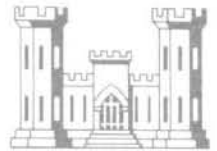




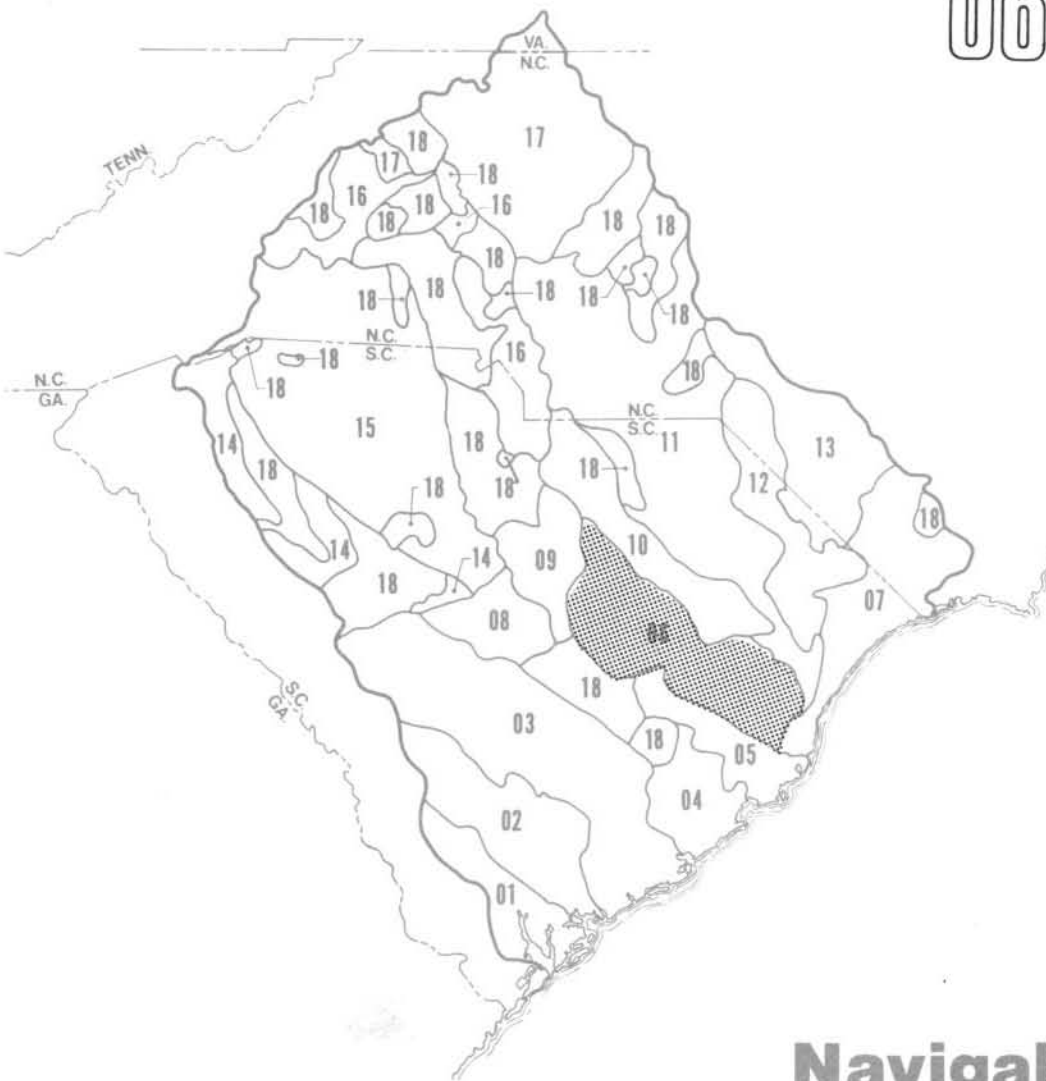
U.S. ARMY CORPS OF ENGINEERS
CHARLESTON DISTRICT
Charleston, South Carolina



BLACK RIVER AREA

Report No.

06



**Navigability
Study
1977**



STANLEY CONSULTANTS

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SECTION 1 - INTRODUCTION

Purpose

The purpose of this study is to collect, develop, and evaluate information on waterbodies within the boundaries of the Charleston District, Corps of Engineers, for establishing the classification of "navigable waters of the U. S." and "waters of the U. S." (During the course of this study the term "navigable waters" was changed to "waters of the U. S." Herein references to "navigable waters" are synonymous with "waters of the U. S.") Study objectives include definition of the present head of navigation, the historic head of navigation, the potential head of navigation, and the headwaters of all waterbodies within the district.

The information generated as a part of the study will be utilized by the Charleston District in administration of its programs dealing with water resource project construction permits in "navigable waters of the U. S." (River and Harbor Act of 1899), and the deposition of dredge or fill material in "navigable waters" or their contiguous wetlands (Section 404 of PL 92-500).

Scope

The scope of this project is generally summarized by the following:

1. Outline drainage areas, locate headwater points where mean flow is five cubic feet per second (cfs), summarize lake data (10 to 1,000 acres), establish stream mileage for "navigable waters of the U. S.", and prepare a stream catalog summary for the district.
2. Conduct field surveys of waterbodies to establish mean water levels and obstruction clearances for evaluating the potential head of navigation.
3. Analyze available hydrological data to estimate mean, maximum, and minimum discharge rates at obstructions and other selected locations.
4. Conduct a literature review to identify past, present, and future uses of waterbodies for interstate commerce.

5. Conduct a legal search to identify Federal and state court cases which impact on navigation classifications.
6. Prepare plan and profile drawings, maps of the district showing significant physical features, and a map delineating the recommended navigation classifications.
7. Prepare reports on all major river basins and large lakes (greater than 1,000 acres) including information on physical characteristics, navigation projects, interstate commerce, court decisions, navigation obstructions, and recommended classification of waterbodies for navigation.
8. Prepare a summary report outlining navigation-related information for the entire district as well as the methodology, procedures, and other factors pertinent to the development of each of the river basin reports.

Conduct of this study relies heavily upon available information. Compilation and evaluation of existing data from many sources and development of field survey information are the main contributions to the new water resource data base represented by this study.

Related Reports

Information pertaining to this navigability study for the Charleston District has been compiled into a series of reports, one of which is represented by this document. A complete listing of the reports is presented below to facilitate cross referencing.

<u>Number</u>	<u>Title</u>
--	Summary Report
01	Coosawatchie River Area
02	Combahee River Area
03	Edisto River Area
04	Cooper River Area
05	Santee River Basin
06	Black River Area
07	Waccamaw River Basin
08	Congaree River Basin
09	Wateree River Basin
10	Lynches River Basin

<u>Number</u>	<u>Title</u>
11	Great Pee Dee River Basin
12	Little Pee Dee River Basin
13	Lumber River Basin
14	Saluda River Basin
15	Broad River Basin
16	Catawba River Basin
17	Yadkin River Basin
18	Lakes - Greater Than 1,000 Acres
--	Coastal Supplement

The eighteen reports covering various drainage areas in the district present information for the specific basins. The Summary Report provides an overview of the entire study of district waterbodies and presents information applicable to all waters in the district. Reference should be made to both the individual drainage area reports as well as the Summary Report to obtain a thorough understanding of the study approach and results.

Acknowledgements and Data Sources

The contribution of many project team members within the Corps of Engineers, Charleston District, and Stanley Consultants is gratefully acknowledged by Stanley Consultants. In addition to the legal search and other evaluations and input from Charleston District staff, several others made significant contributions to this study effort. Dr. John W. Gordon, Assistant Professor in the Department of History, The Citadel, prepared the narrative and literature review information for past and present interstate commerce.

Several state water resource, transportation, utility, and planning agencies also cooperated and provided useful data for compiling these reports. Federal water resource and regulatory agencies and private utilities provided information along with public and private operators of large reservoirs.

Specific numbered data sources are referenced in the reports in parentheses. These data sources are listed in the Bibliography of each report of the navigation study.

SECTION 2 - PHYSICAL CHARACTERISTICS

The Black River, a tributary to the Great Pee Dee River, has a drainage area of approximately 2,080 square miles and lies in southeastern South Carolina. The river flows for approximately 146 miles in a southeast direction from its headwaters in Kershaw and Lee County through Sumter, Clarendon, Williamsburg, and finally Georgetown County where it meets the Great Pee Dee River near Winyah Bay. Plate 06-1 shows the entire drainage basin of the Black River and its tributaries.

The Black River is a meandering coastal plain river, gently flowing from its headwaters, through sometimes swamp-like conditions, to its mouth. Elevations range in the basin from 180 feet above mean sea level at its headwaters to 2.5 feet above mean sea level at its mouth on the Great Pee Dee River at river mile (R.M.) 3.1 near Georgetown, South Carolina. Forty miles of the Black River are considered to be tidally influenced.

Major urban areas in the basin include Sumter, South Carolina in Sumter County near the stream's headwaters and Georgetown, South Carolina in Georgetown County near its mouth. Plates 06-2 through 06-5 are detailed maps indicating the significant features found in the basin.

The principal tributaries to the Black River are Black Mingo Creek, Pocolaligo River, and Black River Swamp. Selected physical characteristics of the Black River and its tributaries are presented in Table 1. Also indicated are approximate values for drainage areas, mean water flows, and elevation changes. Detailed slope information may be found in Table 4. Methodology for determining the numerical values of physical characteristics appearing in Table 1 is defined in the Summary Report.

The locations of key stream gaging stations in the Black River basin are presented in Table 2. Also shown are the mean, minimum, and maximum flows at the gaging stations.

TABLE 1

PHYSICAL CHARACTERISTICS (1 through 5)*

<u>Stream¹⁾ & Code</u>	<u>Length-Mouth to Headwaters (mi)</u>	<u>Elevation Change (ft)</u>	<u>Drainage Area (sq.mi)</u>	<u>Mean Discharge at Mouth (cfs)</u>	<u>Limit of Tidal Influence (R.M.)</u>	<u>Confluence With Black River (R.M.)</u>	<u>Present Navi- gable Waters of the U. S. (R.M.)</u>
Black River 06-01	145.9 ²⁾	180	2,080 ⁴⁾	1,460 ⁴⁾	40.0	--	0-49.6
Black Mingo Creek 06-01-17	30.4 ³⁾	40	280	200	5.0	24.5	0- 9.9
Pocotaligo River 06-01-37	54.3 ³⁾	135	490	440	--	107.7	--
Black River Swamp 06-01-36	38.2 ³⁾	135	470	480	--	107.7	--

1) See Summary Report for explanation of code.

2) From mouth at the confluence with the Great Pee Dee River to a remote point in the Black River basin having a mean annual flow of five cfs.

3) From mouth at the confluence with the Black River to a remote point in the identified stream basin having a mean annual flow of five cfs.

4) Value is for entire drainage basin of Black River including tributaries.

* See Bibliography for these references.

TABLE 2

KEY STREAM GAGING STATIONS (1)(2)

<u>Stream</u>	<u>USGS Gaging Station Number</u>	<u>Location Description</u>	<u>Drainage Area (sq.mi.)</u>	<u>Mean Flow (cfs)</u>	<u>Minimum Flow¹⁾ (cfs)</u>	<u>Maximum Flow²⁾ (cfs)</u>
Scape Ore Swamp Tributary to the Black River	02135300	Located near Bishop- ville, S. C., Lee Co., on U. S. Highway 15 Bridge	70	113	*	*
Black River	02135500	Located near Gable, S. C., Clarendon Co., on U. S. Highway 378 Bridge	401	402	35	880
Black River	02136000	Located at Kingstree, S. C., Williamsburg Co., on U. S. Highway 52 Bridge	1,260	933	30	2,250

1) Exceeded or equaled 90 percent of the time.

2) Exceeded or equaled 10 percent of the time.

* No information available.

SECTION 3 - NAVIGATION IMPROVEMENT PROJECTS

Federal Navigation Projects

A number of studies relating to stream conditions of the Black River have been authorized by Congress and compiled by the Corps of Engineers. As a result of these early studies, the river was determined "a deep and navigable river ... free of obstructions and with a depth of at least ten feet at all stages from the mouth for a distance of over 45 miles." Above this point the river was "very crooked and shoal[ed]." (6) While various surveys of the Black River have been made, an examination of recent Corps of Engineers' annual reports indicates no projects for river improvement involving dredging or snagging have ever been authorized. However, the Incomplete List of Navigable Waters, 1965, developed by the Charleston District (4), indicated navigation on the Black River to the Seaboard Air Line Railroad bridge* (R.M. 49.6).

A Federal navigation project for Black Mingo Creek, a tributary to the Black River, provides for a cleared channel 60 feet wide and 8 feet deep at mean low water by making four short cutoffs from its confluence (R.M. 0.0) with the Black River (R.M. 24.5) to Hemingway bridge (R.M. 9.9). The existing project was completed in 1913. Black Mingo Creek was last cleared of obstructions between its mouth and Hemingway bridge during January, 1945.

The Sampit River, a major stream in the Black River report area, is completely tidally influenced. A Federal navigation project for Georgetown Harbor includes a turning basin at the mouth of the Sampit River. This portion of the harbor project provides for a channel varying in width from 400 feet to 600 feet and a depth of 27 feet. The project also provides for maintenance to a depth of 18 feet for a width of 400 feet on the bypassed portion of Sampit River opposite the City of Georgetown, South Carolina. The Georgetown Harbor project description is located in Report 07.

* Now the Seaboard Coast Line Railroad bridge.

Another program provided for the control and eradication of the water-hyacinth, alligator weed, and other obnoxious aquatic plant growths in the combined interest of navigation, flood control, drainage, agriculture, fish and wildlife conservation, public health, and related purposes. Approximately 10 miles of Black Mingo Creek and 90 miles of the Black River were treated before the program was suspended in 1975 by the Environmental Protection Agency.

Federal project information for the Black River report area is given in Table 3.

TABLE 3

AUTHORIZED FEDERAL NAVIGATION PROJECTS (3)(4)

Waterbody	Black Mingo Creek
Work Authorized	8 ft. deep, 60 ft. wide navigation channel
Date Complete	1913
Project Location	River Mile 0.0 to 9.9 (Hemingway Bridge)
Authorization	River and Harbor Act H. Doc. 782, 61st Cong., 2nd Session, 25 July 1912

Waterbody	Georgetown Harbor, South Carolina
Work Authorized	27 ft. deep, 600 ft. to 400 ft. varying width channel with turning basin in Sampit River - 2,400 ft. long side channel, 18 ft. deep 400 ft. width
Date Complete	1951
Project Location	From Atlantic Ocean through Winyah Bay with turning basin in Sampit River

TABLE 3 (continued)

AUTHORIZED FEDERAL NAVIGATION PROJECTS (3)(4)

Authorization	House Ex. Doc. 258, 48th Cong., 2nd Session, 5 August 1886; House Ex. Doc. 117, 50th Cong., 2nd Session; House Doc. 398, 58th Cong., 2nd Session; House Doc. 211, 76th Cong., 1st Session; Senate Doc. 21, 81st Cong., 1st Session, 30 June 1948

Waterbody	Black River and Black Mingo Creek
Work Authorized	Aquatic Plant Control
Date Complete	Suspended 1975
Project Location	R.M. 0.0 to R.M. 10.0 on Black Mingo Creek; R.M. 0.0 to R.M. 90.0 on Black River
Authorization	Rivers and Harbor Act of 3 July 1958 H. Doc. 37, 85th Cong., 1st Session; River and Harbor Act of 27 October 1965

Other Navigation Projects

Inquiries made at various state and Federal agencies indicate no projects are now planned or under construction which would improve or substantially benefit navigation on the Black River.

SECTION 4 - INTERSTATE COMMERCE

Past

The first English settlers in South Carolina were restricted to waterbodies for movement of heavy and bulky goods and products. As such, the Black River basin provided significant water routes for penetration into the back country. (7)

In the early 1700's, the Black River was a "key water highway in Indian trade." After about 1720, the river was extensively used for shipping food to feed the slaves who worked the rice growing plantations around Georgetown. Indigo was grown along the Black River in the section which now forms Williamsburg County. Naval stores (i.e., pitch, turpentine, rosin, and logs) were also moved down the river. (7)(8)

Vessel traffic on the river and its tributaries (1780-1820) appears to have been of various types and capacities until the advent of the steamboat. Canoes constructed of cypress logs seem to have predominated originally, carrying perhaps sails and long oars. The perriauger* was next in size, which might carry a hundred barrels of pitch and tar or tobacco. Larger vessels that could also ascend some distance up the various tributaries of the river were flats, scows, and various modes or rigs of sloops, schooners, and yawls. These vessels gathered products which were difficult to move over the meager road network that was common to the region. (9)(10)

Such craft found no great difficulty in negotiating the river from Williamsburg down to Georgetown, so long as the river was cleared of snags. In 1737, for example, one Robert Finley received "two hundred bushels of corn from the provincial government as a gratuity for his clearing the river for large boats up to the Town of Kingstree, South Carolina." Various statutes were passed while

* Perriauger - A vessel used during the early development period of the United States (1700's-1800's) for the transportation of supplies. The vessel was sometimes oared, poled, or pulled and was occasionally fitted with mast and sail.

South Carolina was still a royal colony during the late 1700's that addressed the problem of keeping the river open and free from snags. (7, 8, 11 through 16)

With the advent of paddel-wheel and screw steamers, which coincided with South Carolina's interest for internal improvement in the 1820's and 1830's, the General Assembly funded additional efforts to keep the Black River clear of obstructions. During the 1880's and 1890's, when the Corps of Engineers first initiated its surveys and examinations, a thriving waterborne traffic in logs, timber, fertilizer, and goods existed along the river and its major tributaries. Around the turn of the century, such traffic was valued at approximately 1.25 million dollars per annum. The Corps felt that the river, at least in its lower stretch, needed no improvement. (7, 8, 17 through 25)

Subsequently, the extension of the railway network and the construction of a hard-surface highway system, during the period between World Wars I and II, proceeded to divert much of the waterborne commerce which had moved within the Black River basin. (4, 26 through 28)

Black Mingo Creek (also referred to as Mingo Creek or Mingo River), a tributary to the Black River, was also a significant avenue for commerce. The same naval stores, logs, timber, and the like were moved down both rivers. Likewise, development of Black Mingo Creek was similar to Black River. (8)(10) In 1825, the South Carolina Board of Public Works reported, Black Mingo was "formerly navigated by schooners to Wiltown Old Bridge ... 17 miles by water from its mouth. Wiltown is now deserted." (20) Later that century, the River and Harbor Act of 11 August 1888 authorized the following project for Mingo Creek: "... a channel adequate for 5 foot draft steamer navigation to Williams Landing, and thence for a 5 foot draft winter pole boat navigation up to the head of such useful navigation, about 31 miles." The portion of the river for which steamboat navigation was projected had been thoroughly snagged, however, the upper end of the creek had not been cleared. (29) In 1896, the Board of Trade of Georgetown, S. C., reported that Mingo River had a "navigable length for steamers" of 13 miles, and for pole boats, a "navigable length" of 13 miles (assumed additional 13 miles). (24) On March 18, 1908, Congress passed the

Rivers and Harbor Act which "provided for a draft of 8 feet to the Hemingway Bridge, 9.9 miles." This project was completed in 1913. (29) The river was then cleared again, between its mouth at Black River and the Hemingway Bridge, during January 1945 to facilitate shipping of pulpwood to Georgetown. (30) From Corps of Engineer Annual Reports of 1950 and 1974 it is apparent commerce had declined. The navigation project on the creek is described as "completed", with "no commerce reported". (28)

Present

The Black River between the Seaboard Coast Line Railroad bridge at Potatoe Ferry (R.M. 49.6) and the confluence of the Great Pee Dee River, and Black Mingo Creek between the Hemingway Highway bridge (S.C. Highway 41 at R.M. 9.9) and the mouth of the creek on the Black River (R.M. 24.5), have been significant arteries for moving commerce by water. However, the Corps of Engineers' Waterborne Commerce of the United States 1961 listed the Black River as a "nonproject" waterway, with "no commerce reported", and the Corps of Engineers' annual report for 1974 gave Black Mingo Creek a status of "no commerce reported." (26) (27) (28)

Future Potential

Comprehensive analysis of the regional economics (income, education, employment, community facilities, transportation systems, and similar factors), which would indicate growth patterns and the services needed to sustain various types of industrial and commercial activities, is beyond the scope of this study. Thus, the potential use of the Black River and its tributaries for interstate commerce in future years is difficult to predict. However, some analysis and judgments have been made concerning future commerce to assist in establishing navigation classifications.

As discussed later in Section 6, the Black River is navigable, with reasonable improvements, up to the confluence of Black River Swamp and Pocotaligo River at R.M. 107.7. It is anticipated that this stretch of river has the potential to be utilized for shipment of goods into

other states since it is connected with the Great Pee Dee River near Georgetown Harbor (Winyah Bay) and the Atlantic Ocean. The upstream reaches of the basin are not currently used for interstate commerce and the future potential is not anticipated to be significant. This is due in part to limited industrial and commercial activity and heavy dependence on other forms of transportation including the interstate highway system, railroads, and air transport.

SECTION 5 - LEGAL AUTHORITY

General

This section presents information pertaining to the legal aspects of the navigability investigation. Such Federal and state court decisions as apply to the specific basin reported on herein are outlined. The Summary Report presents more complete documentation and references to the court cases dealing with navigation classifications and legal jurisdiction.

Navigability Interpretations

The term "navigable waters of the U. S." is used to define the scope and extent of the regulatory powers of the Federal government. Precise definitions of "navigable waters" or "navigability" are ultimately dependent on judicial interpretation, and are not made conclusively by administrative agencies.

Definitions of "navigability" are used for a wide variety of purposes and vary substantially between Federal and state courts. Primary emphasis must therefore be given to the tests of navigability which are used by the Federal courts to delineate Federal powers. Statements made by state courts, if in reference to state tests of navigability, are not authoritative for Federal purposes.

Federal courts may recognize variations in definition of navigability or its application where different Federal powers are under consideration. For instance, some tests of navigability may include:

1. Questions of title to beds underlying navigable waters.
2. Admiralty jurisdiction.
3. Federal regulatory powers.

This study is concerned with Federal regulatory powers. Unfortunately, courts often fail to distinguish between the tests, and instead rely on precedents which may be inapplicable. Thus, a finding that waters are "navigable" in a question dealing with land title may have a somewhat different meaning than "navigable waters of the U. S." which pertains to Federal regulatory functions.

In this study, the term "navigable waters of the U. S." is used to define the extent and scope of certain regulatory powers of the Federal government (River and Harbor Act); this is distinguished from the term "navigable waters" which refers to other Federal regulatory powers (Section 404 of PL 92-500).

Administratively, "navigable waters of the U. S." are determined by the Chief of Engineers and they may include waters that have been used in the past, are now used, or are susceptible to use as a means to transport interstate commerce landward to their ordinary high water mark and up to the head of navigation. "Navigable waters of the U. S." are also waters subject to the ebb and flow of the tide shoreward to their mean high water mark. These waters are deemed subject to a Federal "navigation servitude". The term "navigable waters of the U. S." defines the more restricted jurisdiction which pertains to the River and Harbor Acts -- particularly the one of 1899 which specifically defined certain regulatory functions for the Corps of Engineers.

In contrast, the term "navigable waters" defines the new broader jurisdiction with respect to Section 404 of the Federal Water Pollution Control Act Amendments of 1972. Accordingly, "navigable waters" not only include those waters subject to the navigation servitude, but adjacent or contiguous wetlands, tributaries, and other waters, as more fully defined in revised Corps of Engineers Regulations.

Although this navigability study covers both "navigable waters of the U. S." and "navigable waters", the analysis of judicial interpretation has only focused upon determining "navigable waters of the U. S." to the head of navigation. Due to common usages in court cases, the terms "navigability" and "navigable waters" may herein appear interchangeably with the term "navigable waters of the U. S." However, the summary of court cases is directed at the Federal regulatory jurisdiction of the River and Harbor Acts, and not necessarily regulatory jurisdiction under the Federal Water Pollution Control Act.

General Federal Court Cases

Powers of the Federal government over navigable waters stem from the Commerce Clause of the U. S. Constitution (Art. I, §8). Pursuant

to its powers under the Commerce Clause, Congress enacted the River and Harbor Act of 1899 which particularly specifies regulatory powers of the Federal government in "navigable waters of the U. S."

The well-established Federal test of navigability is whether a body of water is used or is capable of being used in conjunction with other bodies of water to form a continuous highway upon which commerce with other states or countries might be conducted.

Several Federal court decisions make it clear that a waterway which was navigable in its natural or improved state retains its character as "navigable in law" even though it is not presently used for commerce. The test of navigability is not whether the particular body of water is in fact being used for any form of commerce but whether it has the capacity for being used for some type of commerce. Several cases substantiate this (see the Summary Report for details on the court decisions).

The ebb and flow of the tide is another test which remains a constant rule of navigability in tidal areas, even though it has sometimes been disfavored as a test of Federal jurisdiction. Several cases note that ebb and flow should not be the sole criterion of navigability, but that extension of Federal jurisdiction into the major non-tidal inland waters is possible by an examination of the waters "navigable character". The ebb and flow test, however, remains valid as a rule of navigability in tidal areas; it is merely no longer a restriction for non-tidal areas. For bays and estuaries, this extends to the entire surface and bed of all waterbodies subject to tidal action, even though portions of the waterbody may be extremely shallow or obstructed by shoals, vegetation, or other barriers as long as such obstructions are seaward of the mean high tidal water line. Marshlands and similar areas are thus considered "navigable in law" insofar as they are subject to inundation by the mean high waters. The relevant test is therefore the presence of the mean high tidal waters. Navigable waters are considered navigable laterally over the entire surface regardless of depth.

Another factor relevant to navigability determinations is land title. Whatever title a party may claim under state law, the private ownership of the underlying lands has no bearing on the existence or

extent of the dominant Federal jurisdiction over "navigable waters of the U. S." Ownership of a river or lake bed will vary according to state law; however, the Supreme Court has consistently held that title to the bottomlands is subordinate to the public right of navigation.

Specific Federal Court Cases

Navigability, in the sense of actual usability for navigation or as a legal concept embracing both public and private interests, is not defined or determined by a precise formula which fits every type of stream or body of water under all circumstances and at all times. A general definition or test which has been formulated for Federal purposes is that rivers or other bodies of water are navigable when they are used, or are susceptible of being used, in their ordinary condition as highways for commerce over which trade and travel are or may be conducted in the customary modes of trade and travel on water.

The question of navigability of water when asserted under the Constitution of the U. S., as is the case with "navigable waters of the U. S.", is necessarily a question of Federal law to be determined according to the general rule recognized and applied in the Federal courts.

Review of Federal case history reveals no decisions which apply specifically to navigation in the Black River basin. (31)

South Carolina State Court Cases

The South Carolina legislative enactment defining navigability and requiring freedom from obstruction may be found in Section 70-1 of the South Carolina Code of Laws. This Section essentially provides that all streams which can float rafts of lumber or timber are considered navigable by state law.

Many of the South Carolina State cases reported are primarily concerned with state ownership questions. While the majority of states actually own streams and exercise control over their navigable waters, the ultimate authority has been granted to the Federal government by the Commerce Clause of the Constitution. The general rule, then, is that

the states both own and control the navigable streams within their borders, subject to exercise of the superior right of control by the U. S. Although case histories show that state and Federal concepts of navigability do not always agree, when Federal interests are at stake, the Federal test will govern.

There are exceptions, however, to the "overwhelming majority rule of state ownership of lands beneath navigable waters," and South Carolina is in the minority. In the minority states, it was considered that property rights were vested at the time of independence from England and that the state took title only to tidal-navigable streams while riparian owners took title to all stream beds, both navigable and non-navigable, if non-tidal. Even in the minority states, however, private ownership of the bed does not affect the rights of the public to the use of navigable waters.

A legal search indicates that there are no South Carolina state court cases which specifically deal with navigation considerations in the Black River basin. (31)

Recent Federal Litigation

A review of recent Federal litigation concerning the Charleston District did not reveal any court actions in the Black River basin concerning navigation. (31)

Federal Agency Jurisdiction

The delineation of "navigable waters of the U. S.", as discussed earlier, in essence, defines the Federal navigation servitude and is applicable to Federal jurisdiction generally (not merely applicable to the Corps of Engineers). No matter which Federal agency or activity may be involved, the assertion of "navigability" ("navigable waters of the U. S.") arises under the U. S. Constitution, or under application of Federal statute.

By virtue of the Commerce Clause of the Federal Constitution, and the clause empowering Congress to make all laws necessary to carry into execution the Federal judicial power in admiralty and maritime

matters, "navigable waters of the U. S." are under the control of Congress, which has the power to legislate with respect thereto. It is for Congress to determine when and to what extent its power shall be brought into activity. It may be exercised through general or special laws, by Congressional enactments, or by delegation of authority.

Thus, Congress has power which is paramount to that of the states to make improvements in the navigable streams of the U. S. and for this purpose to determine and declare what waters are navigable. The Federal government also has the power to regulate the use of, and navigation on, navigable waters.

The above presents the basis upon which Federal jurisdiction in "navigable waters of the U. S." is established. The basic definition or jurisdictional concept of "navigable waters of the U. S." remains consistent, irrespective of which department or office of the Federal government may be delegated particular responsibility. For instance, the safety, inspection and marine working functions of the U. S. Coast Guard embrace vessel traffic within "navigable waters of the U. S." as previously defined.

With specific reference to agency regulation of construction or work within "navigable waters of the U. S.", other than by the Corps of Engineers, the Department of Transportation Act of 15 October 1966 (P.L. 89-670) transferred to and vested in the Secretary of Transportation, certain functions, powers and duties previously vested in the Secretary of the Army and the Chief of Engineers. By delegation of authority from the Secretary of Transportation, the Commandant, U. S. Coast Guard, has been authorized to exercise certain of these functions, powers and duties relating to the location and clearances of bridges and causeways in the "navigable waters of the U. S."

An additional agency of particular interest concerning work or construction within "navigable waters of the U. S." is the Federal Power Commission. The Federal Power Act, Title 16, United States Code, Sections 791 et. seq. contemplates the construction and operation of water power projects on navigable waters in pursuance of licenses granted by the Federal Power Commission. The statute was enacted to

develop, conserve, and utilize the navigation and water power resources of the nation. The act provides for the improvement of navigation, development of water power and use of public lands to make progress with the development of the water power resources of the nation.

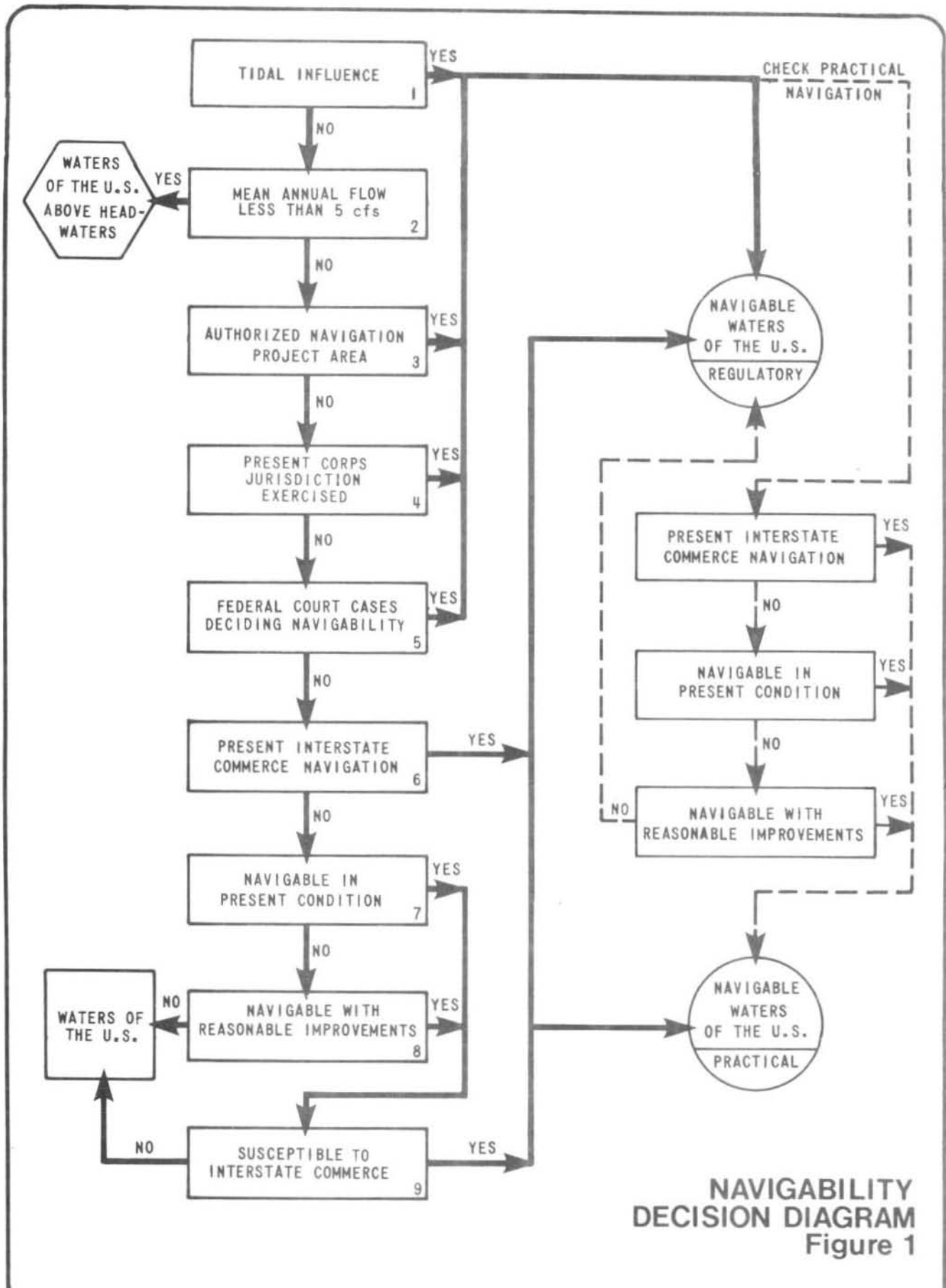
SECTION 6 - NAVIGATION OBSTRUCTIONS AND CLASSIFICATIONS

Navigation Classification Procedures

As noted in Section 5, definition of navigability is not subject to a single precise formula which applies to every circumstance. Many factors including stream physical characteristics (depth, width, flow, slope, etc.), presence of obstructions, court decisions, authorized navigation projects, potential for reasonable improvements, and susceptibility of a stream to interstate commerce activities, play a role in the decision-making process for classifying waterbodies in the Charleston District. In an effort to make the analytical process concerning stream classifications as systematic as possible, a "Navigability Decision Diagram" has been developed and is presented in Figure 1. This diagram has been utilized as a guide in assessing the various navigation classifications for streams in the Charleston District. The Summary Report includes a detailed presentation on the methodology and approaches used in the analysis; however, the following presents a brief synopsis of the techniques as indicated in Figure 1.

Tidal Influenced Areas - Tidal areas (see Item 1 in Figure 1) which are affected by mean high water are classified "navigable waters of the U. S." according to various legislative and judicial actions. The "navigable waters of the U. S." are subject to regulatory jurisdiction by the Corps of Engineers and other agencies. Even though all tidal areas are so classified and subject to regulatory procedures, many are not practically navigable based upon past and/or present requirements for vessels. Figure 1 shows that some additional "check" analyses are necessary to distinguish those tidal waters which are actually capable of practical navigation. Investigation of the tidal areas is beyond the scope of this study; however, drawings showing the "plan" of major rivers to their mouth, often tidal influenced, are presented in the interest of continuity.

Waters of the U. S. Above Headwaters - Section 404 of PL 92-500 considers the headwaters of waterbodies to be the point at which the mean annual flow is five cfs. Waterbodies or portions of waterbodies



**NAVIGABILITY
DECISION DIAGRAM**
Figure 1



located upstream of the headwaters are nationally permitted by law and will not require an individual application for dredge or fill discharge permits provided the proposed work will meet certain conditions.

However, these waters are classified "waters of the U. S." and are within Corps of Engineers jurisdiction as applicable to Section 404. Item 2 in Figure 1 shows the testing procedure for the five cfs point.

Authorized Navigation Project Area - Any streams which currently have authorized Federal projects to aid navigation are classified as "navigable waters of the U. S." (Item 3 in Figure 1). Many of the projects thus authorized were based upon conditions which are not currently applicable (for example, use of pole boats or steamboats for justifying the navigation benefits). Consequently, many of the streams having older authorized projects will not allow passage of present-day commercial navigation vessels without some additional improvement. Thus, some portions of the authorized project areas are not considered practical for navigation. Figure 1 shows the additional "check" procedure which has been followed to assess the practical limit of "navigable waters of the U. S."

Present Corps Jurisdiction Exercised - The Corps of Engineers is exercising jurisdiction on several non-tidal waterbodies which are not covered by authorized projects (Item 4 in Figure 1). (4) Determinations previously made on these waterbodies under the River and Harbor Act indicated use for interstate commerce and hence the current classification as "navigable waters of the U. S." Some of these streams are not currently navigable by present-day commercial vessels and thus have practical limits. Figure 1 shows the "check" used to assess the practical limits of "navigable waters of the U. S."

Federal Court Decisions - As noted in Section 5, Federal case law is the predominant indicator which is to be used for establishing Federal jurisdiction over waterbodies in the Charleston District (Item 5 in Figure 1). Several decisions have been rendered which classify certain streams in the district as "navigable waters of the U. S." However, some of these court decisions have been arrived at under different circumstances or without the benefit of the data developed as a part of this investigation. Therefore, even though some of the

streams are classified by judicial review as "navigable waters of the U. S.", they are not practical for navigation with present-day vessels. Figure 1 shows the steps necessary to "check" those portions of the "navigable waters of the U. S." which are capable of practical navigation.

Present Interstate Commerce Navigation - Any rivers currently involved in interstate commerce activities are classified as "navigable waters of the U. S." from both the regulatory and practical standpoint (see Item 6 in Figure 1).

Waters of the U. S. Below Headwaters - For those streams, or portions of streams, not subject to authorized projects, court cases, or present interstate commerce navigation, several additional tests for determining navigability are required (Items 7 and 8 in Figure 1). If the waterbody is not judged to be navigable in its present state or with reasonable improvements, then it is beyond the limit of "navigable waters of the U. S." and is termed "waters of the U. S." over the remaining length. These "waters of the U. S." (as well as the "navigable waters of the U. S.") up to the headwaters (five cfs points) of the streams are subject to jurisdiction under Section 404 of PL 92-500. A general or individual permit is required for discharge of dredged or fill material below the headwaters (five cfs point) of "waters of the U. S." Discharges above the headwaters are discussed in the previous subsection, "Waters of the U. S. Above Headwaters."

Interstate Commerce - Some non-tidal waters in the district are not now subject to authorized projects, court decisions, or interstate commerce navigation, but can be navigated under present or reasonably improved conditions. These streams may be considered for classification as "navigable waters of the U. S." if they are susceptible to interstate commerce activities (past, present or future). A combined judgment considering both "reasonable improvement" factors (Item 8 in Figure 1) and "interstate commerce" factors (Item 9 in Figure 1) has often been utilized in arriving at the conclusions and recommendations concerning navigability of waterbodies in the Charleston District. The Summary Report provides further details on these factors.

Navigation Classification Categories

This study classifies streams into several different categories, each of which is discussed subsequently:

1. Present "navigable waters of the U. S." (by regulatory procedures).
2. Historically navigable waters (based on literature review).
3. Recommended "navigable waters of the U. S." (based upon data developed as a part of this investigation).
4. Recommended waters for practical navigation (within "navigable waters of the U. S.").
5. Headwaters for all waterbodies (five cfs points).

The first four navigation classifications are displayed on the plates presented later in this report. The headwater limits are summarized in Appendix A.

Present Navigable Waters of the U. S.

Currently the Black River is classified as "navigable waters of the U. S." from its confluence (R.M. 3.1) with the Great Pee Dee River near Winyah Bay and Georgetown, South Carolina, to the Seaboard Coast Line Railroad bridge at Potatoe Ferry (R.M. 49.6) (see Plate 06-2 for location). (3) (4)

Also, Black Mingo Creek, a major tributary to the Black River, is presently classified "navigable waters of the U. S." from its mouth at R.M. 0 (R.M. 24.5 on the Black River) to S. C. 41 Highway Bridge (Hemingway Bridge) at R.M. 9.9. Nineteenth Century congressional authorization of navigable waters extended to R.M. 31, however, later authorization revised this navigable length to R.M. 9.9. See Sections 3 and 4.

Historically Navigable Waters

Various types of vessels ranging from cypress log canoes to steamboats have navigated the Black River from the 1700's and well into the 20th Century. The Black River was navigated by large vessels to Kingstree, South Carolina (R.M. 86.0), while smaller craft navigated to what was then Lowry's Bridge, 12 miles above Kingstree near Pudding Swamp (approximately R.M. 100.0) (see Plate 06-2 for location).

Black Mingo Creek was historically navigable for schooners to R.M. 17 and steamers to Williams Landing (now deserted but estimated to be upstream of R.M. 13.0). In addition, potential pole boat navigation has been reported as far as R.M. 31.

Recommended and Practical Navigable Waters of the U. S.

The recommended and practical limit of "navigable waters of the U. S." on the Black River is at R.M. 107.7 where Black River Swamp and the Pocotaligo River meet to form the Black River (see Plate 06-3 for location). Field investigation of all bridges crossing the Black River between the limit of tidal influence (R.M. 40.0) and the recommended limit of "navigable waters of the U. S." (R.M. 107.7) reveals sufficient water depth of at least 7 feet and channel width of at least 50 feet at channel bottom in all but three cases. At the S. C. Route 377 bridge (R.M. 78.9) and Seaboard Coast Line Railroad bridge (R.M. 85.7) a channel depth of 3.1 feet and 6.3 feet, respectively, is estimated at mean water level. The bridges are located in an 18.6 mile section of the river which has an average slope of 1.11 feet per mile according to USGS maps of the area. The swamp-like, multi-channel conditions explains the low depth at these bridges. The estimated mean water depth at S. C. Secondary 35 (R.M. 101.3) is 4.4 feet. This bridge is just downstream of the recommended practical limit of navigation. The shallow depth is considered a minor obstruction to navigation and is attributed to the swamp-like conditions. The confluence of the Black River with the Black River Swamp and Pocotaligo River (R.M. 107.7) is considered the major barrier to navigation due to depth and low flow and is therefore the recommended limit and practical limit of "navigable waters of the U. S."

Black Mingo Creek, a tributary of the Black River at R.M. 24.5, was investigated as potential "navigable waters of the U. S." based on the size of its drainage area and mean discharge. Field investigation of four bridges crossing the creek above the limit of tidal influence (R.M. 5.0) revealed insufficient depth at mean water level for commercial navigation at all but the first bridge (S. C. 41 bridge, R.M. 9.9). A channel depth of 14.4 feet is estimated at S. C. 41. Insufficient

flow and shallow depth are considered the major obstructions beyond S. C. 41. Therefore, S. C. 41 (R.M. 9.9) is the recommended limit and practical limit of "navigable waters for the U. S." for Black Mingo Creek.

In addition, field investigation of small tributary streams revealed sufficient water depth of at least 7 feet and channel width of at least 50 feet to justify recommendation of some tributaries for navigability classifications. Thus the following streams (which confluence within the previously discussed recommended and practical limits of "navigable waters of the U. S.") are recommended for classification and are listed with their upstream recommended and practical limits of "navigable waters of the U. S." in parentheses: secondary channel near Black River R.M. 42.5 (R.M. 0.4), secondary channel and lake near Black River R.M. 43.5 (R.M. 0.2), Lester Creek (R.M. 0.8), and McGinney Creek (R.M. 0.2). The downstream recommended and practical limit of "navigable waters of the U. S." for each of these streams is at its confluence with the Black River.

These conclusions on the navigation limits meet the criteria established for the Federal test of navigability that the body of water is used, or is capable of being used, in conjunction with other bodies of water to form a continuous highway upon which commerce with other states or countries might be conducted.

Plan and profiles of the recommended navigable waters of the U. S. are shown on Plates 06-6 through 06-11. The plan and profile plates show mean water surface as determined from USGS maps, stream bed depth, 50-foot wide navigable channel depth, pier spacing for bridges crossing the river, and vertical clearances at structures. Approximate vertical clearances for overhead utilities are shown later in this section in Table 4. It is emphasized that all references to elevation are approximate since vertical control was established from USGS contour maps and not field instrument surveys. Water depth and structure vertical clearance measurements are also approximate due to the accuracy inherent in the field techniques. Small tributaries recommended for classification as "navigable waters of the U. S." for less than one mile in length from their confluences are shown on the plan only. (See Summary Report

for a detailed description of the field procedures and the methodology used to calculate water depth at mean flow.)

Obstructions to Navigation

Table 4 is a listing of all obstructions within the recommended "navigable waters of the U. S." of the Black River and Black Mingo Creek. No obstructions were found on the small tributary streams recommended for classification as "navigable waters of the U. S." The structure description, river mile location, mean discharge, mean water slope, and vertical clearances are presented. It is emphasized that mean discharge, slope, and vertical clearances are only approximations based on best available data. Specific procedures for determining these values are discussed in the Summary Report.

Photographs of each obstruction investigated in the field are presented in Figures 2 through 19. Each photograph is identified to correspond with the data listed in Table 4.

Waters of the U. S.

"Waters of the U. S." are considered to be all streams beyond the recommended limits of "navigable waters of the U. S." "Waters of the U. S." with more than five cfs mean annual flow require a permit for discharge of dredged or fill material. "Waters of the U. S." with less than five cfs mean annual flow are nationally permitted by law and will not require an individual application for dredge or fill discharge permits provided the proposed work will meet certain conditions.

Appendix A lists all the five cfs water flow points associated with the Black River report area. Each point is located by stream code, stream name, latitude and longitude, and a mileage reference.

Appendix B lists the lakes located in the Black River report area which have surface areas between 10 and 1,000 acres. The lake summary identifies the stream basin code, lake name or owner, county location, and where data is available, the surface area and gross storage.

TABLE 4

OBSTRUCTION LISTING FROM TIDAL INFLUENCE LIMIT TO
RECOMMENDED LIMIT OF NAVIGABLE WATERS OF THE U. S. (5)

<u>Black River Mile</u>	<u>Description</u>	<u>Mean Discharge (cfs)</u>	<u>Mean Water Slope (ft/mi)</u>	<u>Approximate Vertical Clearance To Obstruction (ft)</u>
48.3	Utility Line (power)	--	0.14	30.0
48.5	S. C. 41 Highway Bridge	1,160	0.14	20.0
48.5	Utility Line (power)	--	0.14	29.5
49.6	Seaboard Coast Line Railroad Bridge	1,160	0.45	20.0
68.0	Utility Line (power)	--	0.46	90.0
68.1	Utility Line (power)	--	0.46	24.0
68.1	S. C. Secondary 30 Highway Bridge	1,090	0.46	11.0
78.2	Utility Line (power)	--	1.11	50.0
78.2	Utility Line (power)	--	1.11	34.0
78.9	S. C. 377 Highway Bridge	1,010	1.11	18.0
78.9	Utility Line (power)	--	1.11	37.0
85.7	Seaboard Coast Line Railroad Bridge	930	0.45	7.0
86.1	Utility Line (power)	--	0.45	31.0
86.5	Utility Line (power)	--	0.45	27.0
86.7	U. S. 52, S. C. 261 Highway Bridge	930	0.45	12.0
86.7	Utility Line (power)	--	0.45	30.0

TABLE 4 (continued)

OBSTRUCTION LISTING FROM TIDAL INFLUENCE LIMIT TO
RECOMMENDED LIMIT OF NAVIGABLE WATERS OF THE U. S. (5)

<u>Black River Mile</u>	<u>Description</u>	<u>Mean Discharge (cfs)</u>	<u>Mean Water Slope (ft/mi)</u>	<u>Approximate Vertical Clearance To Obstruction (ft)</u>
87.4	Utility (underground telephone)	--	0.45	-3.0 ¹⁾
101.3	Utility Line (power)	--	0.45	29.0
101.3	S. C. Secondary 35 Highway Bridge	910	0.45	8.0
<u>Black Mingo Cr. River Mi.</u>	<u>Description</u>	<u>Mean Discharge (cfs)</u>	<u>Mean Water Slope (ft/mi)</u>	<u>Approximate Vertical Clearance To Obstruction (ft)</u>
9.9	S. C. 41, S. C. 51 Highway Bridge	130	0.38	13.0
9.9	Utility Line (power)	--	0.38	31.0

1) Estimated minimum depth below streambed at time of construction.



FIGURE 2 - UTILITY LINE (R.M. 48.3)
(AND S. C. 41 HIGHWAY BRIDGE AND UTILITY LINE)



FIGURE 3 - S. C. 41 HIGHWAY BRIDGE (R.M. 48.5) (AND UTILITY LINE)



FIGURE 4 - SEABOARD COAST LINE RAILROAD BRIDGE (R.M. 49.6)



FIGURE 5 - UTILITY LINE (R.M. 68.0)

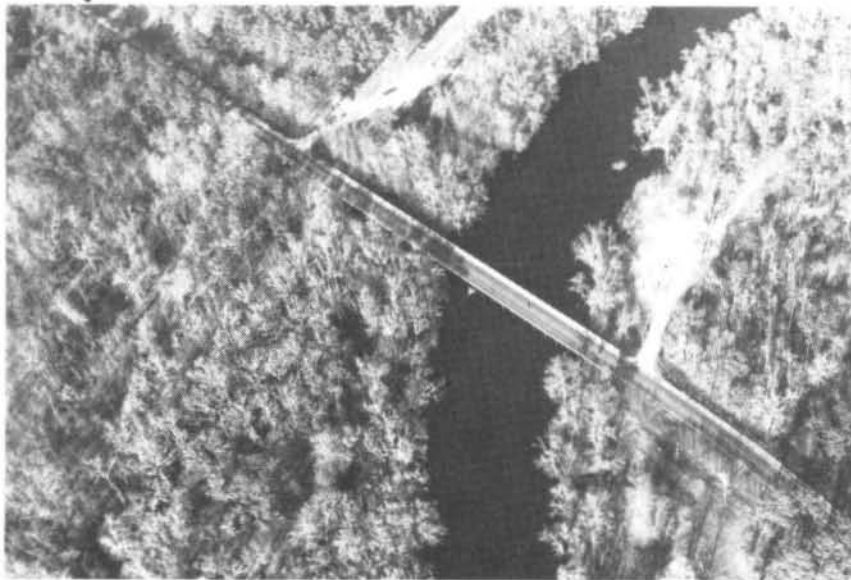


FIGURE 6 - UTILITY LINE (R.M. 68.1)
(AND S. C. SECONDARY 30 HIGHWAY BRIDGE)



FIGURE 7 - S. C. SECONDARY 30 HIGHWAY BRIDGE (R.M. 68.1)



FIGURE 8 - UTILITY LINES (R.M. 78.2)

/ /



FIGURE 9 - S. C. 377 HIGHWAY BRIDGE (R.M. 78.9)



FIGURE 10 - UTILITY LINE (R.M. 78.9) (AND S. C. 377 HIGHWAY BRIDGE)



FIGURE 11 - SEABOARD COAST LINE RAILROAD BRIDGE (R.M. 85.7)
(AND UTILITY LINE)



FIGURE 12 - UTILITY LINE (R.M. 86.1)



FIGURE 13 - UTILITY LINE (R.M. 86.5)



FIGURE 14 - U. S. 52, S. C. 261 HIGHWAY BRIDGE (R.M. 86.7)



FIGURE 15 - UTILITY LINE (R.M. 86.7)
(AND U. S. 52 & S. C. 261 HIGHWAY BRIDGE)



FIGURE 16 - UTILITY LINE (R.M. 101.3)
(AND S. C. SECONDARY 35 HIGHWAY BRIDGE)

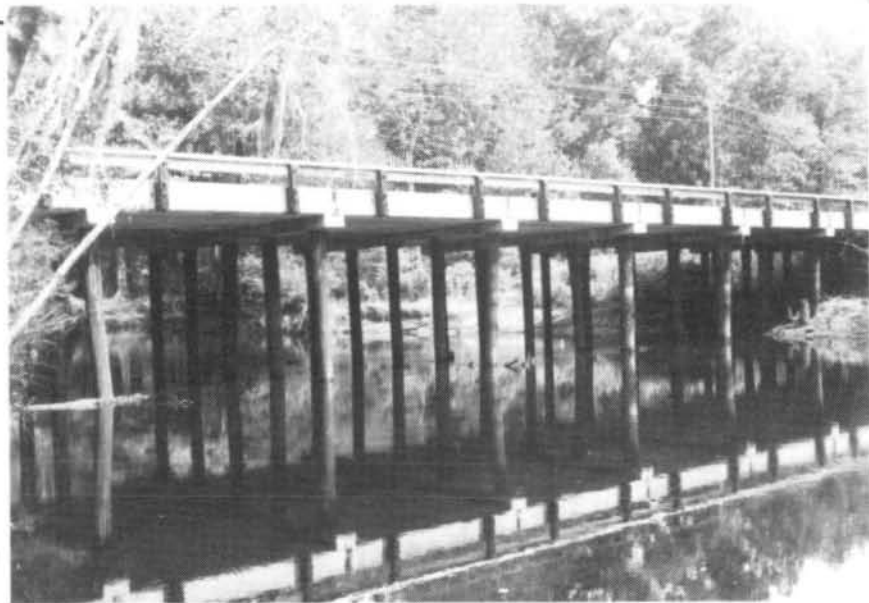


FIGURE 17 - S. C. SECONDARY 35 HIGHWAY BRIDGE (R.M. 101.3)
(AND UTILITY LINE)



FIGURE 18 - S. C. 41, 51 HIGHWAY BRIDGE - BLACK MINGO CREEK (R.M. 9.9)
(AND UTILITY LINE)



FIGURE 19 - UTILITY LINE - BLACK MINGO CREEK (R.M. 9.9)
(AND S. C. 41, 51 HIGHWAY BRIDGE)

SECTION 7 - CONCLUSIONS AND RECOMMENDATIONS

Five classifications of navigation on streams in the Black River report area have been determined and are presented below. The first two are classifications developed from historical evidence and current Federal stream classifications. Classification 3 is based on field measurements, observations, and data analysis for the river. Classification 4 is based on review of all previously determined limits with a recommendation of the most upstream locations with supporting evidence of navigability. The fifth classification accounts for all streams not otherwise classified and was determined based on the drainage area and hydrological aspects of the stream.

1. The Black River is presently classified "navigable waters of the U. S." between its mouth at R.M. 0 on the Great Pee Dee River near Georgetown, South Carolina to the Seaboard Coast Line Railroad bridge (Potatoe Ferry) at R.M. 49.6. Black Mingo Creek is presently classified "navigable waters of the U. S." between its confluence with the Black River (R.M. 24.6) and S. C. Highway 41 (Hemingway Bridge, R.M. 9.9).
2. The historical limit of navigation on the Black River is near Pudding Swamp at R.M. 100.0. Historical limit of navigation on Black Mingo Creek is R.M. 31.
3. The recommended practical limit of navigation on the Black River is R.M. 107.7 (the confluence with Black River Swamp and Pocotaligo River). Minor channel improvements will be necessary for commercial river craft to actually use the river to this point. The recommended practical limit of navigation on Black Mingo Creek is R.M. 9.9 at S. C. 41 Highway bridge. In addition, the following small tributaries are recommended for practical navigation, and are listed with their upstream recommended practical limit of navigation indicated in parentheses: secondary channel near R.M. 42.5 (R.M. 0.4), secondary channel and lake near R.M. 43.5 (R.M. 0.2), Lester Creek (R.M. 0.8), and McGinney Creek (R.M. 0.2).

The downstream limit for each of these small streams is at its confluence with the Black River. No other streams in the Black River basin are considered practically navigable.

4. It is recommended that the Black River be classified "navigable waters of the U. S." between its mouth and the confluence of Black River Swamp and Pocotaligo River (R.M. 107.7). Black Mingo Creek is recommended to be classified as "navigable waters of the U. S." between its mouth and S. C. 41 Highway bridge (R.M. 9.9). In addition, the following small tributaries are recommended for classification as "navigable waters of the U. S." from their confluence with the Black River to the upstream limit indicated in parentheses: secondary channel near R.M. 42.5 (R.M. 0.4), secondary channel and lake near R.M. 43.5 (R.M. 0.2), Lester Creek (R.M. 0.8), and McGinney Creek (R.M. 0.2). These limits are based on the analytical procedures and tests of navigability used in this study effort.
5. All streams not recommended for classification as "navigable waters of the U. S." are recommended for classification as "waters of the U. S." throughout their entire length.

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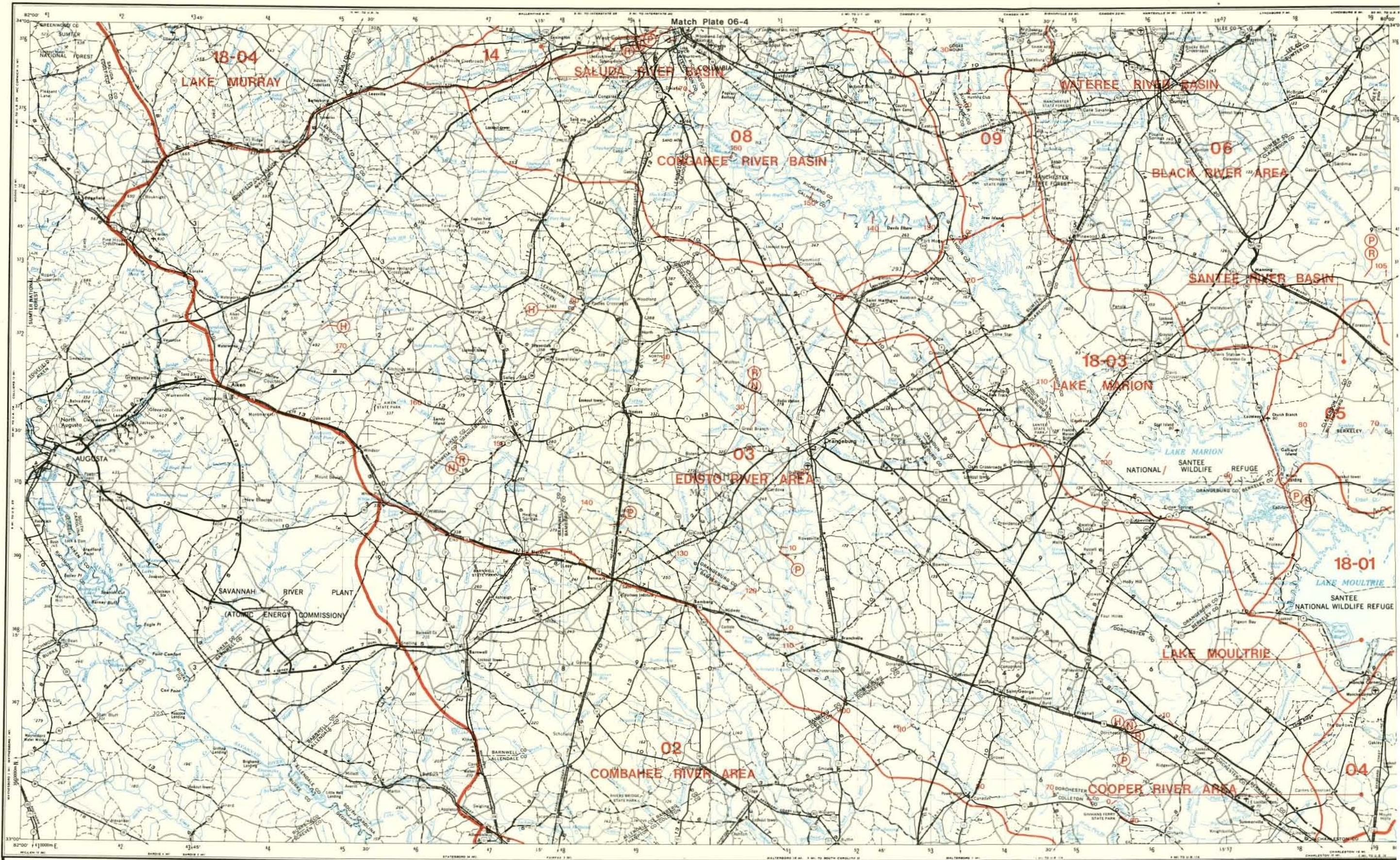
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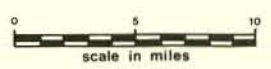
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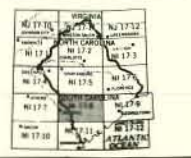


POPULATED PLACES:
 NEW ORLEANS
 CHARLOTTE
 AUGUSTA
 SAVANNAH
 COLUMBIA
 GREENSBORO
 RICHMOND
 WASHINGTON
 PHOENIX
 LOS ANGELES
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 JACKSONVILLE
 MIAMI
 HOUSTON
 SAN ANTONIO
 EL PASO
 DALLAS
 AUSTIN
 HOUSTON
 SAN ANTONIO
 EL PASO
 DALLAS
 AUSTIN

USGS BASE MAP
 AUGUSTA, GA., S.C.
 1957, Revised 1969
 NI 17-8



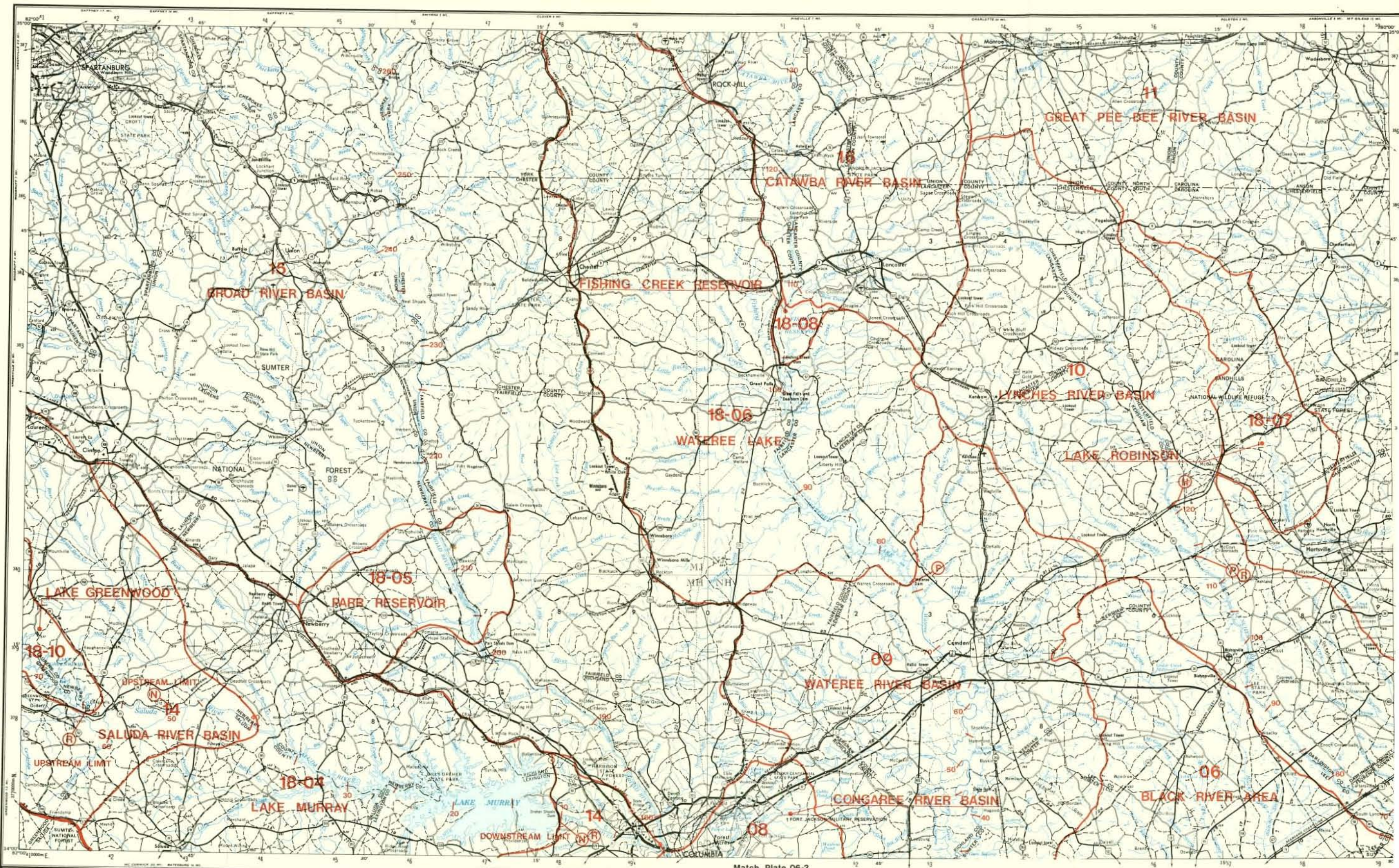
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 (H) HISTORIC LIMIT OF NAVIGATION
 (P) PRACTICAL LIMIT OF NAVIGATION (RECOMMENDED)
 (R) LIMIT OF NAVIGABLE WATERS OF THE U.S. (RECOMMENDED)
 (RM) RIVER MILE



U.S. ARMY CORPS OF ENGINEERS
 CHARLESTON DISTRICT
 Charleston, South Carolina
 STANLEY CONSULTANTS

SIGNIFICANT FEATURES
BLACK RIVER AREA
 Report No. 01,02,03,04,05,06,08,09,14,18
NAVIGABILITY STUDY
 Plate 06-3

1977



POPULATED PLACES

Over 100,000	NEW ORLEANS
25,000 to 100,000	CHARLOTTE
5,000 to 25,000	CHARLESTON
Under 5,000	Other

ROADS

Primary, all weather, hard surface	Secondary, all weather, hard surface
Light duty, all weather, improved surface	Foot or dirt, all weather, unimproved surface
Interchange	Grade crossing

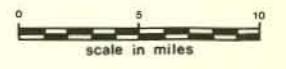
WATER

Regularly navigable, U.S. Steam	Other
Canal	Lock
Swamp	Marsh
Shoals	Bar
Shoals	Bar
Shoals	Bar

Other Symbols

Landmark: School, Church, Other	Landmark: School, Church, Other
Landmark: School, Church, Other	Landmark: School, Church, Other
Landmark: School, Church, Other	Landmark: School, Church, Other

USGS BASE MAP
SPARTANBURG, S.C.; N.C.
1953, Revised 1969
NI 17-5



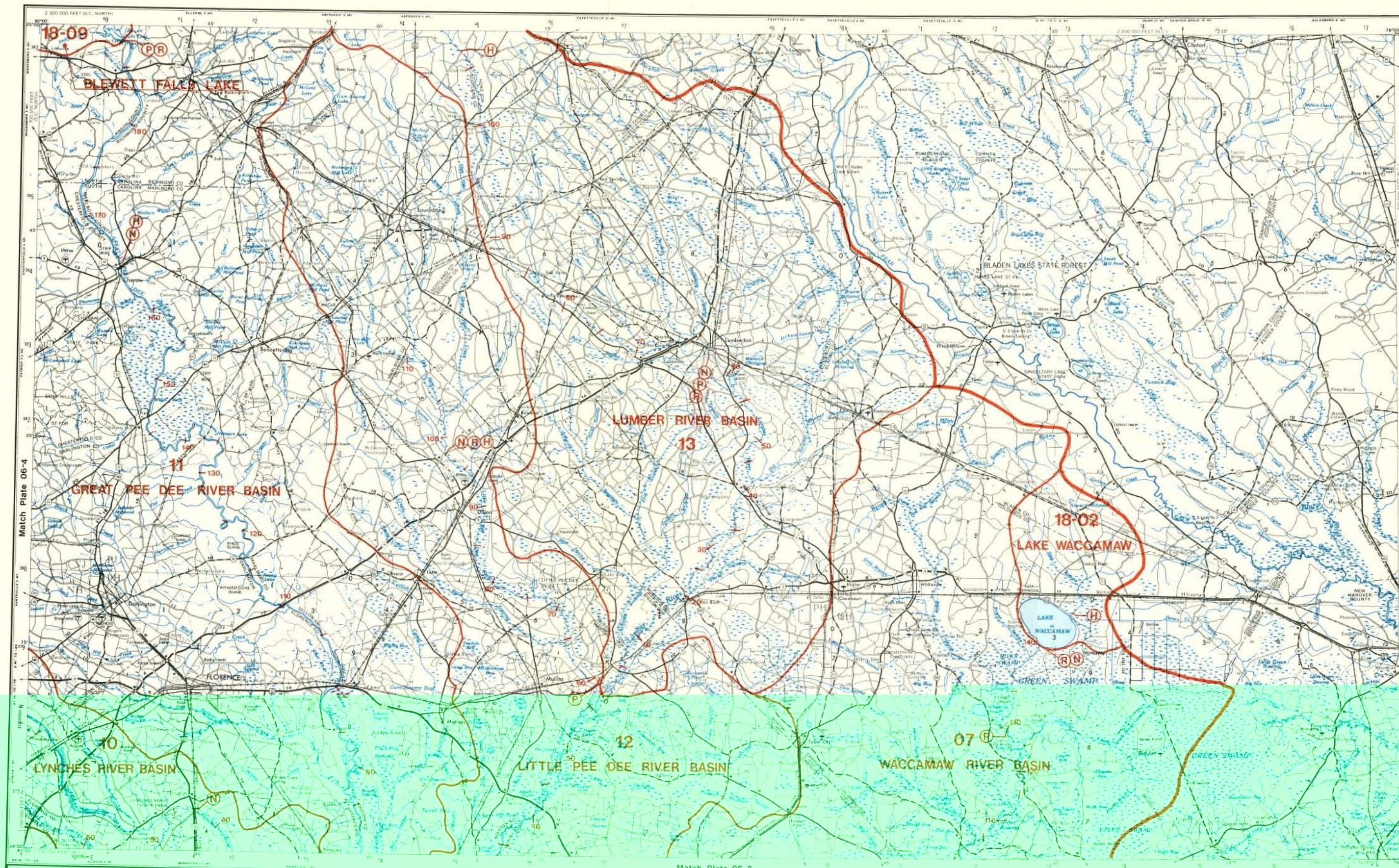
- LEGEND:**
- (N) PRESENT LIMIT OF NAVIGABLE WATERS OF THE U.S.
 - (H) HISTORIC LIMIT OF NAVIGATION
 - (P) PRACTICAL LIMIT OF NAVIGATION (RECOMMENDED)
 - (R) LIMIT OF NAVIGABLE WATERS OF THE U.S. (RECOMMENDED)
 - 70 RIVER MILE



1977

U.S. ARMY CORPS OF ENGINEERS
CHARLESTON DISTRICT
Charleston, South Carolina
STANLEY CONSULTANTS

SIGNIFICANT FEATURES
BLACK RIVER AREA
Report No. 06, 08, 09, 10, 11, 14, 15, 16, 18
NAVIGABILITY STUDY
Plate O6-4



NEW ORLEANS CHARLOTTE CHARLESTON	
1:250,000	1:250,000
1:500,000	1:500,000
1:1,000,000	1:1,000,000
1:2,000,000	1:2,000,000
1:5,000,000	1:5,000,000
1:10,000,000	1:10,000,000

USGS BASE MAP
 FLORENCE, S.C.; N.C.
 1953, Revised 1974
 NI 17-6



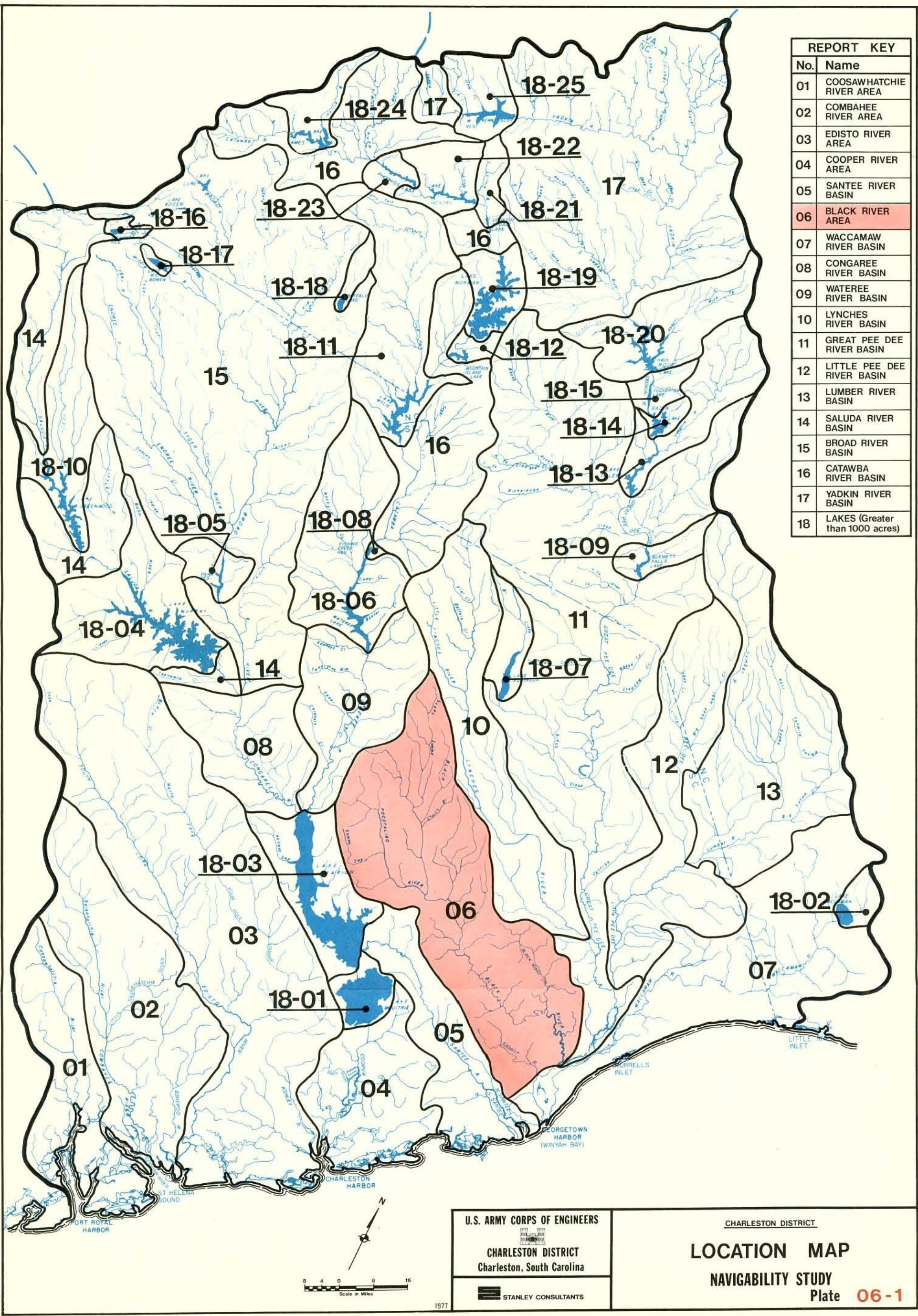
- Match Plate 06-2
- LEGEND
- (N) PRESENT LIMIT OF NAVIGABLE WATERS OF THE U.S.
 - (H) HISTORIC LIMIT OF NAVIGATION
 - (P) PRACTICAL LIMIT OF NAVIGATION (RECOMMENDED)
 - (R) LIMIT OF NAVIGABLE WATERS OF THE U.S. (RECOMMENDED)
 - RV RIVER MILE



U.S. ARMY CORPS OF ENGINEERS
 CHARLESTON DISTRICT
 Charleston, South Carolina

SIGNIFICANT FEATURES
 BLACK RIVER AREA
 Report No. 06, 07, 10, 11, 12, 13, 18
 NAVIGABILITY STUDY
 Plate 06-5

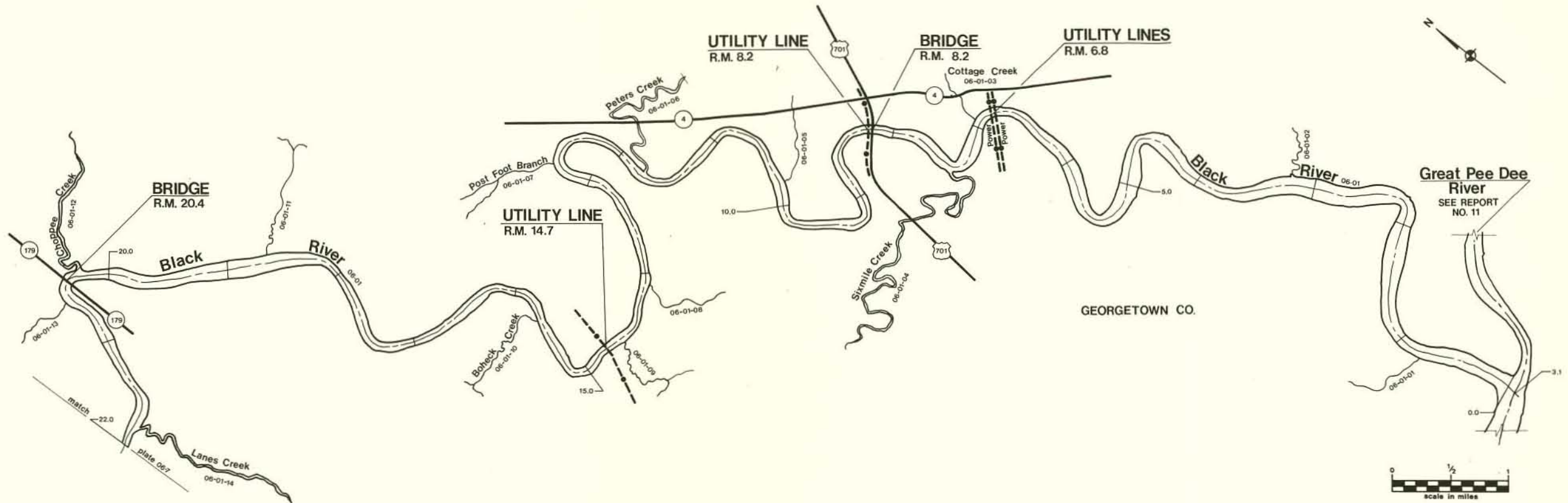
STANLEY CONSULTANTS



REPORT KEY	
No.	Name
01	COOSAWHATCHIE RIVER AREA
02	COMBAHEE RIVER AREA
03	EDISTO RIVER AREA
04	COOPER RIVER AREA
05	SANTEE RIVER BASIN
06	BLACK RIVER AREA
07	WACCAMAW RIVER BASIN
08	CONGAREE RIVER BASIN
09	WATEREE RIVER BASIN
10	LYNCHES RIVER BASIN
11	GREAT PEE DEE RIVER BASIN
12	LITTLE PEE DEE RIVER BASIN
13	LUMBER RIVER BASIN
14	SALUDA RIVER BASIN
15	BROAD RIVER BASIN
16	CATAWBA RIVER BASIN
17	YADKIN RIVER BASIN
18	LAKES (Greater than 1000 acres)

U.S. ARMY CORPS OF ENGINEERS
 CHARLESTON DISTRICT
 Charleston, South Carolina
 STANLEY CONSULTANTS

CHARLESTON DISTRICT
LOCATION MAP
 NAVIGABILITY STUDY
 Plate 06-1



LEGEND:

OVERHEAD STRUCTURE — 75' — HORIZONTAL CLEARANCE IN MAIN CHANNEL

MEAN WATER SURFACE — 12' — VERTICAL CLEARANCE TO STRUCTURE

STREAM BED — 8' (6') — MAXIMUM DEPTH AT MEAN FLOW

STRUCTURE RIVER MILE LOCATION — 8' (6') — MAXIMUM DEPTH OF 50 FOOT WIDE CHANNEL AT MEAN FLOW

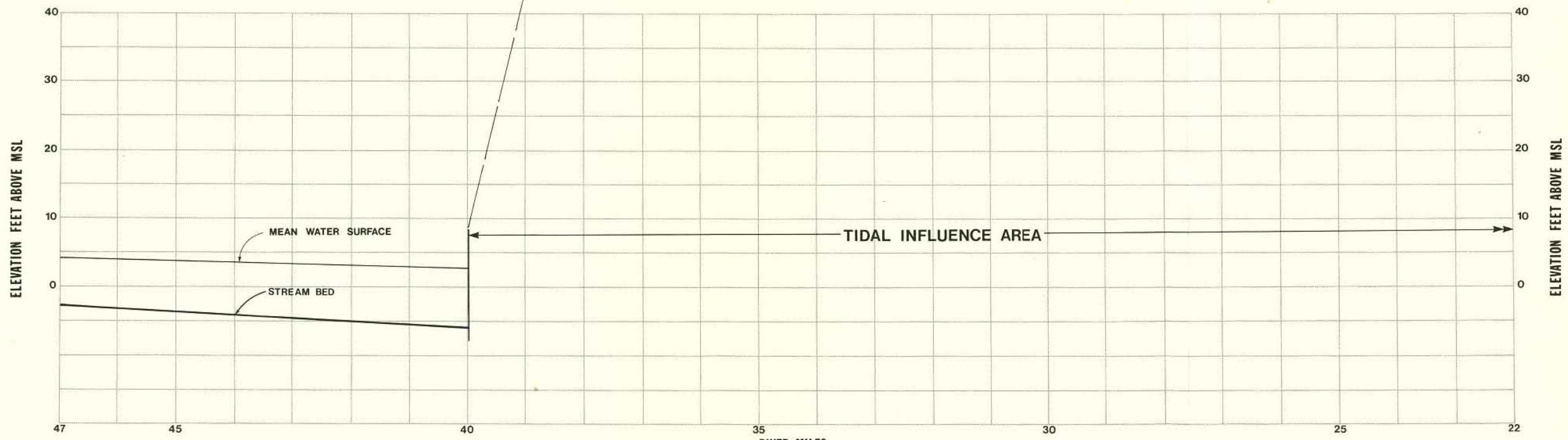
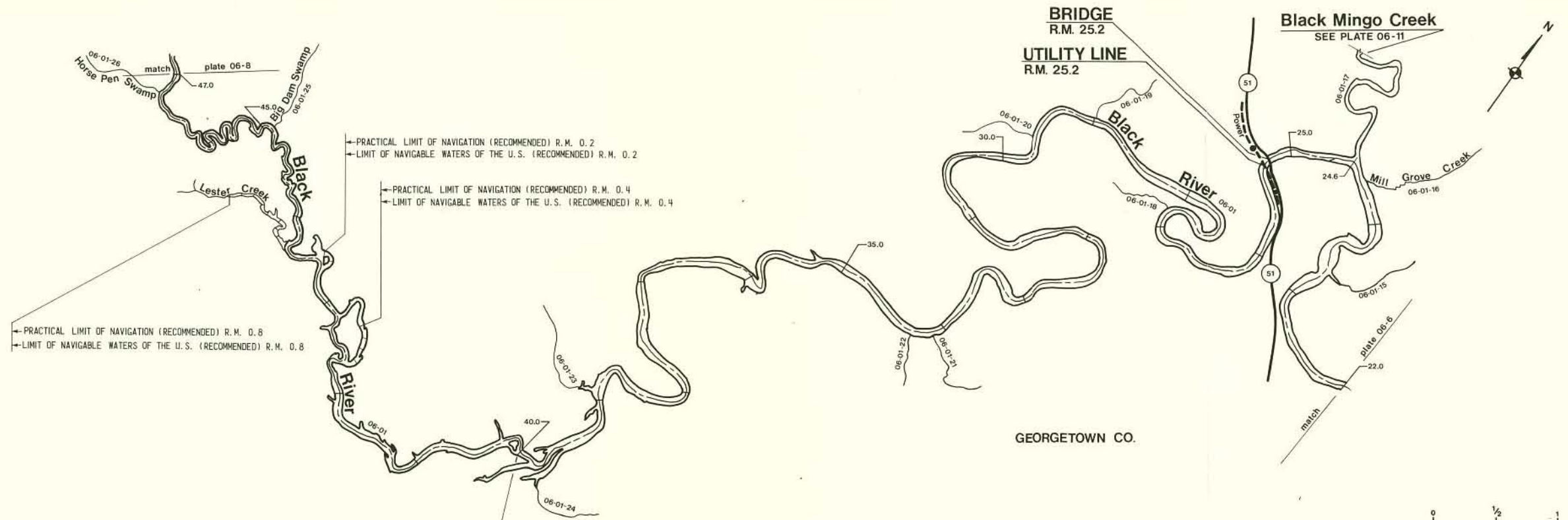
NOTES:

1. ELEVATION AND SLOPE OF MEAN WATER SURFACE ARE BASED ON USGS TOPOGRAPHIC MAPS AND ARE THEREFORE ONLY APPROXIMATIONS. VERTICAL DIMENSIONS FROM STREAM BED TO OVERHEAD STRUCTURES ARE FIELD MEASUREMENTS. RELATIVE LOCATION OF MEAN WATER SURFACE IS APPROXIMATED FROM CONTOUR MAPS, MEASURED CROSS SECTIONS AND VELOCITIES. STREAM FLOW RECORDS, THE MANNING EQUATION, AND FIELD OBSERVATIONS. SEE SUMMARY REPORT FOR COMPLETE EXPLANATION.

2. THE UPSTREAM EXTENT OF TIDAL INFLUENCE IS APPROXIMATED BY PROJECTING THE ELEVATION OF MEAN HIGH TIDE HORIZONTALLY FROM THE MOUTH OF A RIVER TO A MILE POINT WHERE IT INTERSECTS THE PLOTTED MEAN WATER SURFACE OF THAT RIVER.

U.S. ARMY CORPS OF ENGINEERS
 CHARLESTON DISTRICT
 Charleston, South Carolina
 STANLEY CONSULTANTS

PLAN AND PROFILE
BLACK RIVER
 Black River Area
 GEORGETOWN CO., S.C.
NAVIGABILITY STUDY
 Miles 0.0-22.0 Plate 06-6



LEGEND:

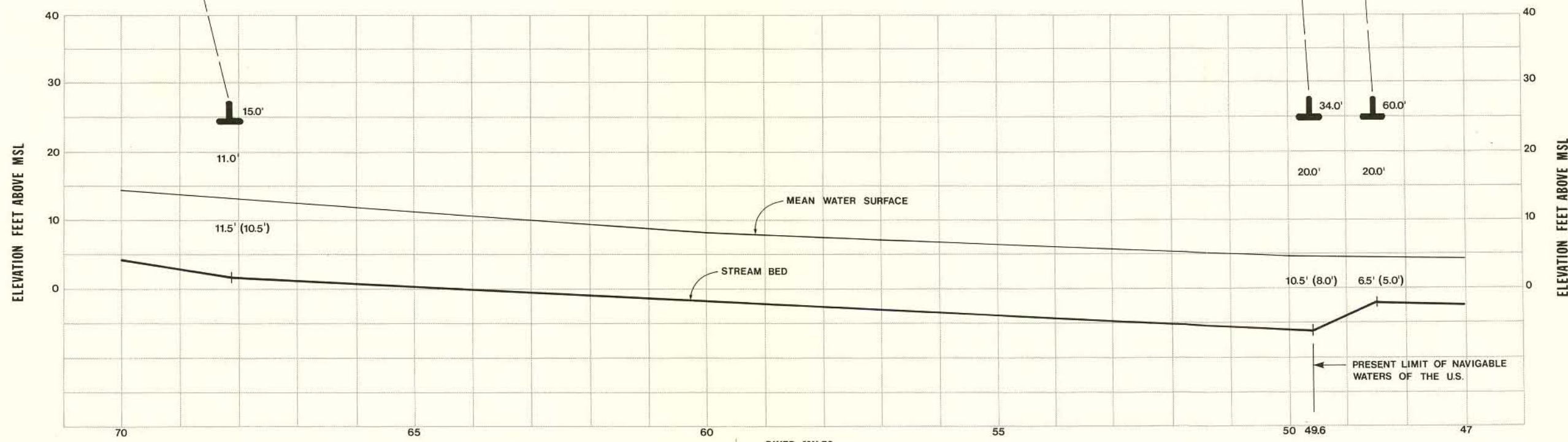
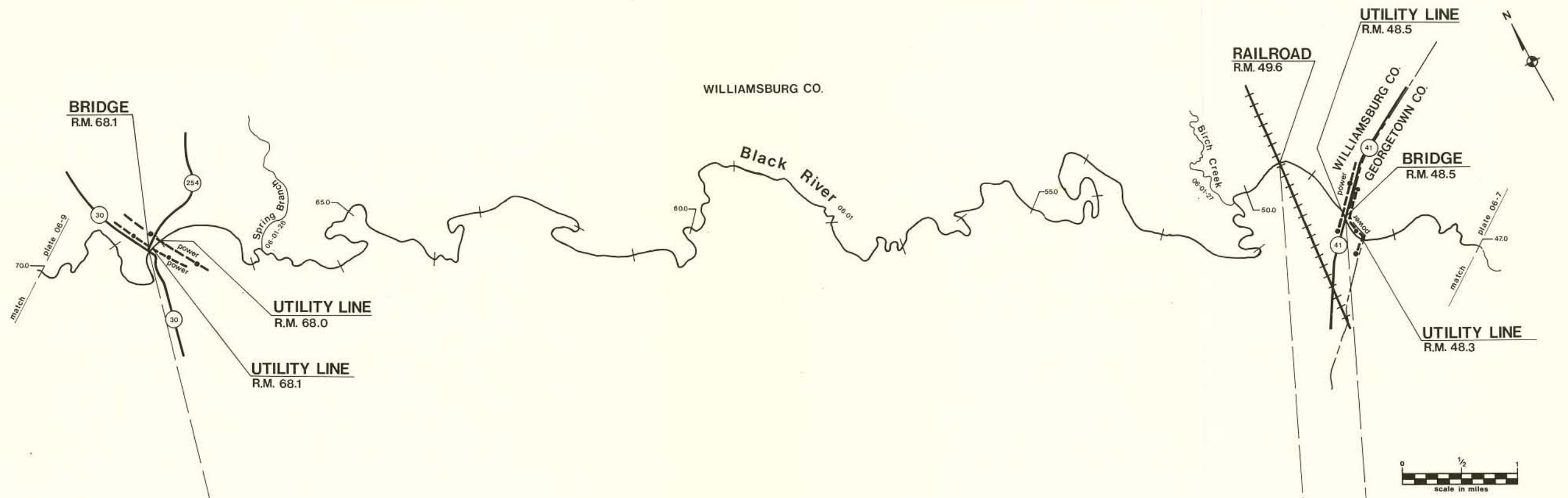
OVERHEAD STRUCTURE	75'	HORIZONTAL CLEARANCE IN MAIN CHANNEL
MEAN WATER SURFACE	12'	VERTICAL CLEARANCE TO STRUCTURE
STREAM BED	8' (6')	MAXIMUM DEPTH AT MEAN FLOW
		MAXIMUM DEPTH OF 50 FOOT WIDE CHANNEL AT MEAN FLOW
STRUCTURE RIVER MILE LOCATION		

NOTES:

- ELEVATION AND SLOPE OF MEAN WATER SURFACE ARE BASED ON USGS TOPOGRAPHIC MAPS AND ARE THEREFORE ONLY APPROXIMATIONS. VERTICAL DIMENSIONS FROM STREAM BED TO OVERHEAD STRUCTURES ARE FIELD MEASUREMENTS. RELATIVE LOCATION OF MEAN WATER SURFACE IS APPROXIMATED FROM CONTOUR MAPS, MEASURED CROSS SECTIONS AND VELOCITIES. STREAM FLOW RECORDS, THE MANNING EQUATION, AND FIELD OBSERVATIONS. SEE SUMMARY REPORT FOR COMPLETE EXPLANATION.
- THE UPSTREAM EXTENT OF TIDAL INFLUENCE IS APPROXIMATED BY PROJECTING THE ELEVATION OF MEAN HIGH TIDE HORIZONTALLY FROM THE MOUTH OF A RIVER TO A MILE POINT WHERE IT INTERSECTS THE PLOTTED MEAN WATER SURFACE OF THAT RIVER.

U.S. ARMY CORPS OF ENGINEERS
 CHARLESTON DISTRICT
 Charleston, South Carolina

PLAN AND PROFILE
BLACK RIVER
 Black River Area
 GEORGETOWN CO., S.C.
NAVIGABILITY STUDY
 Miles 22.0-47.0 Plate 06-7



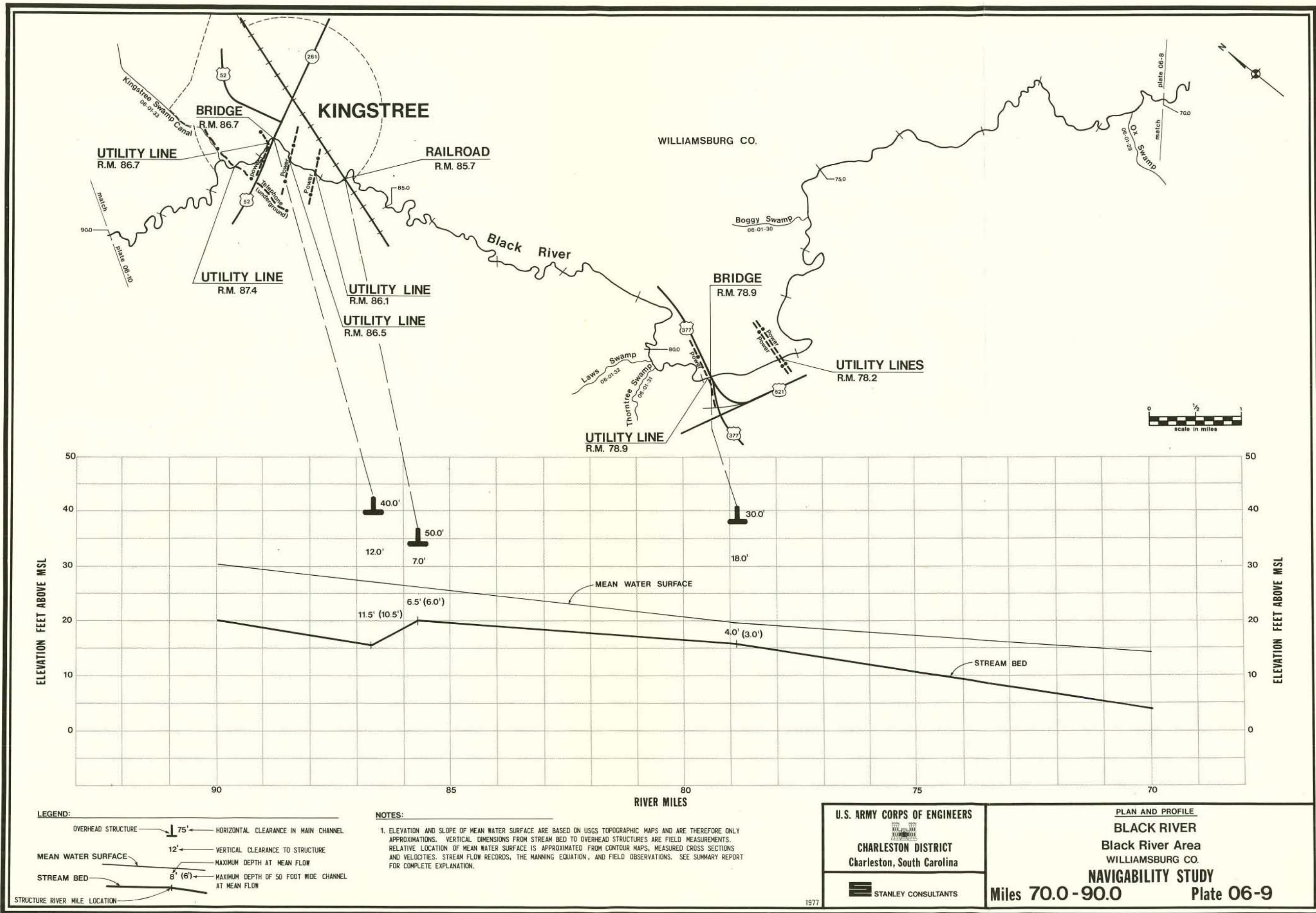
LEGEND:

OVERHEAD STRUCTURE	75'	HORIZONTAL CLEARANCE IN MAIN CHANNEL
MEAN WATER SURFACE	12'	VERTICAL CLEARANCE TO STRUCTURE
STREAM BED	8' (6')	MAXIMUM DEPTH AT MEAN FLOW
		MAXIMUM DEPTH OF 50 FOOT WIDE CHANNEL AT MEAN FLOW
STRUCTURE RIVER MILE LOCATION		

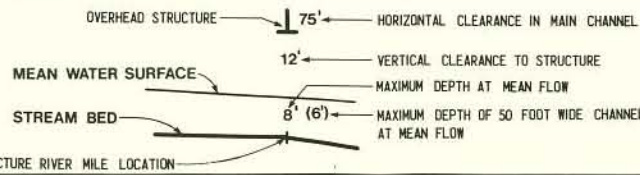
NOTES:

1. ELEVATION AND SLOPE OF MEAN WATER SURFACE ARE BASED ON USGS TOPOGRAPHIC MAPS AND ARE THEREFORE ONLY APPROXIMATIONS. VERTICAL DIMENSIONS FROM STREAM BED TO OVERHEAD STRUCTURES ARE FIELD MEASUREMENTS. RELATIVE LOCATION OF MEAN WATER SURFACE IS APPROXIMATED FROM CONTOUR MAPS, MEASURED CROSS SECTIONS AND VELOCITIES. STREAM FLOW RECORDS, THE MANNING EQUATION, AND FIELD OBSERVATIONS. SEE SUMMARY REPORT FOR COMPLETE EXPLANATION.

<p>U.S. ARMY CORPS OF ENGINEERS</p> <p>CHARLESTON DISTRICT Charleston, South Carolina</p>	<p>PLAN AND PROFILE</p> <p>BLACK RIVER</p> <p>Black River Area GEORGETOWN-WILLIAMSBURG CO., S.C.</p> <p>NAVIGABILITY STUDY</p> <p>Miles 47.0-70.0 Plate 06-8</p>
	<p>STANLEY CONSULTANTS</p>



LEGEND:



NOTES:

1. ELEVATION AND SLOPE OF MEAN WATER SURFACE ARE BASED ON USGS TOPOGRAPHIC MAPS AND ARE THEREFORE ONLY APPROXIMATIONS. VERTICAL DIMENSIONS FROM STREAM BED TO OVERHEAD STRUCTURES ARE FIELD MEASUREMENTS. RELATIVE LOCATION OF MEAN WATER SURFACE IS APPROXIMATED FROM CONTOUR MAPS, MEASURED CROSS SECTIONS AND VELOCITIES. STREAM FLOW RECORDS, THE MANNING EQUATION, AND FIELD OBSERVATIONS. SEE SUMMARY REPORT FOR COMPLETE EXPLANATION.

U.S. ARMY CORPS OF ENGINEERS
 CHARLESTON DISTRICT
 Charleston, South Carolina

STANLEY CONSULTANTS

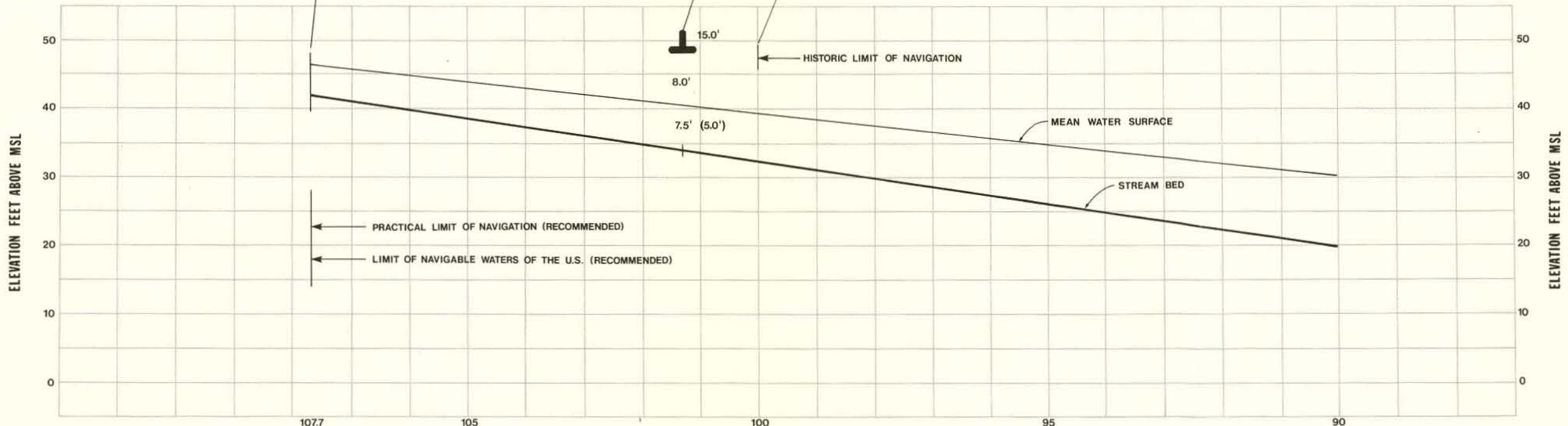
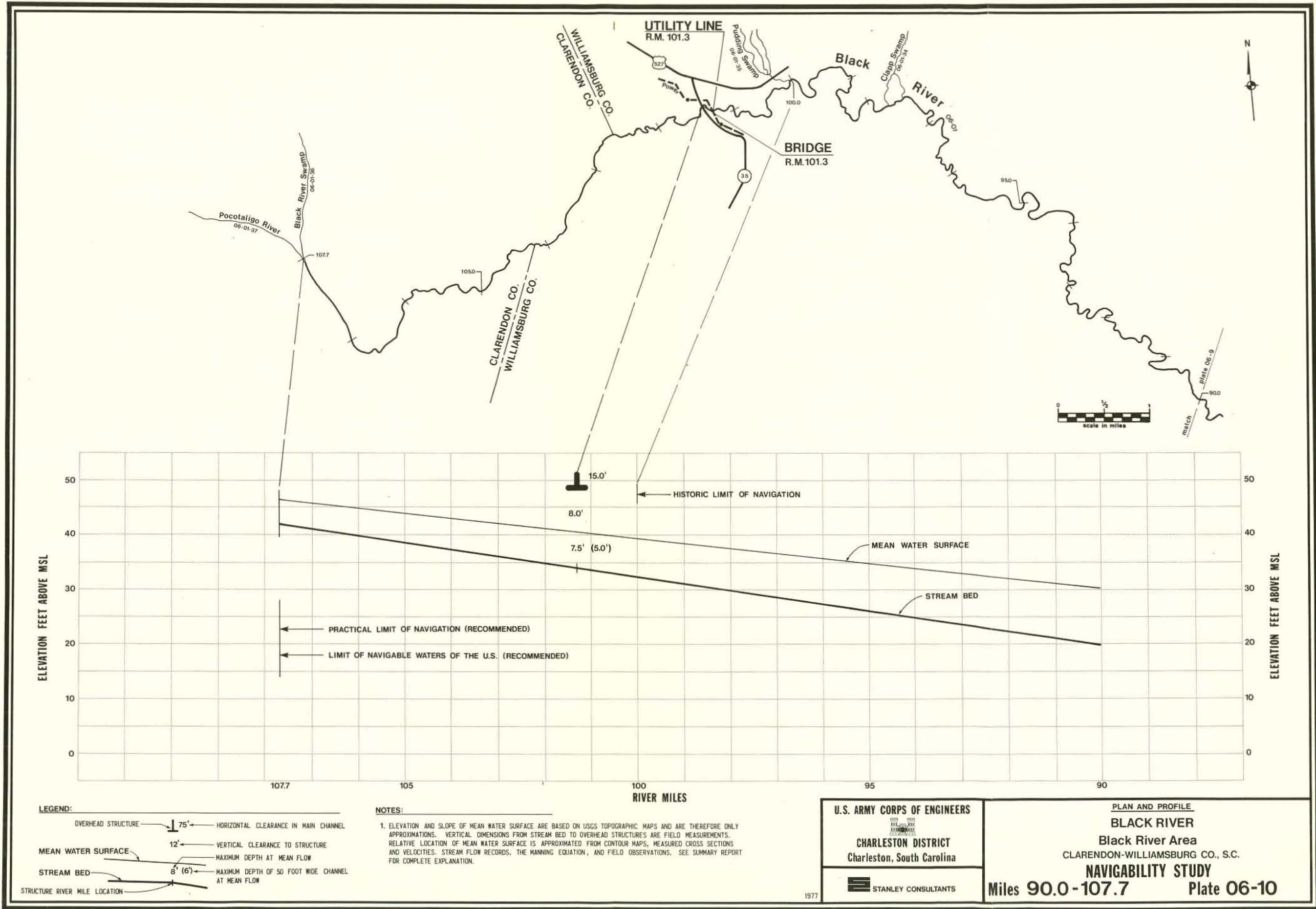
PLAN AND PROFILE

BLACK RIVER
 Black River Area
 WILLIAMSBURG CO.

NAVIGABILITY STUDY

Miles 70.0 - 90.0

Plate 06-9



LEGEND:

OVERHEAD STRUCTURE — 75' — HORIZONTAL CLEARANCE IN MAIN CHANNEL

MEAN WATER SURFACE — 12' — VERTICAL CLEARANCE TO STRUCTURE

STREAM BED — 8' (6') — MAXIMUM DEPTH AT MEAN FLOW

STRUCTURE RIVER MILE LOCATION — 8' (6') — MAXIMUM DEPTH OF 50 FOOT WIDE CHANNEL AT MEAN FLOW

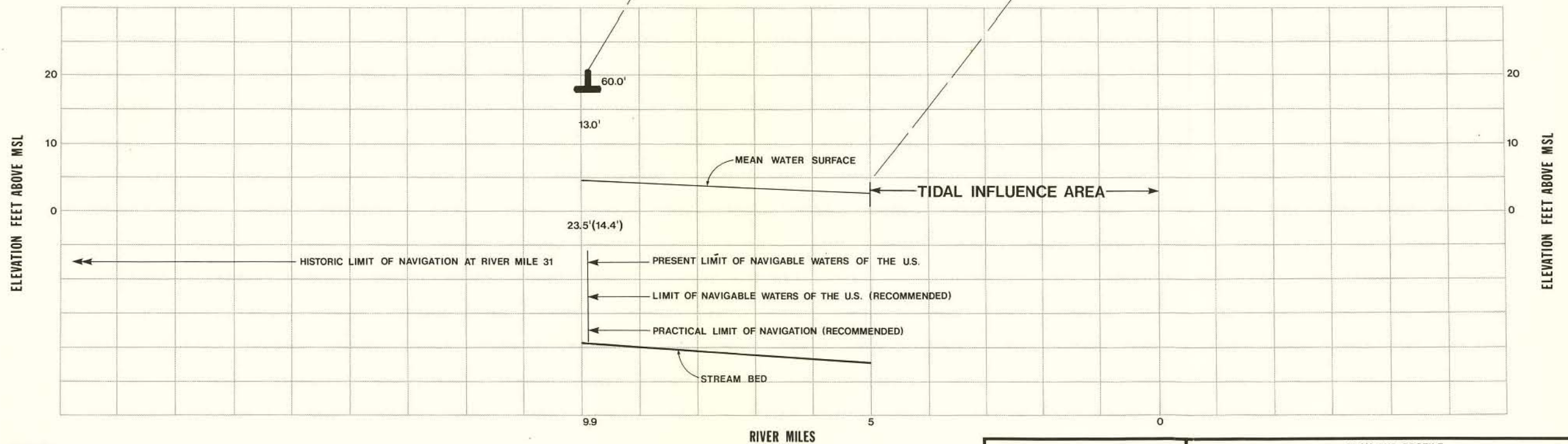
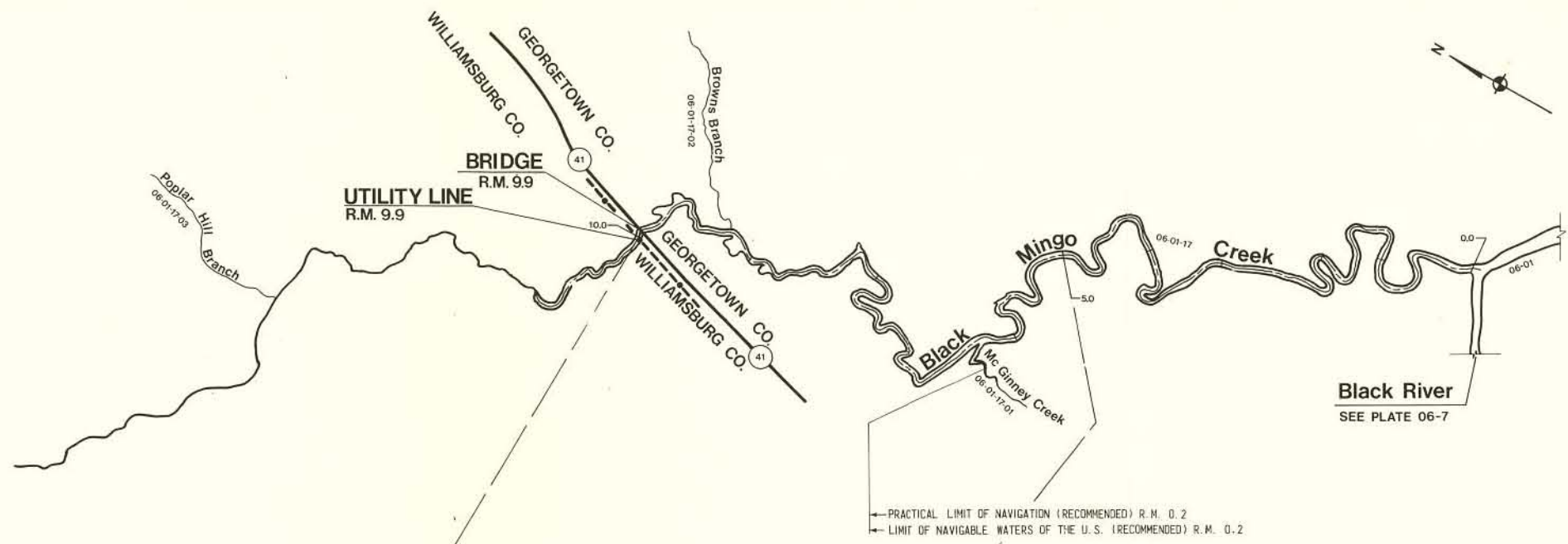
NOTES:

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U.S. ARMY CORPS OF ENGINEERS
 CHARLESTON DISTRICT
 Charleston, South Carolina

STANLEY CONSULTANTS

PLAN AND PROFILE
BLACK RIVER
 Black River Area
 CLARENDON-WILLIAMSBURG CO., S.C.
NAVIGABILITY STUDY
 Miles 90.0 - 107.7 Plate 06-10



LEGEND:

OVERHEAD STRUCTURE — 75' — HORIZONTAL CLEARANCE IN MAIN CHANNEL

MEAN WATER SURFACE — 12' — VERTICAL CLEARANCE TO STRUCTURE

STREAM BED — 8' (6') — MAXIMUM DEPTH OF 50 FOOT WIDE CHANNEL AT MEAN FLOW

STRUCTURE RIVER MILE LOCATION

NOTES:

1. ELEVATION AND SLOPE OF MEAN WATER SURFACE ARE BASED ON USGS TOPOGRAPHIC MAPS AND ARE THEREFORE ONLY APPROXIMATIONS. VERTICAL DIMENSIONS FROM STREAM BED TO OVERHEAD STRUCTURES ARE FIELD MEASUREMENTS. RELATIVE LOCATION OF MEAN WATER SURFACE IS APPROXIMATED FROM CONTOUR MAPS, MEASURED CROSS SECTIONS AND VELOCITIES, STREAM FLOW RECORDS, THE MANNING EQUATION, AND FIELD OBSERVATIONS. SEE SUMMARY REPORT FOR COMPLETE EXPLANATION.

2. THE UPSTREAM EXTENT OF TIDAL INFLUENCE IS APPROXIMATED BY PROJECTING THE ELEVATION OF MEAN HIGH TIDE HORIZONTALLY FROM THE MOUTH OF A RIVER TO A MILE POINT WHERE IT INTERSECTS THE PLOTTED MEAN WATER SURFACE OF THAT RIVER.

U.S. ARMY CORPS OF ENGINEERS

CHARLESTON DISTRICT
Charleston, South Carolina

STANLEY CONSULTANTS

PLAN AND PROFILE

BLACK MINGO CREEK
Black River Area
GEORGETOWN-WILLIAMSBURG CO., S.C.

NAVIGABILITY STUDY

Miles 0.0-9.9 Plate 06-11

APPENDIX A
STREAM CATALOG

This appendix presents a coded listing of all non-tidal streams located in the Black River report area having a mean annual flow greater than or equal to five cfs. In tidal areas essentially all streams are coded; however, some very small, short streams and drainage tile systems were not coded.

Streams which are all or partially subject to tidal influence are noted in the listing. These are classified "navigable waters of the U. S." to the tidal limit. Non-tidal reaches of streams classified "navigable waters of the U. S." are covered in Section 6 of this report. All other streams not tidally influenced are classified "waters of the U. S."

The points where flow is approximately equal to five cfs (headwaters) are defined by approximate longitude and latitude, and river miles from the nearest named tributary, major highway, railroad, or other similar reference point. Some streams listed in the tabulation may not have headwater locations identified. This occurs when the name of a stream changes at a confluence where the flow immediately downstream is greater than five cfs. Thus, the headwater locations for streams with more than one name are associated with the appropriate upstream name found on USGS quadrangle maps. Some streams in this appendix listing are also coded in other reports for this study. Cross-references to specific reports are noted.

The coding system shown in the tabulation uses a procedure developed by the Charleston District, Corps of Engineers. Streams are summarized from the mouth of the major river upstream to the report boundary.

USGS data was used to identify the location where the mean annual stream flow is five cfs. Flow records from gaging stations throughout the Charleston District were evaluated and an isoflow map developed to indicate variations in runoff (cfs per square mile). These runoff values were then applied to the appropriate stream drainage areas (as determined from USGS quadrangle maps) so that a flow of five cfs was approximated.

APPENDIX A
STREAM CATALOG

REPORT NUMBER	STREAM CODE					STREAM NAME	HEADWATER LOCATION (Mean Flow = 5 cfs)					
	MAJOR RIVER	PRIMARY	SECONDARY	TERTIARY	FOURTH ORDER		FIFTH ORDER	LATITUDE (° ' '')	LONGITUDE (° ' '')	STREAM MILES		FROM
										UP	DOWN	
06	01					Black River * #						
		01				Unnamed Tributary *						
		02				Unnamed Tributary *						
		03				Cottage Creek *						
		04				Sixmile Creek *						
			01			Inland Branch *						
			02			Crooked Branch *						
			03			Prince Creek *						
			04			Greens Creek *						
		05				Unnamed Tributary *						
		06				Peters Creek *						
			01			Guinea Creek *						
			02			Black Swamp *						
			03			Simmons Creek *						
			04			Fardick Creek *						
			05			Carver's Bay Creek *						

06-A2

* All or part tidally influenced.

Dual code in Report 11.

APPENDIX A
STREAM CATALOG

REPORT NUMBER	STREAM CODE						STREAM NAME	HEADWATER LOCATION (Mean Flow = 5 cfs)				
	MAJOR RIVER	PRIMARY	SECONDARY	TERTIARY	FOURTH ORDER	FIFTH ORDER		LATITUDE (° ' '')	LONGITUDE (° ' '')	STREAM MILES		FROM
										UP	DOWN	
06	01	06	05	01								
				02								
		07										
		08										
		09										
		10										
		11										
		12										
			01									
		13										
		14										
		15										
		16										
		17										
			01									

* All or part tidally influenced.

APPENDIX A
STREAM CATALOG

06-A4

REPORT NUMBER	STREAM CODE					STREAM NAME	HEADWATER LOCATION (Mean Flow = 5 cfs)					
	MAJOR RIVER	PRIMARY	SECONDARY	TERTIARY	FOURTH ORDER		FIFTH ORDER	LATITUDE (° ' '')	LONGITUDE (° ' '')	STREAM MILES		FROM
										UP	DOWN	
06	01	17	01	01			Smith Swamp	33 34 20	79 27 45	1.5		McGinney Creek
			02				Browns Branch	33 38 00	79 24 40			Confluence-Squirrel Run
				01			Pittman Branch	33 37 25	79 23 25	1.2		Browns Branch
			03				Poplar Hill Branch	33 42 20	79 27 25			Confluence-Caney Br
			04				Indiantown Swamp	33 44 20	79 30 45			Confluence-James Br
			05				Boggy Swamp	33 45 00	79 35 10	3.0		Black Mingo Creek
			06				Turkey Creek	33 41 00	79 35 00	2.2		Black Mingo Creek
			07				Paisley Swamp					
				01			McKnight Swamp	33 44 15	79 40 00			Confluence-Whiteoak Swamp
			08				Cedar Swamp	33 40 00	79 40 00			Confluence-Home Swp
			18				Unnamed Tributary *					
			19				Unnamed Tributary *					
			20				Unnamed Tributary *					
21				Unnamed Tributary *								

* All or part tidally influenced

APPENDIX A
STREAM CATALOG

06-A5

REPORT NUMBER	STREAM CODE						STREAM NAME	HEADWATER LOCATION (Mean Flow = 5 cfs)				
	MAJOR RIVER	PRIMARY	SECONDARY	TERTIARY	FOURTH ORDER	FIFTH ORDER		LATITUDE (° ' '')	LONGITUDE (° ' '')	STREAM MILES		FROM
										UP	DOWN	
06	01	22					Unnamed Tributary *					
		23					Unnamed Tributary *					
		24					Unnamed Tributary *					
		25					Big Dam Swamp	33 31 40	79 29 45			Confluence-Roper Br
		26					Horse Pen Swamp					
			01				Johnsons Swamp					
				01			Murray Swamp	33 27 45	79 36 40			Confluence-Sportsman Pond
		27					Birch Creek	33 34 50	79 32 30	7.0		Black River
		28					Spring Branch	33 33 55	79 41 00	1.4		Black River
		29					Ox Swamp	33 32 05	79 44 20	2.0		Black River
		30					Boggy Swamp	33 39 45	79 46 05	5.5		Black River
		31					Thorntree Swamp	33 32 25	79 52 25	4.7		Black River
		32					Laws Swamp					
	01				Dickey Swamp	33 37 20	79 55 35			Confluence-Bennett Swamp		
			01		Rocky Ford Swamp							

* All or part tidally influenced.

APPENDIX A
STREAM CATALOG

REPORT NUMBER	STREAM CODE						STREAM NAME	HEADWATER LOCATION (Mean Flow = 5 cfs)				
	MAJOR RIVER	PRIMARY	SECONDARY	TERTIARY	FOURTH ORDER	FIFTH ORDER		LATITUDE (° ' ")	LONGITUDE (° ' ")	STREAM MILES		FROM
										UP	DOWN	
06	01	32	01	01	01		Chaney Swamp	33 35 10	79 57 20			Confluence-Holliman Swamp
		33					Kingstree Swamp Canal	33 52 05	79 51 45	15.2		Black River
			01				Unnamed Tributary	33 43 00	79 51 00	2.2		Kingstree Swp Canal
		34					Clapp Swamp	33 47 15	79 53 05			Confluence-Long Br
		35					Pudding Swamp	33 58 00	80 03 05	0.1		S.C. 53 Highway Bridge
			01				Newman Branch	33 48 55	80 02 40	5.7		Cain Branch
			02				Douglas Swamp	34 00 05	80 00 20	0.1		I-95 Highway Bridge
				01			Burnt Branch	33 51 40	79 56 40	1.7		Douglas Swamp
			03				Horse Branch	33 54 25	79 58 45	4.6		Pudding Swamp
			04				Unnamed Tributary	33 56 40	80 05 30	1.0		Threemile Branch
		36					Black River Swamp	34 11 10	80 14 10	0.3		Gin Branch
			01				Tearcoat Branch	33 49 30	80 11 45	2.6		Pan Branch
			02				Church Branch	33 59 05	80 08 40	5.2		Black River Swamp
			03				Scape Ore Swamp					
				01			Rocky Bluff Swamp	34 05 05	80 22 30	5.4		Lee Swamp

06-A6

APPENDIX A
STREAM CATALOG

STREAM CODE							STREAM NAME	HEADWATER LOCATION (Mean Flow = 5 cfs)				
REPORT NUMBER	MAJOR RIVER	PRIMARY	SECONDARY	TERTIARY	FOURTH ORDER	FIFTH ORDER		LATITUDE (° ' '')	LONGITUDE (° ' '')	STREAM MILES		FROM
										UP	DOWN	
06	01	36	03	01	01		Cowpen Swamp	34 06 05	80 21 00	4.5		U.S. 15 Highway Bridge
					02		Mulberry Branch	35 57 45	80 18 50			Confluence-Brunson Branch
					03		Unnamed Tributary	34 01 40	80 20 00	0.7		Rocky Bluff Swamp
					04		Lee Swamp	34 00 40	80 23 15	2.4		Rocky Bluff Swamp
					05		Unnamed Tributary	34 04 00	80 22 30	2.7		Rocky Bluff Swamp
				02			Long Branch	34 00 45	80 14 10	0.8		Little Long Branch
				03			Mechanicsville Swamp					
					01		McGirts Creek	34 08 30	80 22 50	8.2		Scape Ore Swamp
					04		Beaverdam Creek	34 11 45	80 24 30	6.4		Scape Ore Swamp
					05		Cedar Creek	34 13 40	80 20 40	0.7		Scape Ore Swamp
					06		Timber Creek	34 17 00	80 26 50			Confluence-Maple Br
					01		Black Creek	34 19 20	80 23 10	6.2		Timber Creek
					02		Pates Mill Branch	34 16 30	80 24 50	0.2		Timber Creek
		04					Nancy Branch	34 03 05	80 12 00	1.2		Black River Swamp

06-A7

APPENDIX A
STREAM CATALOG

STREAM CODE							STREAM NAME	HEADWATER LOCATION (Mean Flow = 5 cfs)						
REPORT NUMBER	MAJOR RIVER	PRIMARY	SECONDARY	TERTIARY	FOURTH ORDER	FIFTH ORDER		LATITUDE (° ' ")	LONGITUDE (° ' ")	STREAM MILES		FROM		
										UP	DOWN			
06	01	36	05				Stony Run Branch	34 04 50	80 10 00	2.1		Little Stony Run Br		
			06				Gin Branch							
					01			Laws Branch	34 12 10	80 16 00	1.2		Gin Branch	
		37						Pocotaligo River Swamp						
					01			Deep Creek	33 39 40	80 08 15	3.0		Pocotaligo Swamp	
					02			Unnamed Tributary	33 43 00	80 08 45	1.5		Pocotaligo Swamp	
					03			Bear Creek	33 40 40	80 10 20	1.5		Pocotaligo Swamp	
					04			Ox Swamp						
						01			Fellowship Branch	33 39 30	80 14 55	1.5		Ox Swamp
						02			Davis Branch	33 38 45	80 13 55	0.8		Loss Branch
						03			Loss Branch	33 38 20	80 13 00	1.2		Davis Branch
						05			Big Branch	33 43 30	80 16 15	2.5		Pocotaligo Swamp
						06			Sammy Swamp	33 44 55	80 25 35	2.6		Boggy Swamp
							01		Guckolds Branch	33 46 00	80 18 05	1.3		Pocotaligo Swamp
							02		Hungary Hall Branch	33 41 20	80 23 30			Confluence-Deschamps Branch

06-A8

APPENDIX A
STREAM CATALOG

REPORT NUMBER	MAJOR RIVER	STREAM CODE					STREAM NAME	HEADWATER LOCATION (Mean Flow = 5 cfs)					
		PRIMARY	SECONDARY	TERTIARY	FOURTH ORDER	FIFTH ORDER		LATITUDE (° ' '')	LONGITUDE (° ' '')	STREAM MILES		FROM	
										UP	DOWN		
06	01	37	07				Briar Branch	33 47 55	80 19 20	1.7		Pocotaligo Swamp	
			08				Unnamed Tributary	33 51 10	80 18 20	0.9		Pocotaligo Swamp	
			09				Turkey Creek	33 53 15	80 19 30	1.5		Pocotaligo Swamp	
			10				Pocalla Creek	33 50 40	80 21 50	2.3		Pocotaligo Swamp	
			11				Green Swamp	33 59 15	80 24 50			Confluence-Horsenpen Branch	
				01				Shot Pouch Branch	33 55 20	80 22 05	0.3		Green Swamp
				02				Mush Swamp	33 56 35	80 27 10	1.2		Bluffhead Branch
					01			Long Branch	33 58 45	80 26 45	4.0		Mush Swamp
					12			Cane Savannah Creek					
						01		Nasty Branch	33 48 30	80 25 00	1.2		Bethel Creek
						02		Brunson Swamp	33 50 40	80 27 50	3.0		Cane Savannah Creek
						03		Hatchet Camp Branch	33 54 15	80 27 20	2.1		Cane Savannah Creek
						04		Unnamed Tributary	33 53 55	80 28 00	0.3		Hatchet Camp Branch

06-A9

APPENDIX A
STREAM CATALOG

REPORT NUMBER	STREAM CODE					STREAM NAME	HEADWATER LOCATION (Mean Flow = 5 cfs)					
	MAJOR RIVER	PRIMARY	SECONDARY	TERTIARY	FOURTH ORDER		FIFTH ORDER	LATITUDE (° ' ")	LONGITUDE (° ' ")	STREAM MILES		FROM
										UP	DOWN	
06	02											
		01				Sampit River *						
		02				Unnamed Tributary *						
		03				Unnamed Tributary *						
		04				Unnamed Tributary *						
		05				Whites Creek *						
		06				Pennyroyal Creek *						
			01			Turkey Creek *						
		07				Unnamed Tributary *						
		08				Ports Creek *						
			01			Canaan Branch *						
		09				Unnamed Tributary *						
		10				Unnamed Tributary *						
		11				Unnamed Tributary *						
		12				Unnamed Tributary *						

* All or part tidally influenced.

06-A110

APPENDIX A
STREAM CATALOG

REPORT NUMBER	STREAM CODE						STREAM NAME	HEADWATER LOCATION (Mean Flow = 5 cfs)				
	MAJOR RIVER	PRIMARY	SECONDARY	TERTIARY	FOURTH ORDER	FIFTH ORDER		LATITUDE (° ' '')	LONGITUDE (° ' '')	STREAM MILES		FROM
										UP	DOWN	
06	02	13					Unnamed Tributary *					
		14					Spring Gully *					
		15					Unnamed Tributary *					
		16					Unnamed Tributary *					
		17					Unnamed Tributary *					
		18					Unnamed Tributary *					
		19					Boggy Swamp	33 31 40	79 31 55	1.6		Cedar Swamp
		01					Unnamed Tributary *					
		02					Britt Branch *					
		03				Bond Swamp	33 21 25	79 32 50			Confluence-Canaan Br	

06-A11

* All or part tidally influenced.

APPENDIX B
SUMMARY OF 10 TO 1,000 ACRE LAKES

This appendix is a compilation of lakes from 10 to 1,000 acres which are contained in the Black River report area.

This inventory was compiled from the following sources:

1. Inventory of Lakes in South Carolina Ten Acres or More in Surface Area.
2. USGS Quadrangle Maps.

The USGS quadrangle maps were used to locate and to detect lakes that were not listed in the other sources. Actual surface area and gross storage information is supplied where available. The lakes were coded by major stream basin in accordance with other procedures developed for identifying streams. The map data from Source 1 above generally does not permit detailed location of the small lakes. Thus, lakes are coded by basin only as far as the secondary order.

APPENDIX B
SUMMARY OF 10 TO 1,000 ACRE LAKES

REPORT NUMBER	STREAM CODE					LAKE NAME OR OWNER	SURFACE AREA (acres)	GROSS STORAGE (acre-ft)	LOCATION BY COUNTY (SOUTH CAROLINA)
	MAJOR RIVER	PRIMARY	SECONDARY	TERTIARY	FIFTH ORDER				
06	01					Mansfield Plantation	30	60	Georgetown
06	01					Nightgate Plantation	21	36	Georgetown
06	01					Greenfield Plantation	17	27	Georgetown
06	01					Greenfield Plantation	15	24	Georgetown
06	01					International Paper Co.	12	24	Georgetown
06	01					International Paper Co.	20	34	Georgetown
06	01	29				C. M. Shepard	20	45	Williamsburg
06	01	29				W. S. McCollough, Sr.	12	30	Williamsburg
06	01					A. H. Parsons	12	30	Williamsburg
06	01					Dale Scott	13	30	Williamsburg
06	01					W. S. McCollough, Jr.	13	36	Williamsburg
06	02	19				Unnamed Lake	--	--	Williamsburg
06	01	35	03			Gibbons Millpond	80	190	Clarendon
06	01	35	03			Horse Branch	20	40	Clarendon
06	01	37				Dave Plowden	10	32	Clarendon
06	01	37				Lakewood Pond	15	48	Clarendon
06	01	37				Brewington Lake	--	--	Clarendon

06-B2

APPENDIX B
SUMMARY OF 10 TO 1,000 ACRE LAKES

REPORT NUMBER	STREAM CODE					LAKE NAME OR OWNER	SURFACE AREA (acres)	GROSS STORAGE (acre-ft)	LOCATION BY COUNTY (SOUTH CAROLINA)
	MAJOR RIVER	PRIMARY	SECONDARY	TERTIARY	FIFTH ORDER				
06	01	37	04			Joe Moore	20	64	Clarendon
06	01	37	05			Marion Edens	13	42	Clarendon
06	01	35				C. R. Skinner	10	40	Sumter
06	01	35				J. T. Johnson	15	90	Sumter
06	01	36	03			Unnamed Lake	--	--	Sumter
06	01	37	07			Brady Lake	12	50	Sumter
06	01	37	10			Wilcox Des Champs (Deschamps Pond)	70	224	Sumter
06	01	37	10			Campbell Soup	15	75	Sumter
06	01	37	11			Second Mill Co-op	70	224	Sumter
06	01	37	11			Loring Millpond	30	120	Sumter
06	01	37	11			Sawmill Pond	15	60	Sumter
06	01	37	11			Booths Lake	45	180	Sumter
06	01	37	11			Cherryvale Pond	18	70	Sumter
06	01	37	11			Fred Johnson	22	60	Sumter
06	01	37	12			Cains Millpond	43	160	Sumter
06	01	37	12			J. F. Shuler	12	60	Sumter

06-B3

APPENDIX B
SUMMARY OF 10 TO 1,000 ACRE LAKES

REPORT NUMBER	STREAM CODE					LAKE NAME OR OWNER	SURFACE AREA (acres)	GROSS STORAGE (acre-ft)	LOCATION BY COUNTY (SOUTH CAROLINA)
	MAJOR RIVER	PRIMARY	SECONDARY	TERTIARY	FIFTH ORDER				
06	01	37	12			Edwin Boyle	150	600	Sumter
06	01	37	12			McCrays Lake	35	120	Sumter
06	01	37	12			Rowland Pond	15	60	Sumter
06	01	37	12			Henry Shelor	16	80	Sumter
06	01	37	12			Elliots Lake	35	140	Sumter
06	01	37	12			Burnt Gin Lake	12	38	Sumter
06	01	37	12			E. T. Gullede	12	50	Sumter
06	01	36	03			Whites Mill Co-op	60	144	Sumter
06	01	36	03			Arden Pond (Ardis Pond)	33	92	Sumter
06	01	36	03			Wildlife Resource Commission - Ashwood Lake	75	225	Lee
06	01	36	03			R. V. Segars (McGirts Millpond)	50	120	Lee
06	01	36	03			Sammy Newell	15	45	Lee
06	01	36				Minnie Des Champs	20	60	Lee
06	01	36	04			Herman Turner	13	39	Lee
06	01	36	03			Unnamed Lake	--	--	Sumter

APPENDIX B
SUMMARY OF 10 TO 1,000 ACRE LAKES

REPORT NUMBER	STREAM CODE					LAKE NAME OR OWNER	SURFACE AREA (acres)	GROSS STORAGE (acre-ft)	LOCATION BY COUNTY (SOUTH CAROLINA)
	MAJOR RIVER	PRIMARY	SECONDARY	TERTIARY	FIFTH ORDER				
06	01	36				Unnamed Lake	--	--	Lee
06	01	36				Mattie JS Pond	--	--	Lee
06	01	36				Blaine Player	10	30	Lee
06	01	36				Harvey Shaw	15	45	Lee
06	01	36				Eckley	30	60	Lee
06	01	36	06			Lusious Elmore	10	50	Lee
06	01	36	03			Victor McLeod Pond	18	90	Lee
06	01	36	03			Cedar Creek Millpond (Cedar Creek Pond)	30	90	Lee
06	01	36	03			Johnsons Millpond (Singletary Millpond)	11	33	Lee
06	01	36	03			Halls Millpond	30	90	Lee
06	01	36	03			Osborne Hudson	10	40	Kershaw
06	02					International Paper Co.	30	56	Georgetown
06	02					International Paper Co.	10	16	Georgetown
06	01	36	03			Corbitts Millpond	--	--	Lee

06-85