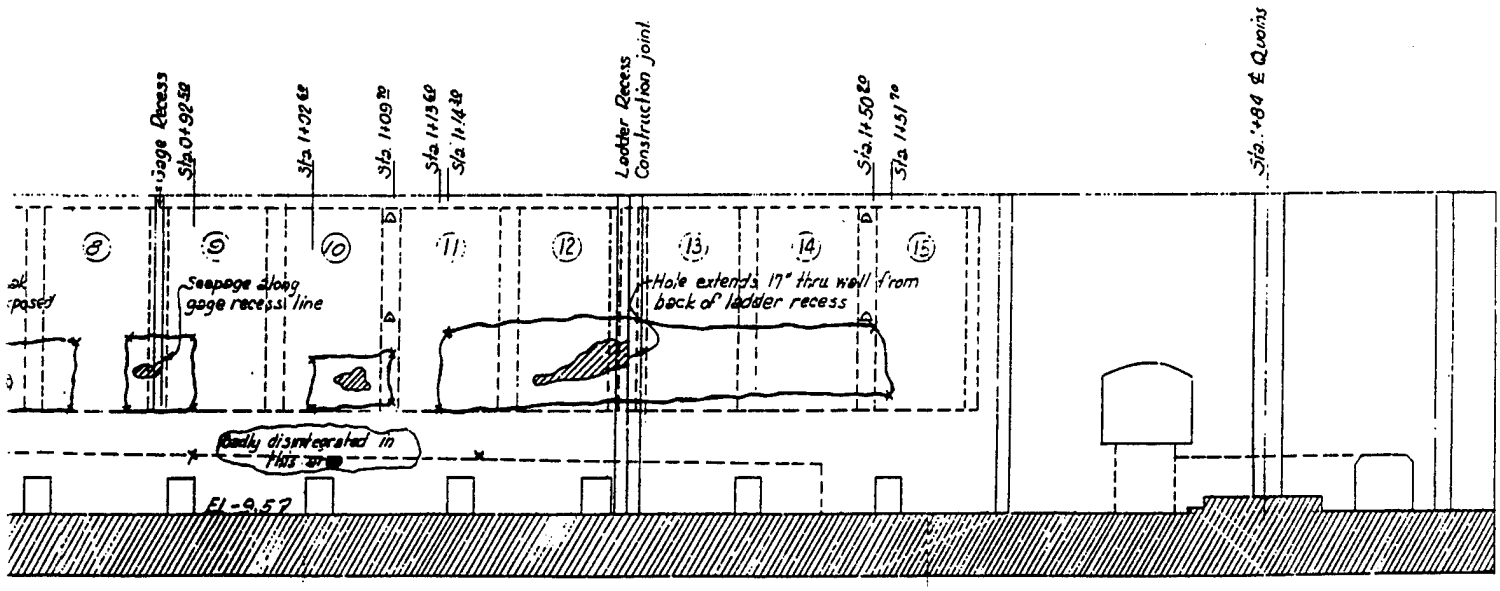


Figure 21. Plan view and inside elevation of Bayou wall.
(from United States War Department 1941)



PLAN BAYOU WALL
Scale: ⅛"=1'-0"



DE ELEVATION BAYOU WALL
SCALE: ⅛"=1'-0"
IMATE LOCATION OF MAJOR FAULTS.)

(2)

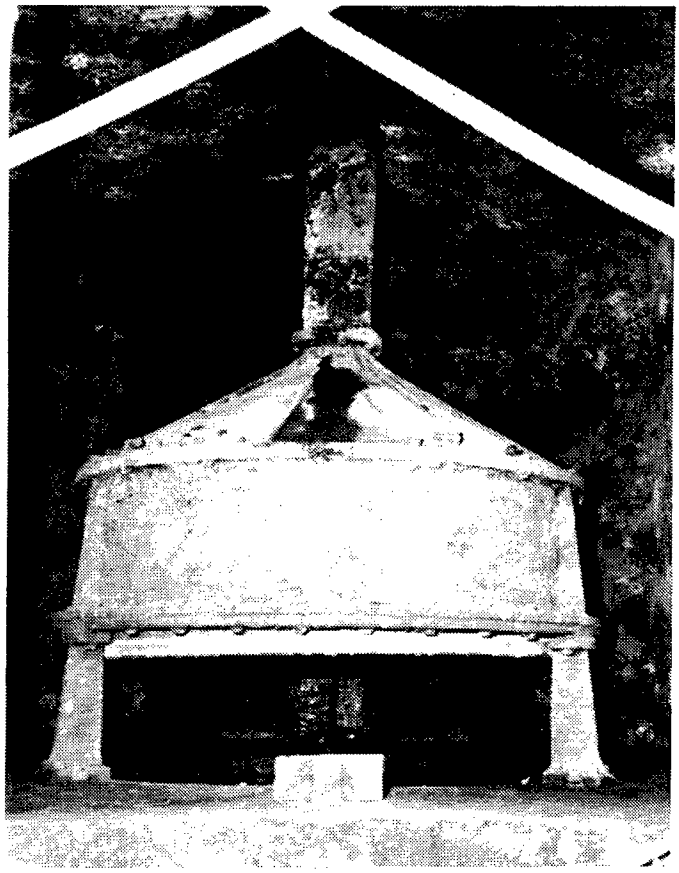


Figure 22. Photograph of "cylindrical drum type gate" or valve taken during 1970 dewatering.
(Courtesy NOD)

The lockkeeper opened the valve and allowed water to enter through a sluice in the side of the lock wall and pass through the valves into the culvert, or tunnel. The arch-shaped entrance to the valve was protected by a trash rack made of steel bars that prevented logs and other debris from entering (Figure 23). The culvert extended for nearly the full length of the chamber wall and was intersected by a series of 13 side ports through which water was discharged into the lock chamber during filling (Figure 24).

The arrangement for emptying was similar to filling, except that the two sluice and valve arrangements at the south end of the chamber were located inside the lock gates (Figure 25). A single side port discharging from each culvert emptied into the forebay.

The movement of traffic through the lock was regulated by two sets of signal balls located at the north and south ends of the bayou-side chamber wall (Figure 26). These steel cylinders were painted red and green and mounted to cable on a post. The signal balls were raised and lowered by a hand crank (Figure 27). The red ball in the raised position was a signal to oncoming traffic to stop while traffic from the opposite direction was being allowed through the lock.

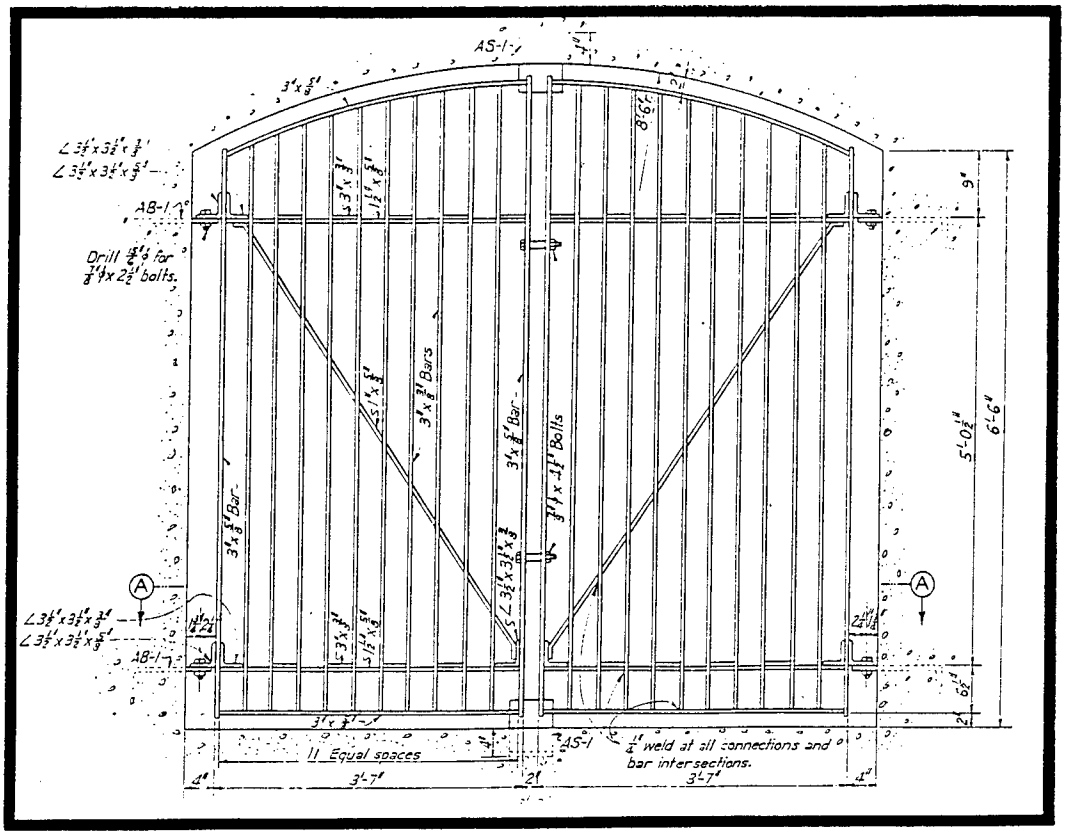


Figure 23. Depiction of trash rack - 1941.
(from United States War Department 1941).

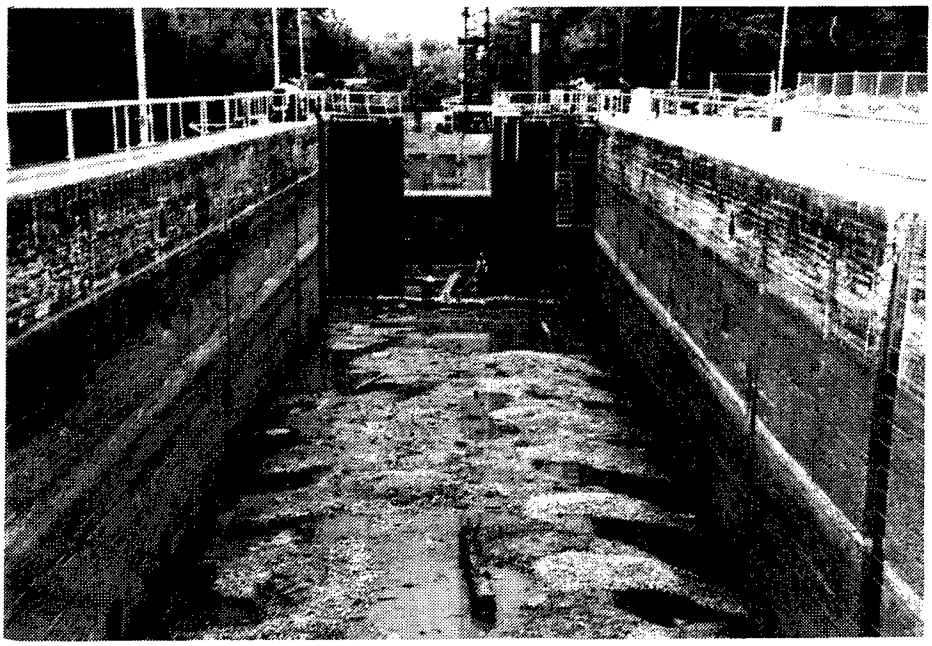


Figure 24. Interior of lock chamber looking south - 1996.

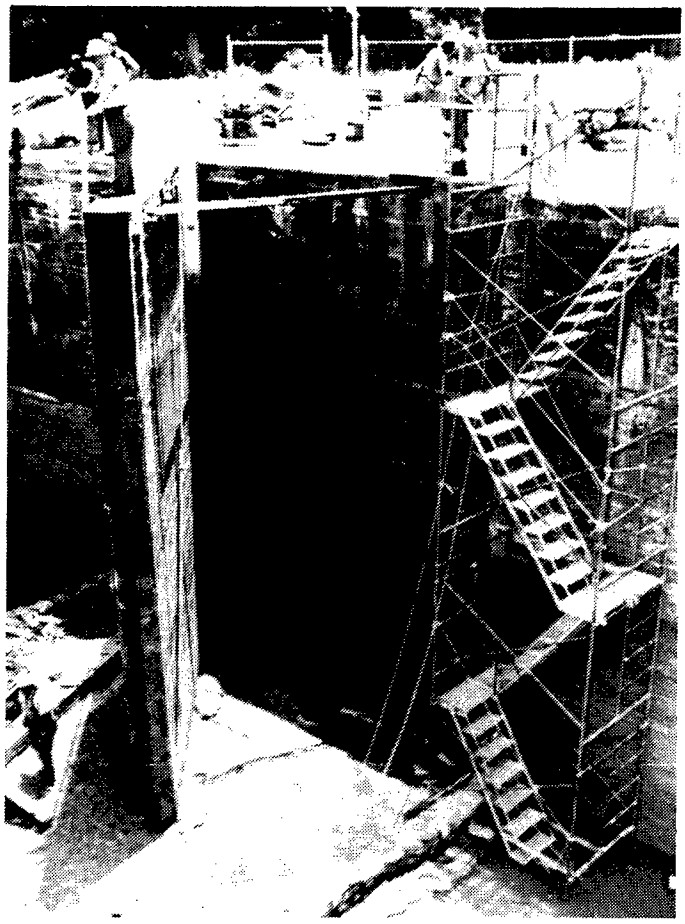


Figure 25. View of southwest corner of drained lock chamber with repair scaffolding - 1970s.
(Courtesy NOD)

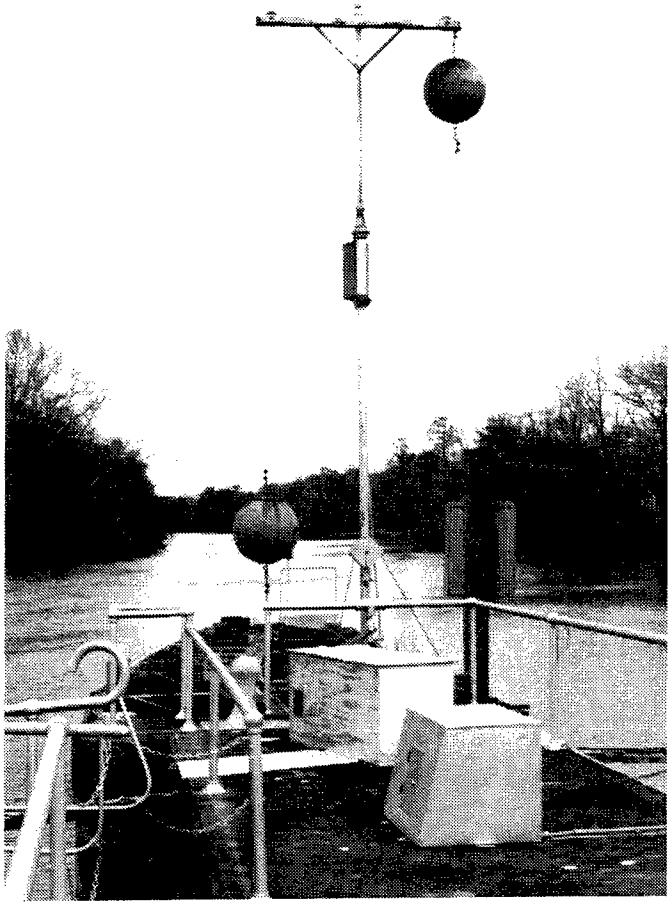


Figure 26. Signal balls at north end of lock - 1996.

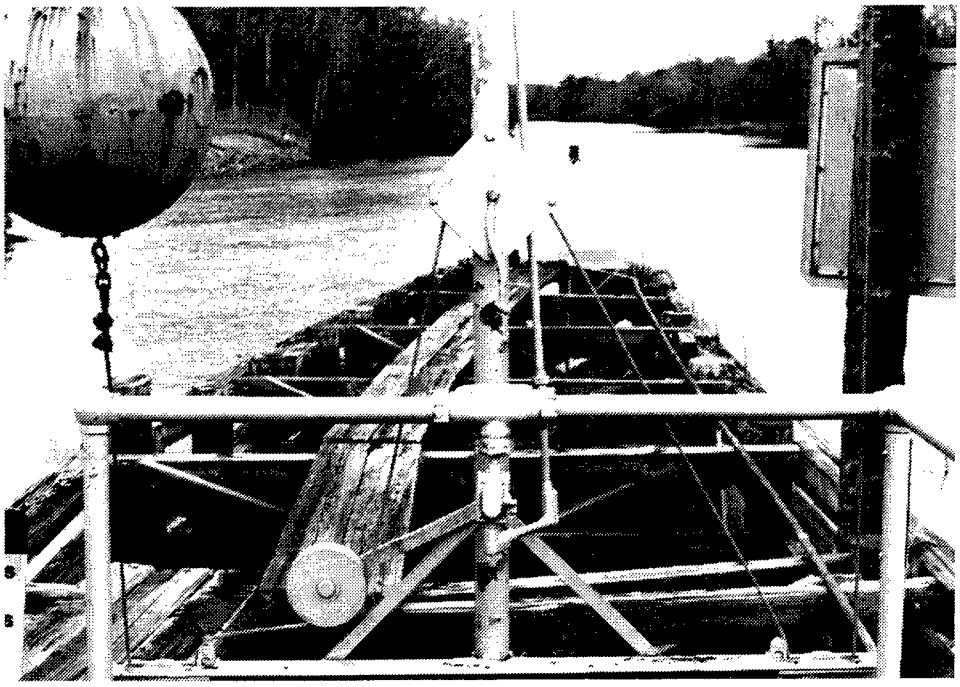


Figure 27. Detail of hand cranking mechanism for signal balls at north end of lock - 1996.

The Keystone dam is a simple crib dam of the "step and slope type." The original construction required driving 5,440 linear feet of round piles which served as crib work for the addition of 2,900 cubic yards of rip-rap stone. To create a water cut-off along the upper face of the dam, "the builders drove 71,000 feet ... of cypress sheet piles, 44 feet long" (United States War Department 1913, 2:2198).

The dam was modified in 1944 and again in the 1950s for the purpose of increasing the water level. A drawing which shows the 1950s improvements indicates that these changes were "add ons" that did not require the complete destruction and replacement of the original structure (Figure 28).

Operation of the Lock

While the substitution, in 1963, of electric motors for the original hand-operated capstans reduced the labor of opening and closing the gate valves which filled and emptied the lock, it only slightly simplified the process of moving a vessel or barge through the Keystone facility. When Gary Angeron, currently Lock and Dam Equipment Mechanic Supervisor at the Berwick Lock and Dam, Berwick, Louisiana, was first called to move a vessel through the locks in the early 1980s, his first impression was that he was seeing a "real antique" (Angeron personal communication March 8, 1996). Angeron's reaction was spurred by the fact that, while the individual tasks involved were simple, the complete process required several repetitive steps and a great deal of walking.

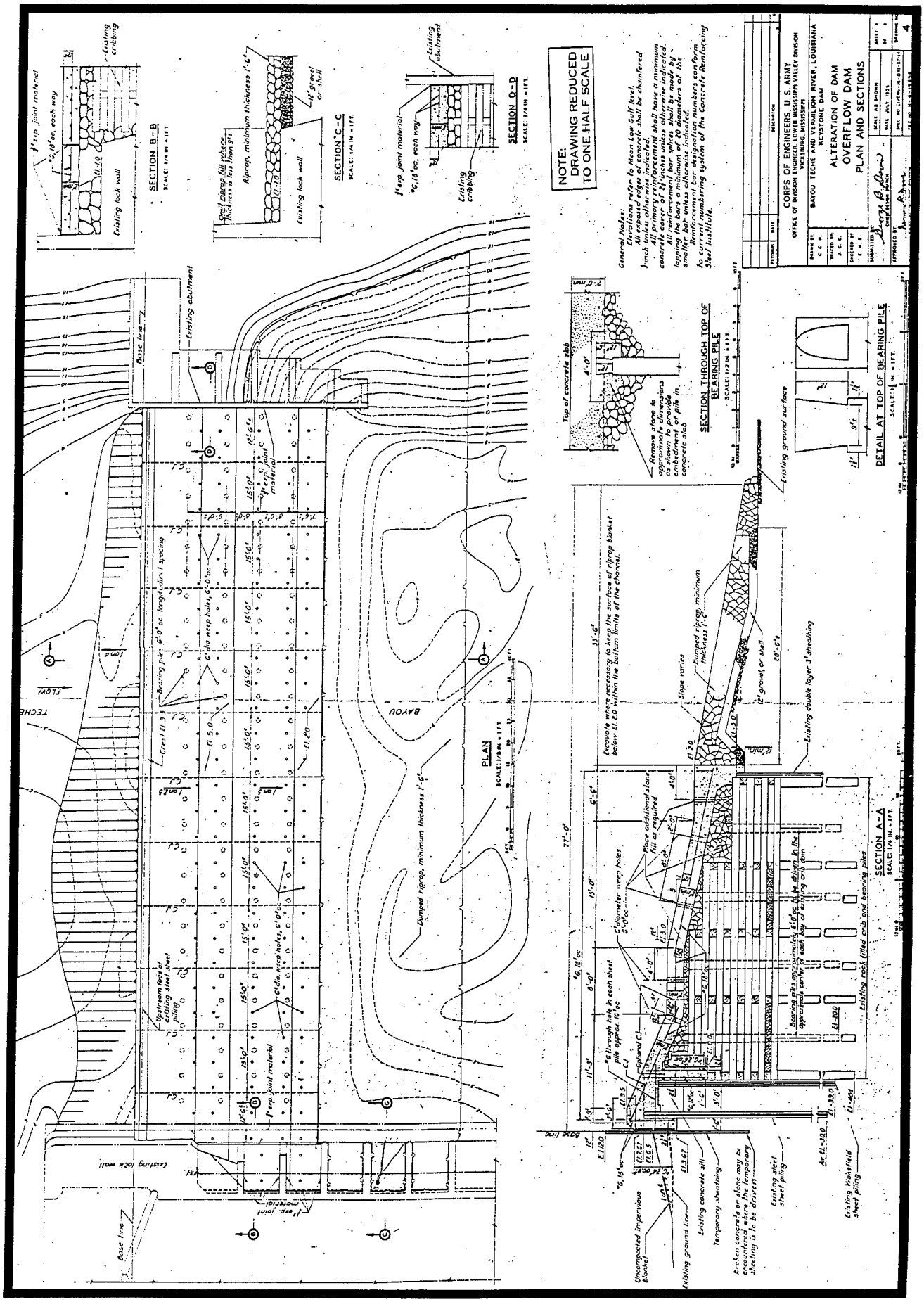


Figure 28. Section view of alteration made to dam in 1956.

As described by the Supervisor and his fellow worker, Lock and Dam Equipment Mechanic Lennis F. Paray, the process worked as follows (Angeron personal communication February 29, 1996 and March 8, 1996; Paray personal communication February 29, 1996). The lock chamber is too small to hold a tug and barge simultaneously so each has to be taken through separately. When the traffic approaches from the downstream side the tug is taken through first. It is essential that the tug pass first because it will be needed to pull the barge out of the lock once the latter has entered the chamber and been raised to the water level of the bayou on the upstream side of the dam.

The capstan at the southwest, downstream corner of the lock is required because once the tug has been moved to the upstream end a power source is required to pull the barge into the forebay and then into the lock chamber (Figure 29). This capstan, called a "cat head" by the lock mechanics, is mounted atop its electrically powered drive mechanism (Figure 30). A rope from the barge is first passed around a round steel post, depicted in Figure 29 near the middle of the photograph, then wrapped a few times around the cat head. When the power is activated the cat head begins to turn. The lock mechanic then pulls slightly to tighten the rope causing it to coil around the turning cat head and draw the barge into the lock chamber.

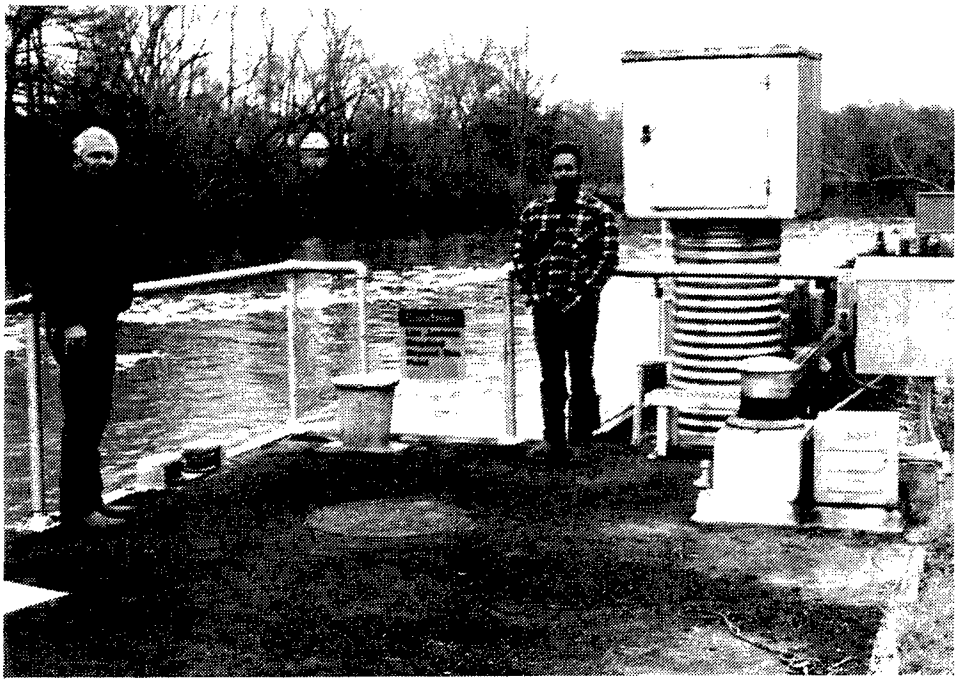


Figure 29. Photograph of Gary Angeron (l) and Lennis Paray (r) showing electrically driven capstan right of Mr. Paray - 1996.

The most complicated part of the process involves raising and lowering the water level in the lock chamber and opening and closing the lock gates. If the chamber were filled to the upstream level when traffic approached from the downstream end, it would first be necessary to lower the water level so that a vessel might enter. To empty the chamber, the lock worker would have to open a valve on one wall of the chamber, then walk across the gate and open the valve on the opposite

wall. Once the valves were opened and the chamber emptied, the lock worker would then activate the electric motor that turned the rack and pinion mechanism that opened the gate on the side of the chamber on which he was standing. The worker would then have to walk to the front of the lock, cross over the gate and walk back to the opposite downstream end of the lock and open the second gate. Once the gates were opened he would either allow a vessel to pass into the chamber under its own power or winch in a barge. When the vessel was in the chamber and tied off, it would be necessary for the lockworker to close the gates in the same circuitous fashion. Next he would move to the front of the lock, open both front valves to fill the chamber then open the front gates.

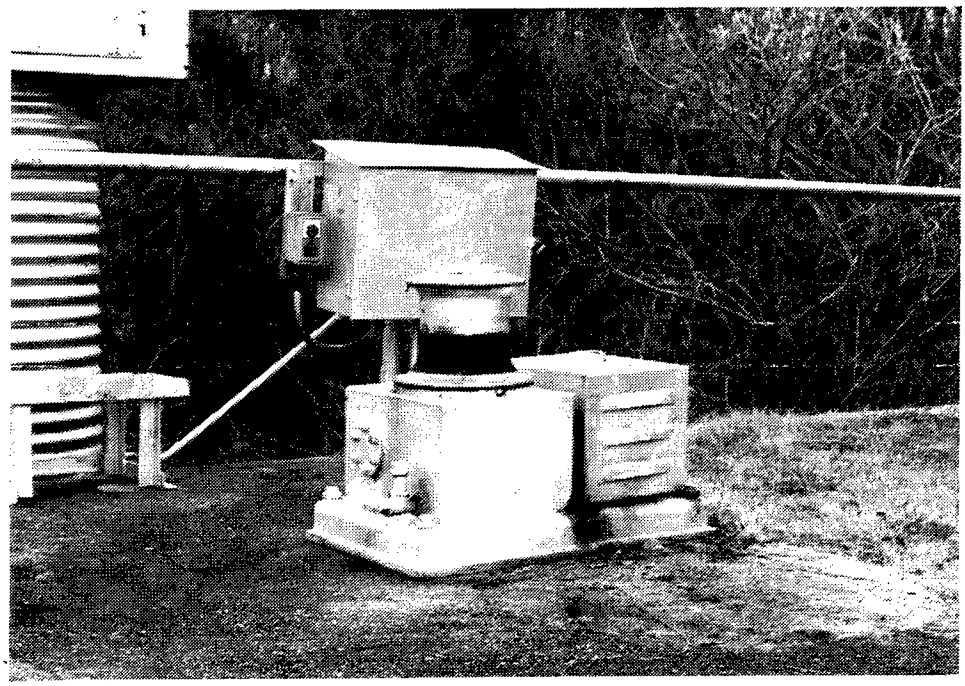


Figure 30. Detail of capstan - 1996.

Summary

The Keystone Lock and Dam has been the subject of repair a number of times over its lifetime, but retains its overall structural integrity. For these and additional reasons, the next chapter presents our evaluation of the Keystone Lock and Dam as eligible for NRHP nomination.

CHAPTER FIVE
MANAGEMENT RECOMMENDATIONS

By
Jack R. Bergstresser, Sr.
with contributions from
Prentice M. Thomas

Applicable National Register Criteria

In *National Register Bulletin 16A; How to Complete the National Register Registration Form,* the National Park Service sets forth four criteria for significance. In the opinion of the author, the Keystone Lock and Dam is significant under Criterion A because, on a local level, it is "associated with events that have made a significant contribution to the broad patterns of our history" (National Park Service 1991a:35). It is also our belief that the facility is eligible under Criterion C because it "embodies the distinctive characteristics of type, period, or method....or represents a significant distinguishable entity whose components lack individual distinction" (National Park Service 1991a:35). In the following discussion these criteria are discussed separately.

Criterion A

Louisiana has established a series of historical contexts and themes to identify the key eras and developments that have led to the formation of the state's unique social, cultural and economic identity. In essence these contexts set forth, from the state's perspective, "the events that have made a significant contribution to the broad patterns of our history," an area of significance under Criterion A of the National Register eligibility requirements.

Keystone Lock and Dam is significant under at least two of these historical contexts and themes: the historical context of Industrialization and Modernization 1890-1940 and the theme of

Euro-American Influence of the Landscape (Smith et al. 1983:279-283). The facility was built as part of a series of improvements to Bayou Teche and its tributaries designed to revitalize agriculture and other forms of economic activity along the bayou in general and in the vicinity of St. Martinville in particular. The construction event was part of a larger series of additions to the state's transportation infrastructure that underpinned the era of industrialization and modernization.

The fact that Keystone Lock and Dam was not an overwhelming commercial success does not mitigate the fact that after its construction the facility became a distinct feature of the surrounding rural, agrarian landscape and a lasting landmark in the minds of local citizens. One only has to ask for direction in the vicinity, as the author did, to discover that the lock and dam are well known features that instantly can be identified by locals. If bayous are an important cultural icon of this region of Louisiana, then undoubtedly this distinctive landmark constitutes a significant symbol of the Euro-American influence on the landscape.

Criterion C

Keystone Lock and Dam is also significant under Criterion C because it "embodies the distinctive characteristics of a type, period, or method" and "represents a significant distinguishable entity whose components lack individual distinction." In terms of its function, the collective components of a lock and dam form a distinguishable entity, just as the collective parts of an internal combustion engine form an automobile engine. While Keystone's components appear to lack individual distinction, each served an integral function without which the facility would not have performed property.

Early twentieth century, small stream facilities such as Keystone reflect the technology and design of earlier eras of lock and dam construction, while contrasting with the technological advances built into contemporaneous large, high volume facilities constructed on the major waterways (cf. Dobney et al. 1987). The significance of these smaller facilities derives not only from the fact that they were perhaps the last generation of American hand-operated facilities, but also because they were operated according to a discrete manual process, or organization of human work, that can be traced far back into the antiquity of locks and dams.

Unfortunately no contextual studies have been conducted that establish either the geographical extent, number or significance of early twentieth century, small, hand-operated locks and dams, and such a task was outside the scope of work for this study. Nevertheless, it is the opinion of the authors that, considering the number of small tributaries such as the Bayou Teche feeding into the nation's major rivers, plus the tremendous number of waterway improvements initiated during the late nineteenth and early twentieth century, the number of facilities like Keystone that were built may have been significant. This hypothesis was supported by a second writer who, in a peer review of the initial draft of this report, concluded:

> The contractors statement 'the number of small hand-operated facilities such as Keystone that were built during the period must have been significant' is difficult to

validate without more research. However, it is the writer's opinion that this statement is true, given the apparent number of small, isolated slackwater systems constructed by both the US Army Corps of Engineers and private companies in the late nineteenth and early twentieth centuries. These manual locks were simple to operate and inexpensive to construct, so it stands to reason that many were in operation during this period. [Maddex 1996:1]

In view of the lack of collective, contextual data, Keystone has to be viewed as an unusual survivor of a type of lock and dam facility that will be disappearing from our material culture at an ever accelerating rate. While it would be preferable to base an evaluation of significance under Criterion C on an abundance rather than an absence of data, until further information is available it is our opinion that Keystone is significant.

The Integrity of the Keystone Lock and Dam

The National Park Service has established seven ways in which integrity applies to historic resources (National Park Service 1982:35-37). These are location, design, setting, materials, workmanship, feeling and association.

Because it has undergone only minor alterations since its initial construction was completed in 1913, the Keystone Lock and Dam has essentially retained its integrity of design, material and workmanship. The only major structural alteration documented by our research occurred when the dam was modified first in the 1940s and then again in the 1950s. The structure was raised a few feet during these construction episodes and some of its wood work was replaced by steel, but the shape of the dam has not been changed and the visual impression that it imparts is probably indistinguishable from the original (Figure 31).

The hand cranking mechanism attached to the signal balls provides a visual reminder that all of the mechanical components of the lock were once hand-powered. The other hand-operated components which once operated the emptying and filling valves and opened and closed the gate, have been replaced by electric motors. However, such alterations do not detract significantly from the overall appearance of the lock. Kemp and Maddex (1994:33) reach a similar conclusion in their discussion of the Harvey Lock. A peer review of the initial draft of this Keystone report further reiterated that such alterations do not constitute a significant impact on a structure's integrity (Maddex 1996).

It appears that the internal mechanisms, such as the rack and pinion arrangements that operated the lock gates and the cylindrical drum type gates or valves, are either original or virtually identical replacements. It is likely that some of these original metal components may have been either repaired or replaced over the years. For instance, as suggested in the June 1941 Corps drawing Number H-4-14096/2 labeled "Iron Work Details," replacement trash racks may have been installed over the valve sluices (refer back to Figure 23).

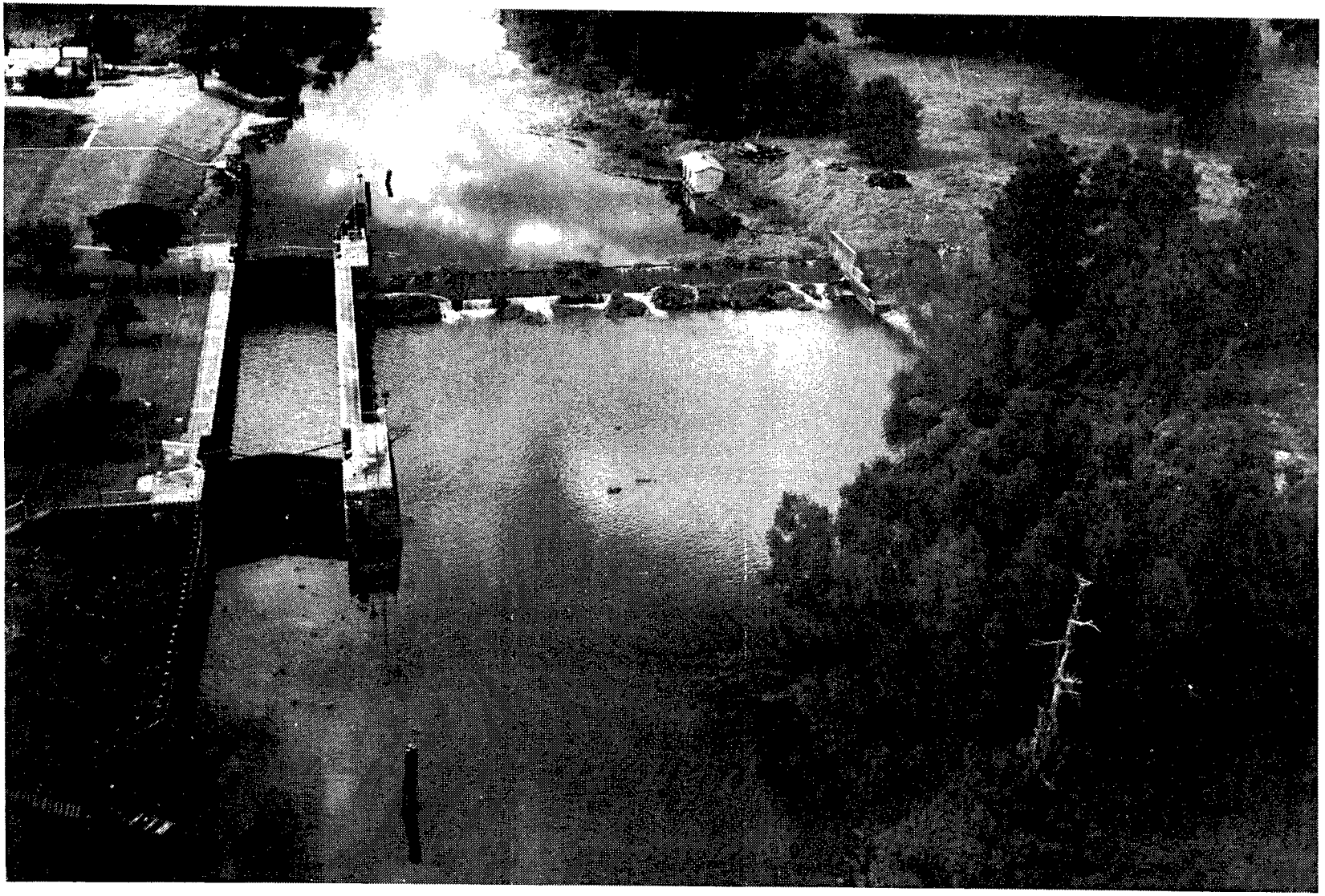


Figure 31. Aerial photograph of Keystone Lock and Dam and surrounding area as they appeared in 1947.
(Courtesy NOD)

Such minor alterations and repairs are to be expected of any industrial facility that has been in operation for over eighty years. Regular maintenance and repair has resulted in several episodes of concrete patching and crack filling. The wood in the lock gates has also been replaced as needed. Such minor changes are difficult to document and may never be fully accounted for, but they do not significantly diminish the structural, architectural or mechanical integrity of the Keystone Lock and Dam.

Just as the original physical appearance of the lock and dam structure has survived relatively unchanged, so has the location, setting and feeling of the place. Obviously the structures have not been moved, but, just as importantly, the overall lock facility, including the lockmaster's house, as well as the surrounding landscape, has escaped significant change. Sugarcane fields to the west still separate the facility from the nearby highway. A mix of fields, woods and pastures on the opposite side of the bayou still preserve the original rural, agrarian nature of the immediate area (Figure 32).

Recommendations

Preservation is the most appropriate mitigative measure for this feature given its integrity and the fact that, as time passes, the prominence of the bayou in the daily lives of the people of the region will invariably diminish. As the pervasive influence of the bayou fades, so too will important ties to local tradition and history be lost. However, while the National Register eligibility of the Keystone Lock and Dam appears certain to these authors and the recommendation for mitigation seems sound, the chances of successful preservation do not. The NOD has considered the feasibility of preservation and has determined that it is not practical at this time.

This leaves us to consider alternatives available for mitigation. It is recommended that after preservation the next best alternative would be a Level 1 Historic American Engineering Record (HAER) recording project. At a minimum, the HAER report should include large format photographs and a full set of existing condition drawings, augmented by conjectural and process drawings showing how the facility operated. One example might be a "bird's-eye" view of the facility as a crew of attendants was busy moving a barge through the lock. These drawings should be accompanied by a comprehensive historical narrative of the site; preparation of a video tape or film showing how the lock was operated is also recommended. These are offered as minimum suggestions; the precise components of the HAER report must be carefully outlined when the NOD assigns the work.

Figure 32. Aerial photograph of Keystone Lock and Dam and the surrounding area as they appear in the 1990s.
(Courtesy NOD)

BIBLIOGRAPHY

AGI, PPC

Archivo General de Indias, Seville, Spain, Papeles Procedentes de Cuba, legajo 202, folio 135.

Allain, Mathé, and Vincent H. Cassidy

1968a "Simars de Belle-Isle among the Attakapas (1719-1721)," *Attakapas Gazette* 3(1):13-18.

1968b "Blanpain, Trader among the Attakapas," *Attakapas Gazette* 3(4):32-38.

1968c "Reluctant Visitors from *La Superbe,*" *Attakapas Gazette* 3(3):22-24.

Baldwin, Leland D.

1914 *The Keelboat Age on the Western Waters.* The University of Pittsburgh Press, Pittsburgh.

Barry, R.G.

1983 Late-Pleistocene Climatology. In *Late Quaternary Environments of the United States,* Volume I, the Late Pleistocene, 391-407. H. E. Wright, Jr, editor. Minneapolis: University of Minnesota Press.

Brasseaux, Carl A.

1987 *The Founding of New Acadia: The Beginnings of Acadian Life in Louisiana, 1765-1803.* Louisiana State University Press, Baton Rouge, Louisiana.

Butler, Joseph T., Jr.

1970 "The Atakapa Indian Cannibals of Louisiana," *Louisiana History* 11:167-176.

Cassidy, Vincent H.

1967 "The Attakapas Country—Cabeza de Vaca," *Attakapas Gazette* 2:4-6.

Citizens of St. Mary Parish

1857 *Petition of the Citizens of St. Mary's Parish in Relation to the Closing of Bayou Plaquemine.* s.l., s.n.

Coastal Environments, Inc.

1977 *Cultural Resources Evaluation of the Northern Gulf of Mexico Continental Shelf.* Interagency Archaeological Services, Office of Archaeology and Historic Preservation, National Park Service, United States Department of the Interior. Washington D.C.

Coastal Environments, Inc. (cont.)

1989 *A history of waterborne commerce and transportation within the U.S. Army Corps of Engineers New Orleans District and an inventory of known underwater cultural resources.* U.S. Army Corps of Engineers, New Orleans District, Report Number COELMN/PD-88/11.

Comeaux, Malcolm L.

1972 *Atchafalaya Swamp Life: Settlement and Folk Occupations,* Louisiana State University School of Geoscience, Baton Rouge, Louisiana.

1976 "An Early View of the Atchafalaya: The Lt. Enoch Humphrey Expedition of 1805," *Attakapas Gazette* 11:153-163.

Conrad, Glenn R.

1972 "A Narrative of Events Connected with the Early Settlement of New Iberia," *Attakapas Gazette* 7 (September, 1972): 118.

1986 *New Iberia: Essays on the Town and Its People.* Second edition. Center for Louisiana Studies, University of Southwestern Louisiana, Lafayette.

1990 *Land Records of the Attakapas District,* Volume 1, *The Attakapas Domesday Book. Land Grants, Claims, and Confirmations in the Attakapas District, 1764-1826.* Center for Louisiana Studies, University of Southwestern Louisiana, Lafayette, Louisiana.

Cruzat, Heloise H.

1928 "The Wreck of *La Superbe* in the Gulf of Mexico en Route from Vera Cruz to New Orleans, May 1745," *Louisiana Historical Quarterly* 11:179-208.

Davis, M. B.

1976 Pleistocene Biogeography of Temperate Deciduous Forest. *Geoscience and Man* 13:13-26.

De Bow's Review

1859 "New Orleans Sugar Market," *De Bow's Review* 28:80.

Delcourt, P. A. and H. R. Delcourt

1983 Late Quaternary Vegetational Dynamics and Community Stability Reconsidered. *Quaternary Research* 19:265-271.

Dincauze, D.
1993 Fluted Points in the Eastern Forests. In *From Kostenki to Clovis: Upper Paleolithic-Paleo-Indian Adaptations.* O. Soffer and N. D. Praslov, eds. Chapter 20:279-292. New York: Plenum Press.

Dobney, Frederick, David Moore, Jeffrey Treffinger, R. Christopher Goodwin, Mark Catin, Paul C. Armstrong, James Cripps and Carol Poplin
1987 *Evaluation of the National Register Eligibility of the Inner Harbor Navigation Canal Lock in Orleans Parish, Louisiana.* New Orleans District Corps of Engineers, Report Number COELMN/PD-87-05.

Folmer, Henri, trans. and ed.
1940/1941 "De Bellisle on the Texas Coast," *The Southwestern Historical Quarterly* 44 (1940-1941): 204-231.

Franklin *Planter's Banner* 1847-1900.

Gagliano, S. M. and B. G. Thom
1967 Deweyville Terrace, Gulf and Atlantic Coasts. Louisiana State University, Coastal Studies Institute, *Coastal Studies Series, Bulletin* 1.

Gibson, J. L.
1972 *Archaeology and Ethnology on the edges of the Atchafalaya Basin, A cultural resources survey of the Atchafalaya Protection Levees.* Submitted to Department of the Army, New Orleans District, Corps of Engineers, Contract No. DACW29-79-C-0265.

1976 *Archeological Survey of Bayou Teche, Vermilion River, and Freshwater Bayou, South Central Louisiana.* University of Southwestern Louisiana, Lafayette, Louisiana.

1978 *Archaeological Survey of the Lower Atchafalaya Region, South Central Louisiana.* University of Southwestern Louisiana, Center for Archaeological Studies, Report Number 5.

1982 Archaeology and ethnology on the edges of the Atchafalaya Basin, South Central Louisiana. Prepared for Department of the Army, New Orleans Corps of Engineers, Report PD-RC-82-04.

1990 *Archaeological Survey of the Mid-Teche Ridge, South Louisiana: from Bayou Gerimond to Bayou Portage Guidry.* USL Center for Archaeological Studies. Lafayette.

Gibson, J. L. (cont.)
1991 *I-49 Connector Phase I: Line and Grade Study, and Draft Environmental Impact Statement, Cultural Resources Investigations.* Prepared for Howard, Needles, Tamen and Bergendorff. Report on file at Division of Archaeology, Office of Cultural Development, Department of Culture, Recreation and Tourism, State of Louisiana, Baton Rouge.

Goodwin, R. Christopher, Jill-Karen Yakubik, Galloway W. Selby, Kenneth R. Jones, Debra Stayner, and Janice Cooper
1985 *An Archaeological and Historic Sites Inventory of Bayou Teche Between Franklin and Jeanerette, Louisiana.* Submitted to Division of Archeology, Department of Culture, Recreation, and Tourism, Baton Rouge, Louisiana.

Haynes, C. V., Jr.
1991 Clovis-Folsom Geochronology and Climatic Change. In *From Clovis to Kostenki: Upper Paleolithic--Paleo-Indian Adaptations.* O. Soffer and N. D. Praslov, editors; Chapter 16:219-239. New York: Plenum Press.

Howe, H. V. and C. K. Moresi
1931 *Geology of Lafayette and St. Martin Parishes.* Louisiana State Department of Conservation, Bureau of Scientific Research and Statistics, Minerals Section. Baton Rouge.

Jeter, M. D., J. C. Rose, G. I. Williams, Jr. and A, M. Harmon
1989 *Archaeology and Bioarchaeology of the Lower Mississippi Valley and Trans-Mississippi South in Arkansas and Louisiana.* Arkansas Archaeological Survey, Research Series, Number 37.

Kemp, Emory and Lee Maddex
1994 National Register Evaluation of the Harvey Lock. Prepared for the U.S. Army Corps of Engineers, New Orleans District. New Orleans.

Lenzer, J. P.
1982 Geomorphology and Geomorphic History of the Atchafalaya Basin. In *Archaeology and Ethnology of the Atchafalaya Basin: a Cultural Resources Survey of the Atchafalaya Basin Protection Levees.* Prepared for Department of the Army, New Orleans District, Corps of Engineers. New Orleans.

Lundelius, E. L. Jr.
1976 Vertebrate Paleontology of the Pleistocene: an Overview. *Geoscience and Man* 13:45-59.

Lundelius, E. L., Jr., R.W. Graham, E. Anderson, J. Guilday, J. A. Holman, D. W. Steadman, and S. D. Webb
1983 Terrestrial Vertebrate Faunas. In *Late Quaternary Environments of the United States,* Volume I: The Late Pleistocene:311-353, H. E. Wright, ed. Minneapolis: University of Minnesota Press.

Maddex, Lee R.
1996 "Peer Review of *National Register Evaluation of Keystone Lock and Dam,*" prepared for the U.S. Army Corps of Engineers, New Orleans District.

Martin, P. S.
1967 Prehistoric Overkill. In P. Martin and H. Wright, eds. *Pleistocene Extinctions: the Search for a Cause.* New Haven: Yale University Press.

Martin P. S. and R. Klein, eds.
1984 *Quaternary Extinctions.* Tuscon: University of Arizona Press.

Martin, L. D. and J. B. Martin
1984 The Effect of Pleistocene and Recent Environments on Man in North America. *Current Research* 1:73-75. Center for the Study of Early Man, University of Maine at Orono.

Mossa, J. and W. J. Autin, editors
1989 *Quaternary Geomorphology and Stratigraphy of the Florida Parishes, Southeastern Louisiana: a Field Trip.* Louisiana Geological Survey, Guidebook Series, Number 5.

Muller, R. A. and J. E. Willis
1978 Climatic Variability in the Lower Mississippi Valley. *Geoscience and Man* 19:55-63.

National Park Service
1982 *How to apply the National Register Criteria for Evaluation.* Government Printing Office, Washington D.C.

1991a *National Register Bulletin 16A; How to Complete the National Register Registration Form.* Government Printing Office, Washington D.C.

1991b *National Register Bulletin 16B; How to Complete the National Register Multiple Property Documentation Form.* Government Printing Office, Washington D.C.

New Iberia *Louisiana Sugar Bowl,* 1876-1880.

O'Neil, C. P, J.E. de Steiguer and G.W. Worth
1975 Trend analysis of vegetation in Louisiana's Atchafalaya River Basin. *U.S. Department of Commerce, National Technical Information Service,* DB-272-764.

Pielou, E. C.
1991 *After the Ice Age.* Chicago: University of Chicago Press.

Prichard, Walter, Fred B. Kniffen, and Clair A. Brown, eds.
1945 "Southern Louisiana and Southern Alabama in 1819: The Journal of James Leander Cathcart," *Louisiana Historical Quarterly,* 28.

Rowland, Dunbar and Albert Godfrey Sanders, eds.
1927 *Mississippi Provincial Archives, French Dominion.* 3 volumes. Mississippi Department of Archives and History, Jackson, MS.

Ruhe, Robert V.
1983 Depositional environment of Late Wisconsin loess in the mid-continental United States. pp. 130-137 in *Late Quaternary Environments of the United States.*

Saucier, R. T.
1974 Quaternary Geology of the Lower Mississippi Valley. *Arkansas Archaeological Survey, Research Series, Number* 6.

1976 Sand Dunes and Related Aeolian Features of the Lower Mississippi Valley. *Geoscience and Man* 19:23-40.

1994 *Geomorphology and Quaternary Geologic History of the Lower Mississippi Valley.* U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, Mississippi.

Shelby, Charmion Clair, trans. and ed.
1938 "Grenier's Journal of His Voyage to Vera Cruz, 1745," *Louisiana Historical Quarterly,* 31 (1938): 631-655.

Ship Registers and Enrollments
1941 *Ship Registers and Enrollments of New Orleans, Louisiana.* 6 volumes, Louisiana State University Press, Baton Rouge, Louisiana.

Smith, Stephen D., Philip G. Rivet, Kathleen M. Byrd and Nancy Hawkins
1983 *Louisiana's Comprehensive Archaeological Plan.* Department of Culture, Recreation and Tourism, Baton Rouge.

Snead, J. I. and R.P. McCullough
1984 *Geological Map of Louisiana.* Baton Rouge: Louisiana Geological Survey.

St. Martin Parish
Conveyance Book 70, (p. 559, #34260; p. 563, #34261)

St. Martinville *Attakapas Gazette,* April 16, 1825.

State of Louisiana
1818 *Acts Passed at the Second Session of the Third Legislature of the State of Louisiana, 1818.* J. C. de St. Romes, New Orleans.

1819 *Acts of the First Session of the Fourth Legislature of the State of Louisiana, 1819.* J. C. de St. Romes, New Orleans.

1821 *Acts Passed at the First Session of the Fifth Legislature.* J. C. de St. Romes, New Orleans.

1832 *Acts Passed at the Third Session of the Tenth Legislature.* Stroud and Pew, New Orleans.

Taylor, Gertrude C.
1980 *Land Grants along the Teche, Part 2, St. Martinville to Sorrel.* Attakapas Historical Association in cooperation with the Center for Louisiana Studies, University of Southwestern Louisiana, Lafayette, Louisiana.

Treffinger, Jeffrey
1988 *Evaluation of the National Register Eligibility of the Vermilion Lock, Vermilion Parish, Louisiana.* Prepared for U.S. Army Corps of Engineers, New Orleans District. Report Number: COELMN/PD-89/02.

United States Corps of Engineers
Keystone Lock Property File, Real Estate Department, New Orleans, Louisiana.

United States Department of the Army
1969 *1969 Annual Report of the Chief of Engineers on Civil Works Activities.* 2 volumes. Government Printing Office, Washington, D. C.

1972 *1972 Annual Report , Chief of Engineers, on Civil Works Activities.* 2 volumes. Government Printing Office, Washington, D. C.

1975 *1975 Annual Report of the Chief of Engineers on Civil Works Activities.* 2 Volumes. Government Printing Office, Washington, D. C.

United States Department of the Army (cont.)

1980 *1980 Annual Report FY 80 of the Chief of Engineers on Civil Works Projects.* Government Printing Office, Washington, D. C.

United States War Department

1870 *Annual Report of the Chief of Engineers to the Secretary of War for the Year 1870.* Government Printing Office, Washington, D. C.

1871 *Report of the Secretary of War, Being Part of the Message and Documents Communicated to the Two Houses of Congress at the Beginning of the Second Session of the Forty-Second Congress.* 2 volumes. Government Printing Office, Washington, D. C.

1889 *Annual Report of the Chief of Engineers, United States Army, to the Secretary of War, for the Year 1889.* 4 parts. Government Printing Office, Washington, D.C.

1910 *Report of the Chief of Engineers, U. S. Army, 1910.* 3 parts. Government Printing Office, Washington, D. C.

1911 *Report of the Chief of Engineers, U. S. Army, 1911.* 3 parts. Government Printing Office, Washington, D. C.

1912 *Report of the Chief of Engineers, U. S. Army, 1912.* 3 parts. Government Printing Office, Washington, D. C.

1913 *Report of the Chief of Engineers, U. S. Army, 1913.* 3 parts. Government Printing Office, Washington, D. C.

1914 *Report of the Chief of Engineers, U. S. Army, 1914.* 3 parts. Government Printing Office, Washington, D. C.

1915 *Report of the Chief of Engineers, U. S. Army, 1915.* 3 parts. Government Printing Office, Washington, D. C.

1916 *Report of the Chief of Engineers, U. S. Army, 1916.* 3 parts. Government Printing Office, Washington, D. C.

1917 *Report of the Chief of Engineers, U. S. Army, 1917.* 3 parts. Government Printing Office, Washington, D. C.

1918 *Report of the Chief of Engineers, U. S. Army, 1918.* 3 parts. Government Printing Office, Washington, D. C.

United States War Department (cont.)

1920 *Report of the Chief of Engineers, U. S. Army, 1920.* 3 parts. Government Printing Office, Washington, D. C.

1927 *Report of the Chief of Engineers, U. S. Army, 1927.* 2 parts. Government Printing Office, Washington, D. C.

1928 *Report of the Chief of Engineers, U. S. Army, 1928.* 2 parts. Government Printing Office, Washington, D. C.

1929 *Report of the Chief of Engineers, U. S. Army, 1929.* 2 parts. Government Printing Office, Washington, D. C.

1930 *Report of the Chief of Engineers, U. S. Army, 1930.* 2 parts. Government Printing Office, Washington, D. C.

1931 *Report of the Chief of Engineers, U. S. Army, 1931.* 2 parts. Government Printing Office, Washington, D. C.

1936 *Report of the Chief of Engineers, U. S. Army, 1936.* 2 parts. Government Printing Office, Washington, D. C.

1937 *Report of the Chief of Engineers, U. S. Army, 1937.* 3 parts. Government Printing Office, Washington, D. C.

1938 *Report of the Chief of Engineers, U. S. Army, 1938.* 2 parts. Government Printing Office, Washington, D. C.

1940 *Report of the Chief of Engineers, U. S. Army, 1940.* 2 parts. Government Printing Office, Washington, D.C.

1941 *Report of the Chief of Engineers, U. S. Army, 1941.* Government Printing Office, Washington, D. C.

1946 *Annual Report of the Chief of Engineers, U. S. Army, 1945.* 2 parts. Government Printing Office, Washington, D. C.

1950 *Annual Report of the Chief of Engineers, U. S. Army, 1949.* 2 parts. Government Printing Office, Washington, D. C.

1952 *Annual Report of the Chief of Engineers, U. S. Army, 1951.* 2 parts. Government Printing Office, Washington, D. C.

United States War Department (cont.)

1957 *Annual Report of the Chief of Engineers, U. S. Army, 1957.* 2 volumes. Government Printing Office, Washington, D. C.

1961 *Annual Report of the Chief of Engineers, U. S. Army, on Civil Works Activities, 1961.* 2 volumes. Government Printing Office, Washington, D. C.

USDA

1974 *Soil Survey of Evangeline Parish, Louisiana.* United States Department of Agriculture, Soil Conservation Service.

1977 *Soil Survey of Lafayette Parish, Louisiana.* United States Department of Agriculture, Soil Conservation Service.

Watts, W. A.

1983 Vegetational History of the Eastern United States 25,000 to 10,000 Years Ago. Pages 294-310, in *Late Quaternary Environments of the Eastern United States,* Volume I, the Late Pleistocene, 294-310, H. W. Wright, ed. Minneapolis: University of Minnesota Press.

Wilby, Routh Trowbridge, ed.

1991 *Clearing Bayou Teche after the Civil War: The Kingsbury Project, 1870-1871.* Center for Louisiana Studies, University of Southwestern Louisiana, Lafayette.

Williams, Lyle Givens

1970 "A Water Route from the Opelousas to the Mississippi in 1791," *Attakapas Gazette,* 5:5-10.

Wright, H. E., Jr.

1976 Pleistocene Ecology-Some Current Problems. *Geoscience and Man* 13:1-12.

APPENDIX I
SCOPE OF WORK

CELMN-PD-RN

5 Oct 1995

SCOPE OF SERVICES
National Register Evaluation
of the Keystone Lock and Dam,
St. Mary's Parish, Louisiana

1. Introduction. The purpose of this study is to determine the National Register eligibility of the Keystone Lock and Dam. The contractor will provide recommendations for treatment of the property if it is found to be eligible for the National Register of Historic Places.

2. Project Background. Keystone Lock and Dam is located on Bayou Teche, just north of New Iberia, Louisiana. It is owned and operated by the U.S. Army Corps of Engineers, New Orleans District. Construction of the project was completed in 1913.

3. Study Requirements. The study will provide an evaluation of the National Register significance of the Keystone Lock and Dam. The contractor will not evaluate the architectural significance of buildings or the archeological significance of underground cultural resources on the property. The contractor will provide fully documented recommendations for treatment of the property if it is eligible for the National Register of Historic Places. In particular, the study shall fully assess the impact on the lock of closing the chamber with rocks and abandoning the structure by ending maintenance.

This project will provide information to meet some, but not all of the requirements, in the Corps of Engineers regulation, Project Construction and Operation Historic Preservation Program (ER 1130-2-438). Specifically, this study will follow the requirement for historic property investigations only for the Lock and Dam.

a. Phase 1. Background Research. Comprehensive historical research will be conducted to develop a historic context for the lock. The Contractor will utilize material on the historic context of New Orleans District locks in Dobney, et. al., Evaluation of the National Register Eligibility of the Inner Harbor Navigation Canal Lock in Orleans, Parish, Louisiana; Kemp and Maddex, National Register Evaluation of Harvey Lock; Treffinger, Evaluation of the National Register Eligibility of the Vermilion Lock, Vermilion Parish, Louisiana; and other sources.

Documents, plans, maps, and aerial photography at the New Orleans District will be consulted. Historical information about the construction and operation of the lock will be examined. Interviews will be conducted as necessary with Corps of Engineers employees familiar with the history of the lock.

b. Phase 2. Field inspection of the Lock. Upon completion of phase 1, the Contractor shall conduct a field inspection of the Lock. This will be used to produce a description of the complex, including photographs, to be used in the final report.

c. Phase 3. Report Preparation. The contractor will make recommendations on the eligibility of the Keystone Lock and Dam for inclusion in the National Register of Historic Places. These recommendations will be fully documented. If the contractor recommends the structure as eligible for inclusion in the National Register, he will present and assess management and mitigation alternatives for the Lock in the report. One feasible mitigation strategy is to document the Lock to Historic American engineering Record (HAER) standards. Detailed recommendations for documentation of the Lock to HAER standards shall be developed by the Contractor.

The study will be conducted utilizing current professional standards and guidelines including, but not limited to:

the National Park Service's draft standards entitled, "How to Apply the National Register Criteria for Evaluation," dated June 1, 1982;

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

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

Historic American Buildings Survey/Historic American Engineering Record Standards for Documentation of Historic Buildings, Sites, Structures, or Objects;

Louisiana's Comprehensive Archeological Plan dated October 1, 1983; and

National Register Bulletin 16: Guidelines for Completing National Register of Historic Places Forms.

4. Reports:

a. Draft Report. Six copies of the draft report integrating all phases of this investigation will be submitted to the COR for review and comment within 8 weeks after delivery order award.

The written report shall follow the format set forth in MIL-STD-847A with the following exceptions: (1) separate, soft, durable, wrap-around covers will be used instead of self covers; (2) page size shall be 8-1/2 x 11 inches with 1-inch

margins; (3) the reference format of American Antiquity will be used. Spelling shall be in accordance with the U.S. Government Printing Office Style Manual dated January 1973.

b. Final Report. The COR will provide all review comments to the Contractor within 8 weeks after receipt of the draft reports (16 weeks after work item award). Upon receipt of the review comments on the draft report, the Contractor shall incorporate or resolve all comments and submit one preliminary copy of the final report to the COR within 4 weeks (20 weeks after work item award). Upon approval of the preliminary final report by the COR (within 1 week after submittal), the Contractor will submit 30 copies and one reproducible master copy of the final report to the COR. The Contractor will also provide computer disk(s) of the text of the final report in Microsoft Word or other approved format.

If the contractor recommends that Keystone Lock and Dam is eligible for the National Register of Historic Places, three copies of the National Register Registration Forms will be submitted. This documentation will contain all of the data required by NPS National Register Bulletin 16: Guidelines for Completing National Register of Historic Places Forms.