



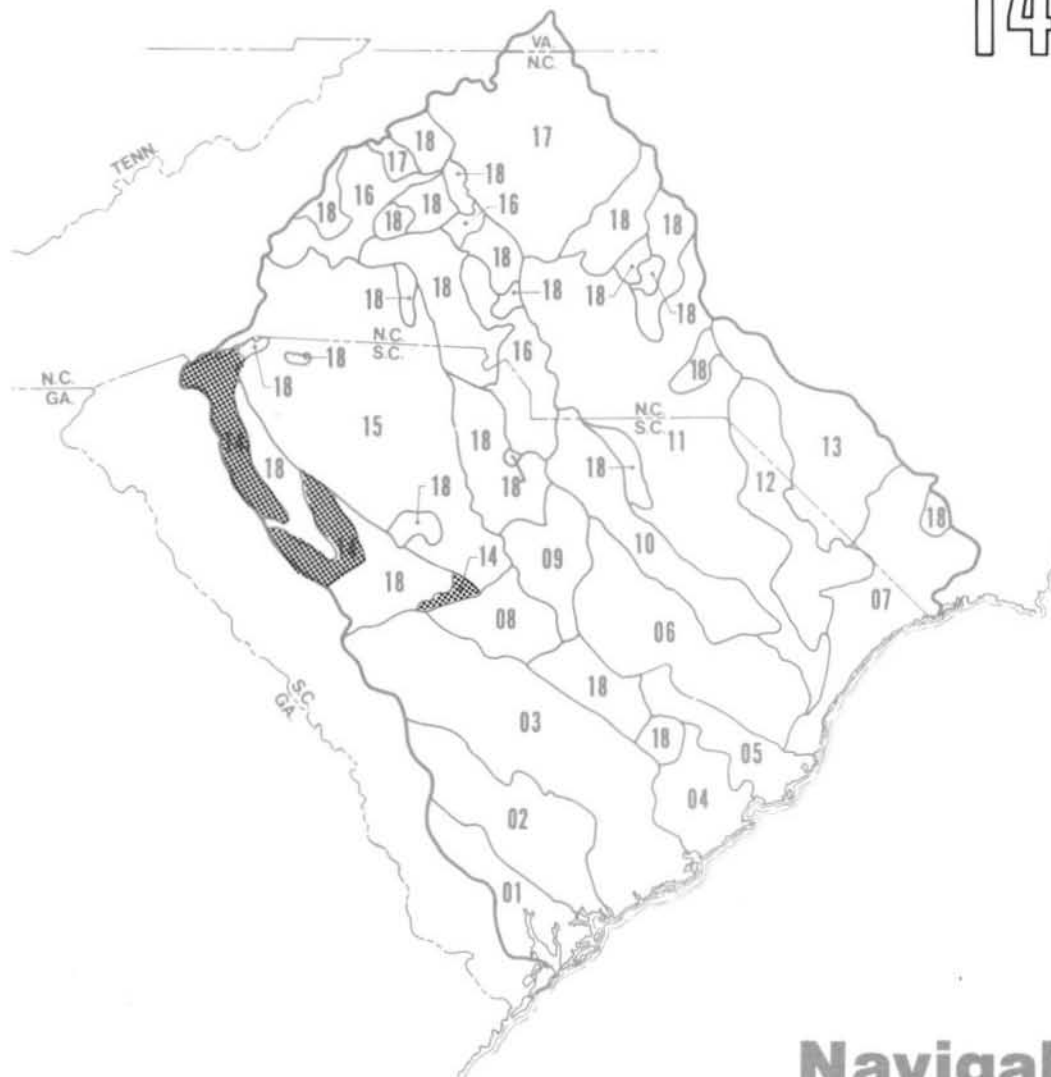
U.S. ARMY CORPS OF ENGINEERS
CHARLESTON DISTRICT
Charleston, South Carolina



SALUDA RIVER BASIN

Report No.

14



**Navigability
Study
1977**



STANLEY CONSULTANTS

CONTENTS

	<u>Page</u>
SECTION 1 - INTRODUCTION	14-1
Purpose	14-1
Scope	14-1
Related Reports	14-2
Acknowledgements and Data Sources	14-3
SECTION 2 - PHYSICAL CHARACTERISTICS	14-5
SECTION 3 - NAVIGATION IMPROVEMENT PROJECTS	14-8
Federal Navigation Projects	14-8
Other Navigation Projects	14-8
SECTION 4 - INTERSTATE COMMERCE	14-9
Past	14-9
Present	14-12
Future Potential	14-12
SECTION 5 - LEGAL AUTHORITY	14-13
General	14-13
Navigability Interpretations	14-13
General Federal Court Cases	14-14
Specific Federal Court Cases	14-16
South Carolina State Court Cases	14-16
Recent Federal Litigation	14-17
Federal Agency Jurisdiction	14-17
SECTION 6 - NAVIGATION OBSTRUCTIONS AND CLASSIFICATIONS	14-20
Navigation Classification Procedures	14-20
Navigation Classification Categories	14-24
Present Navigable Waters of the U. S.	14-24
Historically Navigable Waters	14-24
Recommended Navigable Waters of the U. S.	14-24
Recommended Practical Navigable Waters of the U. S.	14-25
Waters of the U. S.	14-25
SECTION 7 - CONCLUSIONS AND RECOMMENDATIONS	14-27

CONTENTS (continued)

	<u>Page</u>
BIBLIOGRAPHY	14-28
Cited References	14-28
Other Background Information	14-29
APPENDIX A - STREAM CATALOG	14-A1
APPENDIX B - SUMMARY OF 10 TO 1,000 ACRE LAKES	14-B1

TABLES

<u>Number</u>		<u>Page</u>
1	Physical Characteristics	14-6
2	Key Stream Gaging Stations	14-7

FIGURES

<u>Number</u>		<u>Follows Page</u>
1	Navigability Decision Diagram	14-21

PLATES

<u>Number</u>		<u>Follows Page</u>
14-1	Location Map	14-30
14-2	Significant Features	14-30
14-3	Significant Features	14-30
14-4	Significant Features	14-30
14-5	Significant Features	14-30

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	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

<u>Number</u>	<u>Title</u>
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 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

As shown on Plate 14-1, the Saluda River basin is located in the western portion of the state of South Carolina and makes up part of the Santee-Cooper drainage basin. The headwaters of the basin are located on the eastern slope of the Blue Ridge Mountains, just inside the South Carolina state line. The river flows approximately 180 miles and joins the Broad River to form the Congaree River near Columbia, South Carolina. The Saluda River is the largest river in the basin; there are no major tributaries. However, Lake Murray, Lake Greenwood, and Poinsett Reservoir (North Saluda Reservoir) are major lakes which provide power, water, and recreation opportunities to the surrounding area. Detailed information on these lakes is provided in Report 18. In addition, several smaller hydro-electric facilities form small pools along the river and provide power to communities in the central section of the basin. Plates 14-2 through 14-5 are detailed maps indicating the location of the significant features in the basin. Additional information on the Santee, Cooper, Broad, and Congaree Rivers is provided in Reports 05, 04, 15, and 08, respectively.

The Saluda River is primarily a mountainous-type river characterized by periodic rapids and high velocity flow in the upper reaches and generally uniform channel sections with short, well defined banks and flood plains in the lower reaches. However, much of the flow is regulated, particularly in the lower reaches, consequently changing channel depth, embankment heights, and vegetation levels on a daily basis and distorting to some degree the general characteristics of the river. Table 1 further presents selected key physical characteristics, such as approximate drainage area, length, and elevation change for the Saluda River. The methodology used in developing these characteristics is defined in the Summary Report. Table 2 presents information on the USGS gaging stations located along the Saluda River.

TABLE 1
PHYSICAL CHARACTERISTICS (1) (2) (3)*

Length to Headwaters ¹⁾	182 miles
Elevation Change to Headwaters	2,270 feet
Drainage Area of Basin	2,510 square miles
Mean Discharge at Mouth	2,910 cfs
Limit of Tidal Influence	None
Length of Present Navigable Waters of the U. S. ²⁾	River Mile (R.M.) 10.0 to R.M. 50.0

1) From confluence with Broad River to a remote point on the Saluda River having a mean annual flow of five cfs.

2) From Lake Murray Dam to the approximate end of Lake Murray.

* See Bibliography for these references.

TABLE 2

KEY STREAM GAGING STATIONS (1)(4)

<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>
Saluda	02162500 ³⁾	Near Greenville, S.C., Pickens Co., on State Road 124 Bridge and just downstream from Saluda Lake Dam (R.M. 132)	293	640	225	1,110
Saluda	02163500 ³⁾	Near Ware Shoals, S.C., Greenwood Co., just down- stream from Ware Shoals Dam (R.M. 83.7)	569	1,020	310	1,890
Saluda	02167000 ³⁾	Located at Chappels, S.C., Newberry Co., on State Highway 39 Bridge (R.M. 52.3)	1,350	1,960	610	3,500
Saluda	02169000 ³⁾	Near Columbia, S.C., Richland Co., upstream from Old Saluda Mill, and 1.6 miles upstream from confluence with Broad River (R.M. 167)	2,510	2,910	380	5,600

1) Exceeded or equaled 90 percent of the time.

2) Exceeded or equaled 10 percent of the time.

3) Flow partially or completely regulated.

SECTION 3 - NAVIGATION IMPROVEMENT PROJECTS

Federal Navigation Projects

No Federal navigation projects have been authorized for the Saluda River basin. (5) (6)

Other Navigation Projects

No modern-day navigation improvement projects have been identified in the basin. As discussed in Section 4, several legislative efforts were directed toward the Saluda River in the early 1800's by the state of South Carolina; however, evidence of any improvements has ceased to exist.

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 Saluda River.

SECTION 4 - INTERSTATE COMMERCE

Past

In the early 18th Century, the Carolina traders from Charleston regularly traveled to and from the Cherokee Indian nation over a route which came to be called "the Cherokee Trail." (7) This path ran from Charleston to the northwest, skirting a stretch of the Saluda River. Over the next four decades, depending on the Indian situation, various groups of white (and later black) settlers penetrated to the Saluda basin, a region the Cherokees had previously claimed as a hunting ground. Most of the settlers were Scotch-Irishmen and Englishmen who had come south from Pennsylvania and Virginia, but there were also groups of Swiss, Germans, and Irishmen. (8)

The extent to which these settlers employed the Saluda, or its various tributary streams, for purposes of commercial navigation is not clear from the evidence available. While rafts and bateaux of various sorts were almost certainly utilized to some degree, the rivers of the region were for the most part not navigable and "the Saluda and Broad Rivers ... were only partially so." (9) In 1784, the General Assembly of South Carolina passed an act forbidding the building of dams across the Saluda, or doing anything else which might obstruct the passage of fish. But efforts specifically directed toward navigational improvement came in 1801 and in 1805 when the legislature passed "An Act to open the navigation of certain rivers [i.e., the Broad and the Saluda] therein mentioned, and for cutting a canal across North Island." (10) Yet this early interest in the Saluda navigation was small compared to that which was obtained during the prosperous days of South Carolina's internal improvement schemes.

In 1818, the state's Civil and Military Engineer, John Wilson, recommended an extensive program of improvements. He was supported by Joel R. Poinsett to the extent that the legislature was quick to appropriate funds on the understanding that "immediate attention was

to be given the Broad and Saluda." (11) Wilson's initial survey of the Saluda had indicated numerous obstructions, including a rocky shoal at the river mouth, various dams and falls, and "large masses of rocks ... dividing the water into numerous channels, through which boats cannot be navigated." The parts which were navigable were a short stretch above the rapids at "Casemans" and thence to Dreher's Mill, above which "The river is good 2-1/2 miles ... to Hyler's shoals." Additional navigable stretches occurred above that point, but were separated from each other by obstacles similar to those already described. (12)

In 1819, improvements were started on the Saluda's canal and dam, but these were "harder than originally thought." (13) The Saluda Canal "at the river mouth, and the canal at Dreher's Shoals ... were actually completed in 1821, but could not be fully utilized until the completion of the dam in the Broad River which would enable boats from the Saluda to enter the Columbia Canal." (14) Additional sluicing operations on the Saluda followed, and in 1826 it was reported to the legislature that "boating commenced on that river last winter [in 1825]." The official report rather glowingly portrayed the Saluda's navigation as extending "about 143 miles; and that above the mouth of the Little Saluda, which is less than 35 miles above Columbia, there are few points which even render the ascending navigation difficult." (15) This level of water was sufficient, apparently, to support the passage of a "boat with forty bales of cotton." (16) The waterbody which Wilson had referred to as the Little Saluda, "falls into this river [the Saluda] about 45 miles from its confluence with the Broad River." The Little Saluda River was navigable "only in times of freshets," although it might be rendered so "at all seasons for about 18 miles from its mouth by dams and locks." (17)

In 1824, South Carolina spent \$3,042 on the "Saluda Canal and sluices," and followed with an additional \$1,200 over the next two years. (18) By 1826, Robert Mills could report that "The Saluda River is navigable 120 miles above Columbia." Its three canals -- the Saluda Canal (over two miles long, with five locks), Dreher's Canal (one mile

long, with four locks), and Lorick's Canal -- made the river "navigable the whole extent ... for boats carrying fifty bales of cotton." (19) The Little Saluda, on the other hand, was "non-navigable," although it might be made navigable by removing the logs and shoals which obstructed it. Neither was the Reedy River (a tributary of the Saluda which joined it about forty-five miles west of Columbia) a navigable stream. (20) But the Saluda appears to have been navigated quite extensively in the early 19th Century, and cotton was, of course, the highly lucrative crop which formed the major share of the commodities exported via river navigation.

In the ensuing decades, the appearance of the railroads "undoubtedly hastened the demise of the canals, although these on the Saluda ... were abandoned fifteen or twenty years before railroads penetrated the areas they were built to serve." (21) By 1883, the State Board of Agriculture could pronounce the Saluda River "navigable for 84 miles above Columbia," at least for pole boats carrying 50 bales of cotton. (22)

The U. S. Army Corps of Engineers, in 1889, became involved in the river. Captain F. V. Abbott noted that the Broad and Saluda united just above Columbia to form the Congaree, and that the Saluda contained "three canals to render the river navigable." "Their remains," he observed, "still exist." Abbot also reported that on the stretch of the river between Bauknight's Mills and Great Shoals, "about 95 miles above the mouth, there seems to have been some navigation, although there are frequent shoals." He added that "Nothing but pole boats were ever used on the river." (23)

Nineteen years later, in 1908, when the Corps again examined the river, it was found to be "impracticable ... to navigate this stretch of waterway even in light bateaux [sic]. Given these conditions there was "no commerce at the present time." (24) Nor had this situation altered nearly fifty years later, when Waterborne Commerce of the United States, 1953 contained no reference concerning commercial navigation on the Saluda. (25)

A series of dams has been constructed, beginning in 1882, on the Saluda for the purpose of generating hydroelectric power. In that year, "a group of Charlestonians ... built a waterpowered cotton mill" near Pelzer, S. C. In 1895, this project was adapted to furnish electric power. (26) Thereafter, twenty-five-mile long Lake Greenwood was formed by damming the Saluda at Buzzards' Roost. The Saluda Dam, constructed at Dreher Shoals, forms Lake Murray and furnishes hydroelectric power.

Present

The Saluda River is not currently being used for purposes of interstate waterborne commerce, nor apparently are any of that river's various tributary streams being so used. (27)

In 1965, the Saluda was described as having a "Navigable length in miles" of zero miles, and was designated a "Non-navigable" stream. (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 Saluda River and its tributaries for interstate commerce in future years is difficult to predict.

The river has the potential to be utilized for shipment of goods into other states since it is an element of the Santee-Cooper River system, Charleston Harbor and the Atlantic Ocean. However, future potential interstate commerce is not anticipated to be significant in the basin due in part to heavy dependence by industrial and commercial establishments 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.

A review of legal documentation indicates one Federal court decision which applies to the Saluda River basin. (3) This case is briefly summarized below.

Thompson v. South Carolina Electric and Gas Co.* - This case, concerning the death by drowning of plaintiff's intestate, held that the waters of Lake Murray were "navigable waters of the U. S." and the electric company's use and control thereof extended only to uses provided by its licenses to use impounded waters at its power plant below the dam for production of electric energy.

South Carolina State Court Cases

The current 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

* 112 F. Supp. 313 (1954).

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 their 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 will not affect the rights of the public to the use of navigable waters.

A review of legal documentation indicates no South Carolina court decisions which apply to the Saluda River basin.

Recent Federal Litigation

A review of recent Federal regulatory litigation concerning the Charleston District reveals no court actions pertaining to the Saluda River basin.

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 (PL 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.

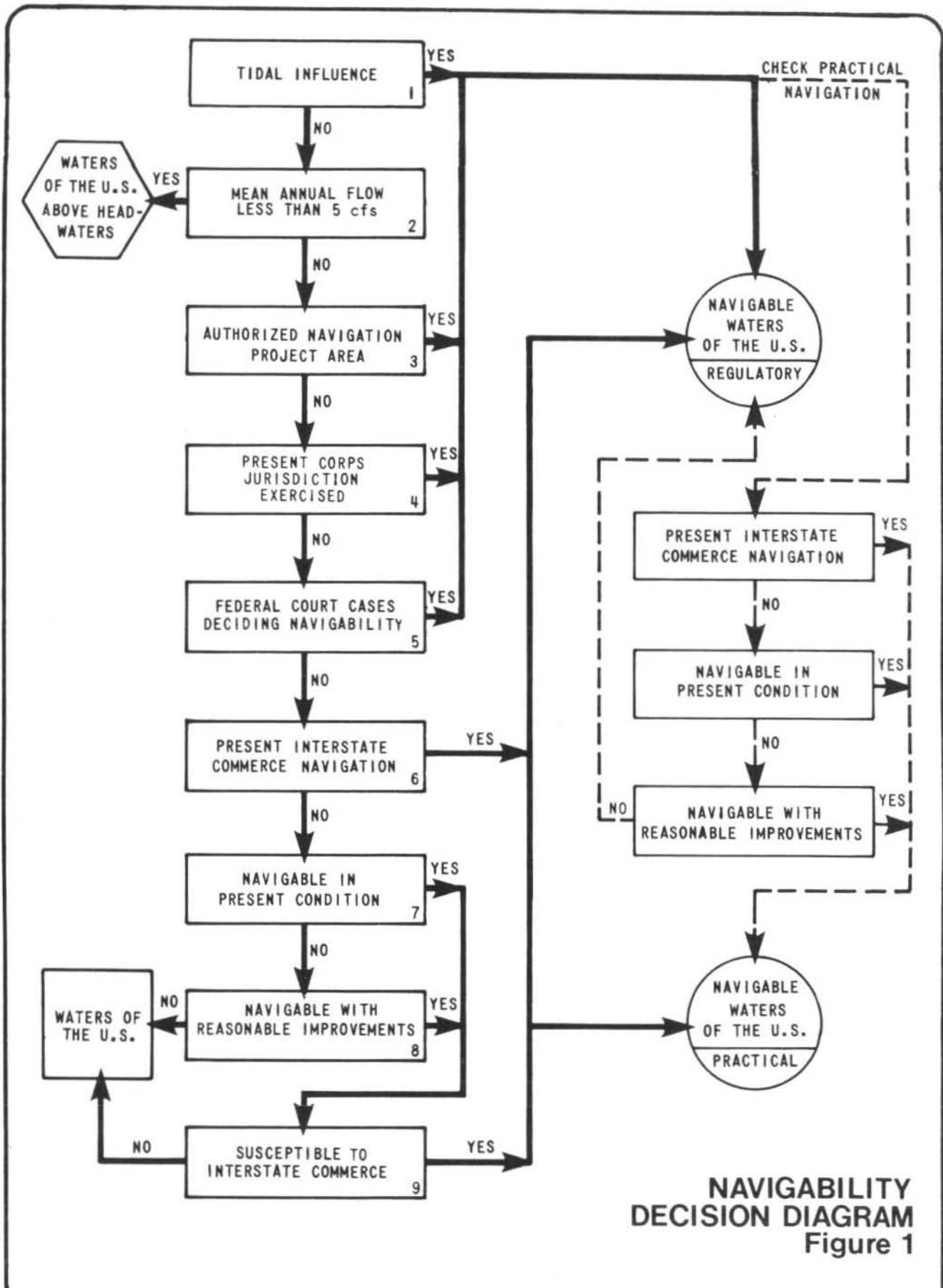
SECTION 6 - NAVIGATION OBSTRUCTIONS AND CLASSIFICATIONS

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). (28) 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.

Lake Murray (from R.M. 10 to approximately R.M. 50) is the only portion of the Saluda River basin presently classified as "navigable waters of the U. S." The Federal court case summarized in Section 5 is the basis for this classification. Plate 14-3 presents the map location. Information on Lake Murray including plan drawings, is included in Report 18. (3) (5) (29)

Historically Navigable Waters

As discussed in Section 4, the Saluda River was historically reported as navigable as far as R.M. 143 with the use of canals and dams (see Plate 14-4 for map location).

Recommended Navigable Waters of the U. S.

"Navigable waters of the U. S.", once classified in the past, cannot be declassified. Thus, the recommended limit of "navigable waters of the U. S." (for regulatory purposes) on the Saluda River must be from Lake Murray dam (R.M. 10.0) to the end of Lake Murray (approximately R.M. 50) as presented in the Federal court decision (see Section 5). In addition, field observations revealed the river channel,

between the end of Lake Murray (R.M. 50) and Lake Greenwood dam (R.M. 64), met the criteria of mean water depth of at least 7 feet and approximate channel width of at least 50 feet. In addition the average slope is less than the 2 to 3 feet per mile considered as critical for navigation. Therefore, the total length of river recommended to be classified as "navigable waters of the U. S." is from R.M. 10 to R.M. 64. This limit was not extended into Lake Greenwood due to the lack of a navigable entrance. Plate 14-3 presents the map location.

Recommended Practical Navigable Waters of the U. S.

The Saluda River is not recommended to be classified as "practical navigable waters of the U. S." This recommendation is based on review of channel slopes which indicated slopes in excess of 3 feet per mile between the mouth of the river and Lake Murray Dam, and also the lack of a navigable entrance into Lake Murray. Upstream of Lake Murray Dam, there is a 54 mile segment of river (including Lake Murray) that is dimensionally capable of supporting commercial navigation, however, this segment is isolated from other navigable waterways by a steep slope and the lack of a navigable entrance at the dam. In addition, the present and potential use of the river for interstate commerce does not appear sufficient to justify the extensive amount of work required to open this reach to navigation. Therefore, the entire river is not recommended as being practically navigable.

There are no significant tributaries to the Saluda River capable of supporting navigation.

This conclusion on the navigation limit meets 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.

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 flow points located in the Saluda River basin. Each point is indicated by stream code, stream name, latitude and longitude, and a mileage reference.

Appendix B lists the lakes located in the Saluda River basin 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.

SECTION 7 - CONCLUSIONS AND RECOMMENDATIONS

Five classifications of navigation on streams in the Saluda River basin 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 only portion of the Saluda River basin presently classified as "navigable waters of the U. S." is Lake Murray (R.M. 10 to approximately R.M. 50).
2. Historically the Saluda River was navigable to R.M. 143.
3. Due to major non-navigable obstructions and steep slopes, the Saluda River is not considered practically navigable.
4. It is recommended that the Saluda River be classified "navigable waters of the U. S." from Lake Murray dam (R.M. 10) to Lake Greenwood dam (R.M. 64).
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.

BIBLIOGRAPHY

Cited References

1. Water Resources Data for South Carolina 1975, Water Data Report 75-1, U. S. Geological Survey, 1976.
2. Summary Report, Navigability Study, U. S. Army Corps of Engineers, Charleston District, developed by Stanley Consultants, 1977.
3. Legal Documentation for Navigability Study, U. S. Army Corps of Engineers, Charleston District, Charleston, South Carolina, 1977.
4. South Carolina Streamflow Characteristics Low-Flow Frequency and Flow Duration, U. S. Geological Survey, Raleigh, North Carolina, 1967.
5. Project Maps Charleston District 1975, U. S. Army Corps of Engineers, Office of the District Engineer, Charleston, South Carolina, 1975.
6. Extract Report of the Charleston, S. C., District, Annual Report of the Chief of Engineers on Civil Works Activities, U. S. Department of the Army, USGPO, Washington, D. C., 1974, pp. 7-16.
7. Corkran, David H., The Carolina Indian Frontier, USC Press, Columbia, 1970, pp. 7-34 and map facing page 38.
8. Pope, Thomas H., The History of Newberry County, South Carolina, USC Press, Columbia, 1973, Vol. I, pp. 4-5.
9. Ibid., p. 123.
10. McCord, David J., The Statutes at Large of South Carolina, A. S. Johnston, Columbia, 1840, Vol. VII, pp. 531, 577.
11. Hollis, Daniel W., "Costly Delusion: Inland Navigation in the South Carolina Piedmont," Proceedures of the S. C. Historical Association, 1968, p. 31.
12. Kohn, David and Glenn, Bess, eds., Internal Improvement in South Carolina 1817-1828, "Report of the Civil and Military Engineer of South Carolina (1818)", USGPO, Washington, 1938, p. A12.
13. Ibid., p. 11.
14. Hollis, "Costly Delusion," p. 36.
15. Kohn, Internal Improvement, pp. 468-469.

16. Hollis, "Costly Delusion," p. 36.
17. Kohn, Internal Improvement, p. A13.
18. Phillips, Ulrich B., A History of Transportation in the Eastern Cotton Belt to 1860, Columbia University Press, New York, 1908, p. 91 (table and notes).
19. Mills, Robert, The Statistics of South Carolina, 1826, Reprint Co., Spartanburg, reprint ed. 1972, pp. 158, 524.
20. Ibid., pp. 524, 605.
21. Hollis, "Costly Delusion," p. 43.
22. S. C. State Board of Agriculture, South Carolina Resources and Population, 1883, Reprint Co., Spartanburg, reprint ed. 1971, p. 130.
23. U. S. War Department, Annual Report of the Chief of Engineers, U. S. Army, 1889, Pt. II, Appendix N, pp. 1203-1207.
24. U. S. Congress, House, Saluda River, South Carolina, H. Doc. No. 651, 60th Cong., 1st Sess., 1908, p. 4.
25. U. S. Department of the Army, Waterborne Commerce of the United States, 1953, Pt. I, Waterways and Harbors: Atlantic Coast, p. 324.
26. Savage, Henry, River of the Carolinas: The Santee, UNC Press, Chapel Hill, 1968 ed., pp. 354-355.
27. U. S. Department of the Army, Waterborne Commerce of the United States, 1975, Pt. I, Waterways and Harbors: Atlantic Coast, p. 124.
28. Incomplete List of Navigable Waters, RCS ENG CW-ON (OT), U. S. Army Corps of Engineers, Charleston, South Carolina, 1965.

Other Background Information

Bennett, H. H., Soils and Agriculture of the Southern States, np., New York, 1921.

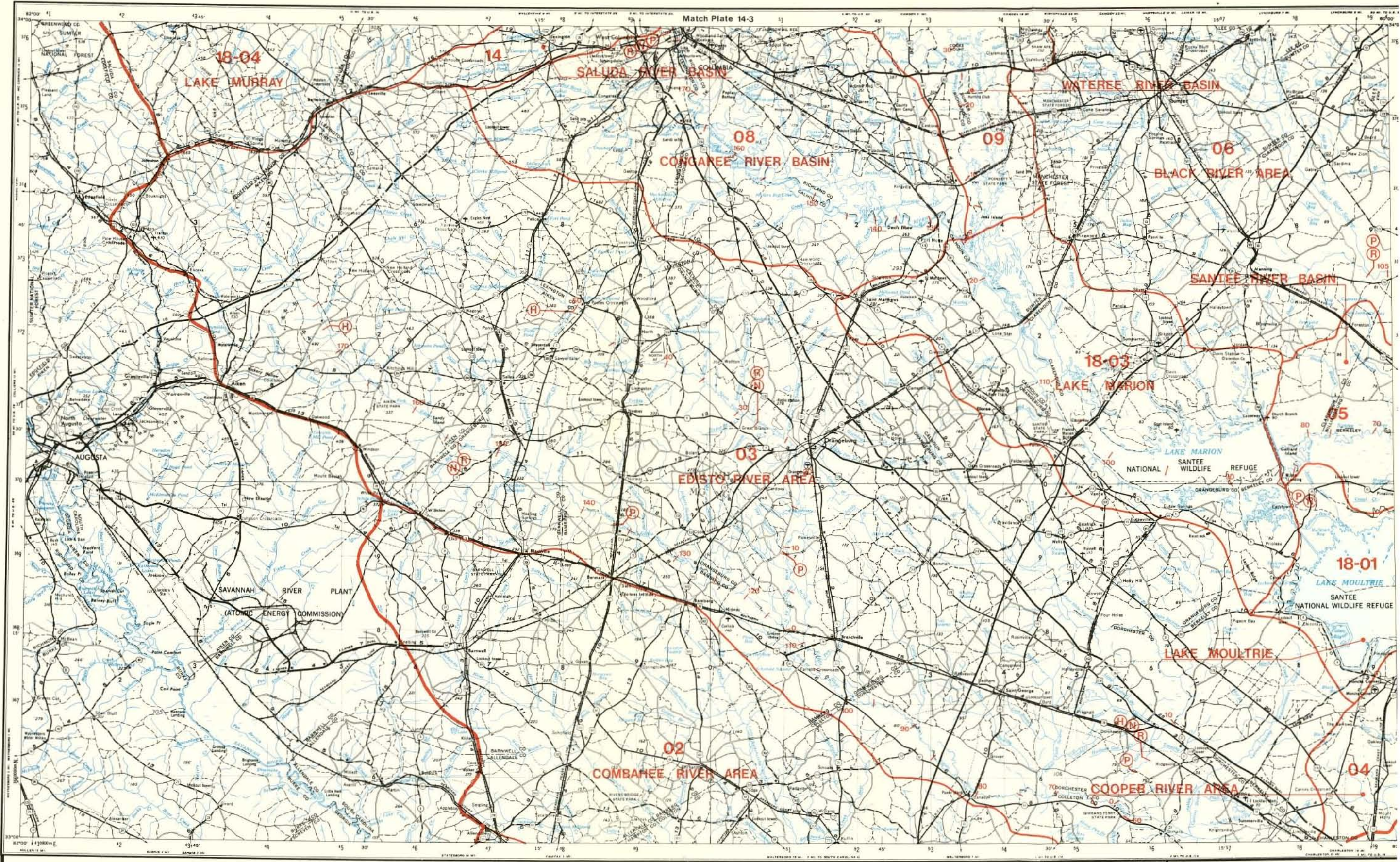
Kohn, August, The Cotton Mills of South Carolina, Reprint Co., Spartanburg, reprint ed., 1975.

Kohn, August, The Waterpowers of South Carolina, Walker, Evans and Cogswell, Charleston, 1911.

Meriwether, Robert L., The Expansion of South Carolina 1729-1765, Southern Publishers, Kingsport, 1940.

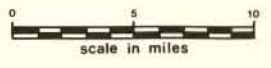
Summer, George L., Newberry County, South Carolina, np., Newberry,
1950.

S. C. Department of Agriculture, The Developed and Undeveloped Water
Powers of South Carolina, Handbook of S. C., Columbia, 1907.

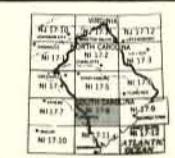


Match Plate 14-3

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



- 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)
 - 30 RIVER MILE



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

SIGNIFICANT FEATURES
SALUDA RIVER BASIN
 Report No. 01, 02, 03, 04, 05, 06, 08, 09, 14, 18
NAVIGABILITY STUDY
 Plate 14-2

POPULATED PLACES:
 Over 100,000
 50,000 to 100,000
 25,000 to 50,000
 10,000 to 25,000
 5,000 to 10,000
 Under 5,000

NEW ORLEANS
CHARLOTTE
CHARLESTON
Georgetown
Myrtle Beach

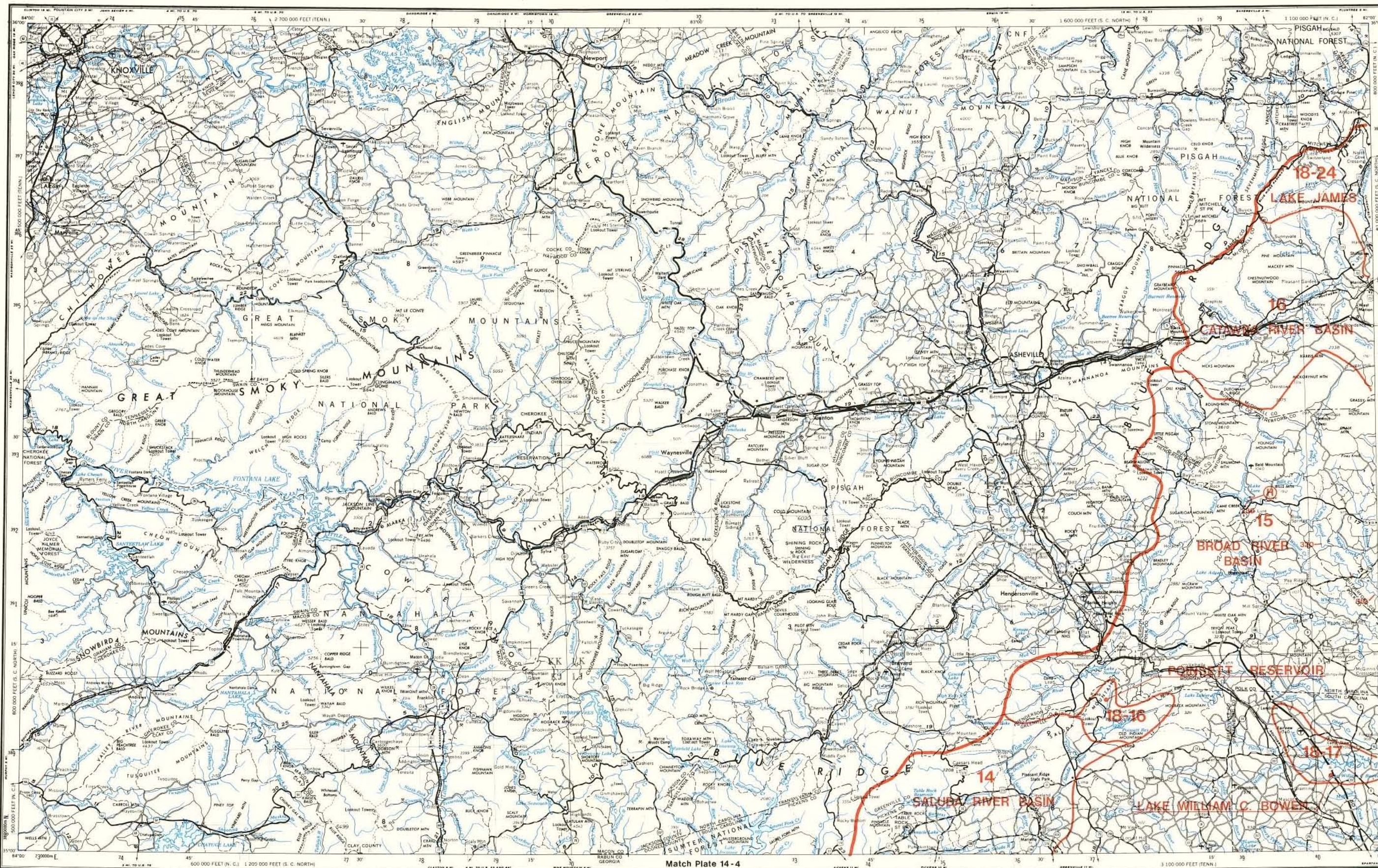
ROADS:
 Primary, all weather, hard surface
 Secondary, all weather, hard surface
 Light duty, all weather, improved surface
 Fair or poor weather, unimproved surface
 Interchange
 State highway, U.S. State
 Power line
 Landmark: School, Church, Other, 2, 4, 6
 Landing area
 Cool station in fall
 Marsh or swamp
 Irrigation or dry stream

RAILROADS:
 Standard gauge
 Metric gauge
 Narrow gauge
 Electric
 Steam
 Diesel
 Trolley

WATER:
 River
 Lake
 Reservoir
 Pond
 Stream
 Bayou
 Canal
 Tidal water

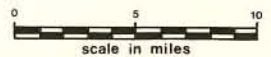
TOPOGRAPHY:
 Contour interval, 20 feet
 Spot elevation
 Bench mark
 Elevation in feet
 Elevation in meters

1977



POPULATED TRACES		ROADS	
Over 500,000	Primary, all weather, hard surface	1 1/2" - 2" wide	Primary, all weather, hard surface
250,000 - 500,000	Secondary, all weather, hard surface	2" - 3" wide	Secondary, all weather, hard surface
100,000 - 250,000	Light duty, all weather, improved surface	3" - 4" wide	Light duty, all weather, improved surface
50,000 - 100,000	Fair or no weather, unimproved surface	4" - 6" wide	Fair or no weather, unimproved surface
Under 50,000	Unimproved	6" - 8" wide	Unimproved
		8" - 10" wide	
		10" - 12" wide	
		12" - 14" wide	
		14" - 16" wide	
		16" - 18" wide	
		18" - 20" wide	
		20" - 22" wide	
		22" - 24" wide	
		24" - 26" wide	
		26" - 28" wide	
		28" - 30" wide	
		30" - 32" wide	
		32" - 34" wide	
		34" - 36" wide	
		36" - 38" wide	
		38" - 40" wide	
		40" - 42" wide	
		42" - 44" wide	
		44" - 46" wide	
		46" - 48" wide	
		48" - 50" wide	
		50" - 52" wide	
		52" - 54" wide	
		54" - 56" wide	
		56" - 58" wide	
		58" - 60" wide	
		60" - 62" wide	
		62" - 64" wide	
		64" - 66" wide	
		66" - 68" wide	
		68" - 70" wide	
		70" - 72" wide	
		72" - 74" wide	
		74" - 76" wide	
		76" - 78" wide	
		78" - 80" wide	
		80" - 82" wide	
		82" - 84" wide	
		84" - 86" wide	
		86" - 88" wide	
		88" - 90" wide	
		90" - 92" wide	
		92" - 94" wide	
		94" - 96" wide	
		96" - 98" wide	
		98" - 100" wide	
		100" - 102" wide	
		102" - 104" wide	
		104" - 106" wide	
		106" - 108" wide	
		108" - 110" wide	
		110" - 112" wide	
		112" - 114" wide	
		114" - 116" wide	
		116" - 118" wide	
		118" - 120" wide	
		120" - 122" wide	
		122" - 124" wide	
		124" - 126" wide	
		126" - 128" wide	
		128" - 130" wide	
		130" - 132" wide	
		132" - 134" wide	
		134" - 136" wide	
		136" - 138" wide	
		138" - 140" wide	
		140" - 142" wide	
		142" - 144" wide	
		144" - 146" wide	
		146" - 148" wide	
		148" - 150" wide	
		150" - 152" wide	
		152" - 154" wide	
		154" - 156" wide	
		156" - 158" wide	
		158" - 160" wide	
		160" - 162" wide	
		162" - 164" wide	
		164" - 166" wide	
		166" - 168" wide	
		168" - 170" wide	
		170" - 172" wide	
		172" - 174" wide	
		174" - 176" wide	
		176" - 178" wide	
		178" - 180" wide	
		180" - 182" wide	
		182" - 184" wide	
		184" - 186" wide	
		186" - 188" wide	
		188" - 190" wide	
		190" - 192" wide	
		192" - 194" wide	
		194" - 196" wide	
		196" - 198" wide	
		198" - 200" wide	
		200" - 202" wide	
		202" - 204" wide	
		204" - 206" wide	
		206" - 208" wide	
		208" - 210" wide	
		210" - 212" wide	
		212" - 214" wide	
		214" - 216" wide	
		216" - 218" wide	
		218" - 220" wide	
		220" - 222" wide	
		222" - 224" wide	
		224" - 226" wide	
		226" - 228" wide	
		228" - 230" wide	
		230" - 232" wide	
		232" - 234" wide	
		234" - 236" wide	
		236" - 238" wide	
		238" - 240" wide	
		240" - 242" wide	
		242" - 244" wide	
		244" - 246" wide	
		246" - 248" wide	
		248" - 250" wide	
		250" - 252" wide	
		252" - 254" wide	
		254" - 256" wide	
		256" - 258" wide	
		258" - 260" wide	
		260" - 262" wide	
		262" - 264" wide	
		264" - 266" wide	
		266" - 268" wide	
		268" - 270" wide	
		270" - 272" wide	
		272" - 274" wide	
		274" - 276" wide	
		276" - 278" wide	
		278" - 280" wide	
		280" - 282" wide	
		282" - 284" wide	
		284" - 286" wide	
		286" - 288" wide	
		288" - 290" wide	
		290" - 292" wide	
		292" - 294" wide	
		294" - 296" wide	
		296" - 298" wide	
		298" - 300" wide	
		300" - 302" wide	
		302" - 304" wide	
		304" - 306" wide	
		306" - 308" wide	
		308" - 310" wide	
		310" - 312" wide	
		312" - 314" wide	
		314" - 316" wide	
		316" - 318" wide	
		318" - 320" wide	
		320" - 322" wide	
		322" - 324" wide	
		324" - 326" wide	
		326" - 328" wide	
		328" - 330" wide	
		330" - 332" wide	
		332" - 334" wide	
		334" - 336" wide	
		336" - 338" wide	
		338" - 340" wide	
		340" - 342" wide	
		342" - 344" wide	
		344" - 346" wide	
		346" - 348" wide	
		348" - 350" wide	
		350" - 352" wide	
		352" - 354" wide	
		354" - 356" wide	
		356" - 358" wide	
		358" - 360" wide	
		360" - 362" wide	
		362" - 364" wide	
		364" - 366" wide	
		366" - 368" wide	
		368" - 370" wide	
		370" - 372" wide	
		372" - 374" wide	
		374" - 376" wide	
		376" - 378" wide	
		378" - 380" wide	
		380" - 382" wide	
		382" - 384" wide	
		384" - 386" wide	
		386" - 388" wide	
		388" - 390" wide	
		390" - 392" wide	
		392" - 394" wide	
		394" - 396" wide	
		396" - 398" wide	
		398" - 400" wide	
		400" - 402" wide	
		402" - 404" wide	
		404" - 406" wide	
		406" - 408" wide	
		408" - 410" wide	
		410" - 412" wide	
		412" - 414" wide	
		414" - 416" wide	
		416" - 418" wide	
		418" - 420" wide	
		420" - 422" wide	
		422" - 424" wide	
		424" - 426" wide	
		426" - 428" wide	
		428" - 430" wide	
		430" - 432" wide	
		432" - 434" wide	
		434" - 436" wide	
		436" - 438" wide	
		438" - 440" wide	
		440" - 442" wide	
		442" - 444" wide	
		444" - 446" wide	
		446" - 448" wide	
		448" - 450" wide	
		450" - 452" wide	
		452" - 454" wide	
		454" - 456" wide	
		456" - 458" wide	
		458" - 460" wide	
		460" - 462" wide	
		462" - 464" wide	
		464" - 466" wide	
		466" - 468" wide	
		468" - 470" wide	
		470" - 472" wide	
		472" - 474" wide	
		474" - 476" wide	
		476" - 478" wide	
		478" - 480" wide	
		480" - 482" wide	
		482" - 484" wide	
		484" - 486" wide	
		486" - 488" wide	
		488" - 490" wide	
		490" - 492" wide	
		492" - 494" wide	
		494" - 496" wide	
		496" - 498" wide	
		498" - 500" wide	

USGS BASE MAP
KNOXVILLE, TENN., N.C., S.C.
1957 Revised 1972
NI 17-1

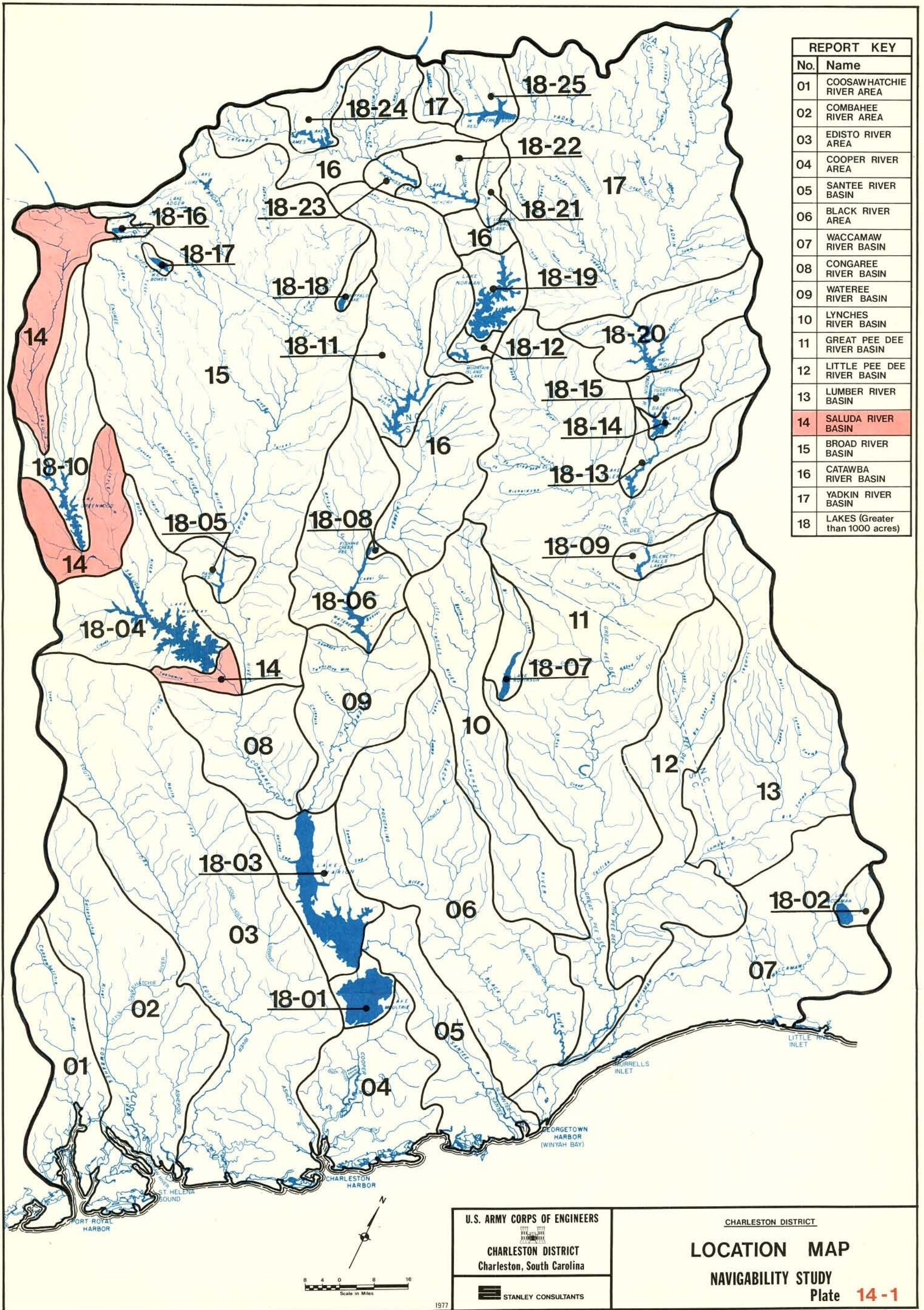


- LEGEND:
- (N) PRESENT LIMIT OF NAVIGABLE WATERS OF THE U.S.
 - (H) HISTORIC LIMIT OF NAVIGATION
 - (P) PRACTICAL LIMIT OF NAVIGATION (RECOMMENDED)
 - (R) LIMIT OF NAVIGABLE WATERS OF THE U.S. (RECOMMENDED)
 - 20 RIVER MILE



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

SIGNIFICANT FEATURES
SALUDA RIVER BASIN
Report No. 14, 15, 16, 18
NAVIGABILITY STUDY
Plate 14-5



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	WACCAWAM 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 14-1

APPENDIX A
STREAM CATALOG

This appendix presents a coded listing of all streams located in the Saluda River basin having a mean annual flow greater than or equal to five cfs. This summary does not include secondary streams in the drainage areas for Lake Murray (18-04), Lake Greenwood (18-10), or Poinsett Reservoir (18-16); these stream codes are presented in Report 18.

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		
14	01						Saluda River ##						
		01					Kinley Creek	34 03 15	81 09 05	1.8			Saluda River
		02					Fourteenmile Creek	33 59 45	81 15 00		1.0		Long Branch
			01				Twelvemile Creek	33 56 00	81 22 35	2.9			Long Creek
				01			Long Creek	33 57 20	81 20 40				Confluence-Hamburg Branch
		03					Rawls Creek	34 04 45	81 12 15	3.0			Koon Branch
		04					Rocky Creek #	34 00 20	81 20 20	1.7			Lake Murray
		05					Little Hollow Creek #	34 00 35	81 24 05	1.5			Lake Murray
		06					Horse Creek #	33 58 10	81 26 30	3.8			U.S. 378 Highway Bridge
		07					Hollow Creek #	33 58 10	81 30 00	1.1			Caney Creek
		08					Whetstone Creek #	34 02 05	81 28 50	0.2			Lake Murray
		09					Little Saluda River # (Lake Murray)						
		10					Beaverdam Creek #	34 14 25	81 44 45	3.3			Welch Creek
		11					Bush River #	34 25 50	81 52 35	0.7			S.C. 56 Highway Bridge

14-A2

Dual code in Report 18.

Dual code in Report 08.

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		
14	01	12					Big Creek #	34 08 25	81 33 10	1.8		Lake Murray	
		13					Buffalo Creek #	34 09 00	81 29 50	1.5		Lake Murray	
		14					Camping Creek #	34 11 50	81 29 05			Confluence-Susannah Branch	
		15					Bear Creek #	34 09 55	81 22 45			Confluence-Rocky Br	
		16					Tosity Creek	34 09 30	81 42 55	1.5		Saluda River	
		17					Little River	34 33 00	82 02 25	3.7		U.S. 276 Highway Bridge	
			01				Mudlick Creek						
				01			Pages Creek	34 13 35	81 52 00	2.0			Mudlick Creek
				02			Mills Creek	34 15 30	81 52 25	1.8			Mudlick Creek
				03			North Campbell Creek	34 19 35	81 57 40	1.5			S.C. 560 Highway Bridge
			02				Sandy Run Creek	34 17 05	81 47 25	2.2			Reeder Branch
			03				Garrison Creek	34 19 40	81 49 30	2.0			Quaker Creek
			04				Simmons Creek	34 23 25	81 53 00	4.9			Little River
		05				Beaverdam Creek	34 23 50	82 00 10	3.8			S.C. 72 Highway Bridge	

Dual code in Report 18.

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	
14	01	17	06				North Creek	34 27 00	81 56 00	2.9		Seaboard Coast Line Railroad Bridge
			07				Burnt Mill Creek	34 28 35	82 01 25		0.9	Scout Branch
			08				Reedy Fork	34 30 15	82 01 50	1.2		Little River
		18					Terrapin Creek	34 09 10	81 48 30	2.3		Saluda River
		19					Sharps Branch	34 11 35	81 50 05	1.2		Saluda River
		20					Halfway Swamp	34 04 35	81 55 45	4.4		Thompsons Creek
			01				Thompsons Creek	34 06 50	81 53 35	0.2		Halfway Swamp
		21					Ninety Six Creek	34 08 45	82 04 25	1.9		Ropers Creek
			01				Wilson Creek	34 12 00	82 06 55	3.0		Coronaca Creek
				01			Big Rock Creek	34 11 00	82 05 10	3.8		Wilson Creek
				02			Coronaca Creek	34 16 05	82 12 30	2.1		S.C. 254 Highway Bridge
					01		Rocky Creek	34 13 10	82 10 00	1.9		Turner Branch
			02				South Ninety Six Creek	34 05 10	81 59 30			Confluence-Sixmile Cr
			03				Roper Creek	34 07 35	82 04 00	1.6		Ninety Six Creek
		22					Mulberry Creek #	34 19 25	82 14 35	0.9		Dudley Creek

14-A4

Dual code in Report 18.

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		
14	01	23					Turkey Creek #	34 25 35	82 20 20	3.8		Goose Creek	
		24					Reedy River #	34 57 35	82 27 35	5.1		Little Creek	
		25					Rabon Creek #						
		26					Long Lick Branch #	34 22 25	82 04 30	2.3		Lake Greenwood	
		27					Cane Creek #	34 22 40	82 02 15	6.8		S.C. 72 Highway Bridge	
		28					Unnamed Tributary #	34 17 05	82 00 45	0.6		Cane Creek	
		29					Broad Mouth Creek	34 32 00	82 27 30	2.5		S.C. Secondary 267 Highway Bridge	
				01				Unnamed Tributary	34 30 45	82 27 10	1.0		Broad Mouth Creek
				30				Little Creek	34 29 20	82 20 40	0.2		U.S. 76 Highway Bridge
				31				Mountain Creek	34 34 15	82 22 55	6.5		U.S. 76 Highway Bridge
						01		Unnamed Tributary	34 32 30	82 20 40	0.6		Mountain Creek
						02		Unnamed Tributary	34 34 00	82 21 40	0.6		Mountain Creek
				32				Toney Creek	34 33 30	82 25 35	0.3		Saluda River

Dual code in Report 18.

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		
14	01	33					Big Creek	34 38 55	82 30 20	2.0		Camp Creek	
		34					Grove Creek						
			01					Little Grove Creek	34 45 10	82 24 25	0.6		Mill Creek
		35					Hurricane Creek	34 41 45	82 32 30			At S.C. 81 Highway Bridge	
		36					Big Brushy Creek						
			01					Little Brushy Creek	34 44 15	82 30 50	1.6		Big Brushy Creek
			02					Middle Branch	34 48 20	82 33 45	3.6		Hornbuckle Creek
			03					Brushy Creek	34 48 10	82 34 50	1.5		S.C. Secondary 133 Highway Bridge
		37						Georges Creek	34 50 45	82 35 50			Confluence-Mad Dog Branch
			01					Little Georges Creek	34 52 05	82 31 15	2.0		Georges Creek
			02					Hamilton Creek	34 50 40	82 32 10	1.1		Georges Creek
			03					Burdine Creek	34 52 10	82 35 05	0.1		S.C. 183 Highway Bridge
		38						Machine Creek	34 54 15	82 33 10	2.2		Saluda River

14-A6

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	
14	01	38	01				34 56 40	82 34 00	2.5		Machine Creek	
		39					34 56 50	82 29 30	2.6		Saluda River	
		40					34 56 20	82 36 40	1.1		S.C. 135 Highway Bridge	
		41					35 10 45	82 19 10	2.4		Poinsett Reservoir	
			01					35 01 58	82 27 30	0.5		North Saluda River
			02					35 05 00	82 26 50	1.2		North Saluda River
			03					35 08 25	82 27 30	0.6		Beaverdam Creek
				01				35 07 30	82 27 45	0.4		Terry Creek
			42					35 10 50	82 23 40	0.6		Posey Creek
			43					35 02 50	82 44 50	2.6		Laurel Creek
				01				34 58 00	82 36 15	3.4		S.C. 186 Highway Bridge
				02				34 59 15	82 33 00	0.2		S.C. 186 Highway Bridge
				03				35 07 20	82 36 40			Confluence-Coldspring Branch

14-A7

Dual code in Report 18.

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	
14	01	43	03	01			Mill Creek	35 04 05	82 30 50	0.2		U.S. 276 Highway Bridge
				02			Devils Fork Creek	35 06 45	82 30 50	2.5		Middle Saluda River
				03			Oil Camp Creek	35 06 15	82 35 00	2.3		Middle Saluda River
				04			Gap Creek	35 09 10	82 29 20	0.9		Cherry Branch
			04				Oolenoy River	34 59 35	82 45 35			Confluence-Willis Cr
				01			Weaver Creek	35 01 15	82 39 55	1.0		S.C. 11 Highway Bridge
					01		Burgess Creek	35 02 05	82 38 00			Confluence-Cisson Creek
				02			Carrick Creek	35 01 05	82 41 40	1.7		Oolenoy River
				03			Emory Creek	35 01 05	82 45 15	1.8		Oolenoy River
			05				West Fork	35 04 40	82 34 20			Confluence-Robinson Branch
				06			Matthews Creek	35 05 55	82 40 25			Confluence-Julian Cr
				07			Slicking Creek	35 04 30	82 42 15	0.7		Table Rock Reservoir
				08			Laurel Creek	35 03 55	82 43 40			Confluence-Sunfish Cr

14-A8

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 Saluda River basin.

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	FOURTH ORDER				
14	01					Saluda Terrace Gardens	10	60	Lexington
14	01	02	01			Corley Mill Pond	33	185	Lexington
14	01	02	01			Lexington Millpond	32	205	Lexington
14	01	02	01			Gibson Pond	24	115	Lexington
14	01	02	01			Lexington Wildlife (Barr Lake)	57	342	Lexington
14	01	02	01			Lake Sheally Ann	12	58	Lexington
14	01	02	01			Lessie T. Oswald	10	64	Lexington
14	01	02	01			Smith Pond	20	120	Lexington
14	01	02	01			L. L. Rikard, Jr.	12	87	Lexington
14	01	02	01			J. C. Hayes	16	96	Lexington
14	01	02	01			Frank Crout	24	144	Lexington
14	01	02	01			L. L. Rikard, Jr.	10	60	Lexington
14	01	03				Michael J. Mungo	10	54	Lexington
14	01	02				Boice Porth	11	44	Lexington
14	01					Ray O. Bickley #	15	106	Lexington
14	01					L. O. Porth #	18	151	Lexington

14-82

Dual code in Report 18.

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				
14	01	07				E. D. Senn #	10	72	Lexington
14	01	09	01			Ponderosa Golf Club #	12	50	Saluda
14	01	09	01			Crouch Brothers #	14	90	Saluda
14	01	09	01			Asbill Pond #	12	96	Saluda
14	01	09	01			Harold E. Frick #	16	100	Saluda
14	01	09	01			O. T. Price, Jr. #	12	60	Saluda
14	01	09	01			R. M. Watson & Sons #	12	60	Saluda
14	01	09	01			Elijah Rodgers #	12	48	Saluda
14	01	09	01			L. S. Burton #	10	50	Saluda
14	01	09				Town of Saluda #	40	232	Saluda
14	01	09				Persimmon Hill Golf Club #	13	78	Saluda
14	01	14				Caldwells Pond #	10	51	Newberry
14	01	11				C. T. Smith	16	76	Newberry
14	01	21				Startfort Pond	30	360	Greenwood
14	01	21	01			Greenwood Mills	18	36	Greenwood
14	01	21	01			A. M. Watkins	10	60	Greenwood

Dual code in Report 18.

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				
14	01	21	01			Abner Stockman Pond	10	80	Greenwood
14	01	21	01			City of Greenwood	56	224	Greenwood
14	01	21	01			Citizen Trust Co.	12	60	Greenwood
14	01	21	01			Unnamed Lake	18	--	Greenwood
14	01	21	01			Greenwood Country Club	16	90	Greenwood
14	01					Bill Heerd #	16	100	Greenwood
14	01					Brook & Jack Scurry #	15	107	Laurens
14	01	24				Boyds Mill Pond	182	2,184	Laurens
14	01	23				American Legion Lake (Honea Path Post)	12	48	Abbeville
14	01					Holiday's Bridge - Duke Power Co.	160	1,152	Anderson
14	01	29				Broadmouth Creek Watershed Structure #4	13	38	Anderson
14	01	29				Broadmouth Creek Watershed Structure #2	15	61	Anderson
14	01	29				Broadmouth Creek Watershed Structure #9	10	27	Anderson
14	01	29				Broadmouth Creek Watershed Structure #8	10	32	Anderson

14-84

Dual code in Report 18.

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				
14	01					Duke Power Company	15	150	Anderson
14	01	33				Big Creek Watershed Structure #1	93	858	Anderson
14	01	33				Big Creek Watershed Structure #2	36	296	Anderson
14	01	36	02			Brushy Creek Watershed Structure #16	12	64	Anderson
14	01	36	03			Brushy Creek Watershed Structure #11	24	115	Anderson
14	01	36	03			Brushy Creek Watershed Structure #17	14	58	Anderson
14	01	36	01			Brushy Creek Watershed Structure #18	26	136	Anderson
14	01					Mrs. Robert I. Woodson	30	240	Anderson
14	01	24	05			Huff Creek Watershed Structure #3 #	21	93	Greenville
14	01	24	05			Huff Creek Watershed Structure #5 #	37	232	Greenville
14	01	24	05			Trollingwood Lake (Snows Lake) #	32	480	Greenville
14	01	24	05			Huff Creek Watershed Structure #3 #	19	87	Greenville

14-85

Dual code in Report 18.

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				
14	01	24	05			Huff Creek Watershed Structure #1 #	22	127	Greenville
14	01	24	05			Huff Creek Watershed Structure #4 #	27	222	Greenville
14	01	24				Conestee Lake #	48	600	Greenville
14	01	24	10			Cone Mills #	14	112	Greenville
14	01	24				Furman University	30	300	Greenville
14	01					Saluda Lake (Duke Power Company)	500	4,000	Greenville
14	01					Tall Pine Lake	16	350	Greenville
14	01	43				Table Rock Cove (Reservoir) (Greenville Water Works)	500	29,154	Greenville
14	01	43	03			Lowell Tankersly (Tankersly Lake)	12	150	Greenville
14	01	43	03			Hide-A-Way Lake	16	320	Greenville
14	01	43	03			Friddle Lake	14	--	Greenville
14	01	37	03			Dr. B. F. Finley	20	200	Pickens
14	01	37	03			Dr. B. F. Finley	20	200	Pickens
14	01	37	03			Dr. B. F. Finley	10	100	Pickens

Dual code in Report 18.

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				
14	01	37	03			George Creek Watershed Structure #1A	47	1,473	Pickens
14	01	43	01			T. T. Hughes	10	50	Pickens
14	01	43	04			Unnamed Lake	10	60	Pickens
14	01	43	04			Table Rock State Park - Pinnacle Lake	25	250	Pickens

14-87