



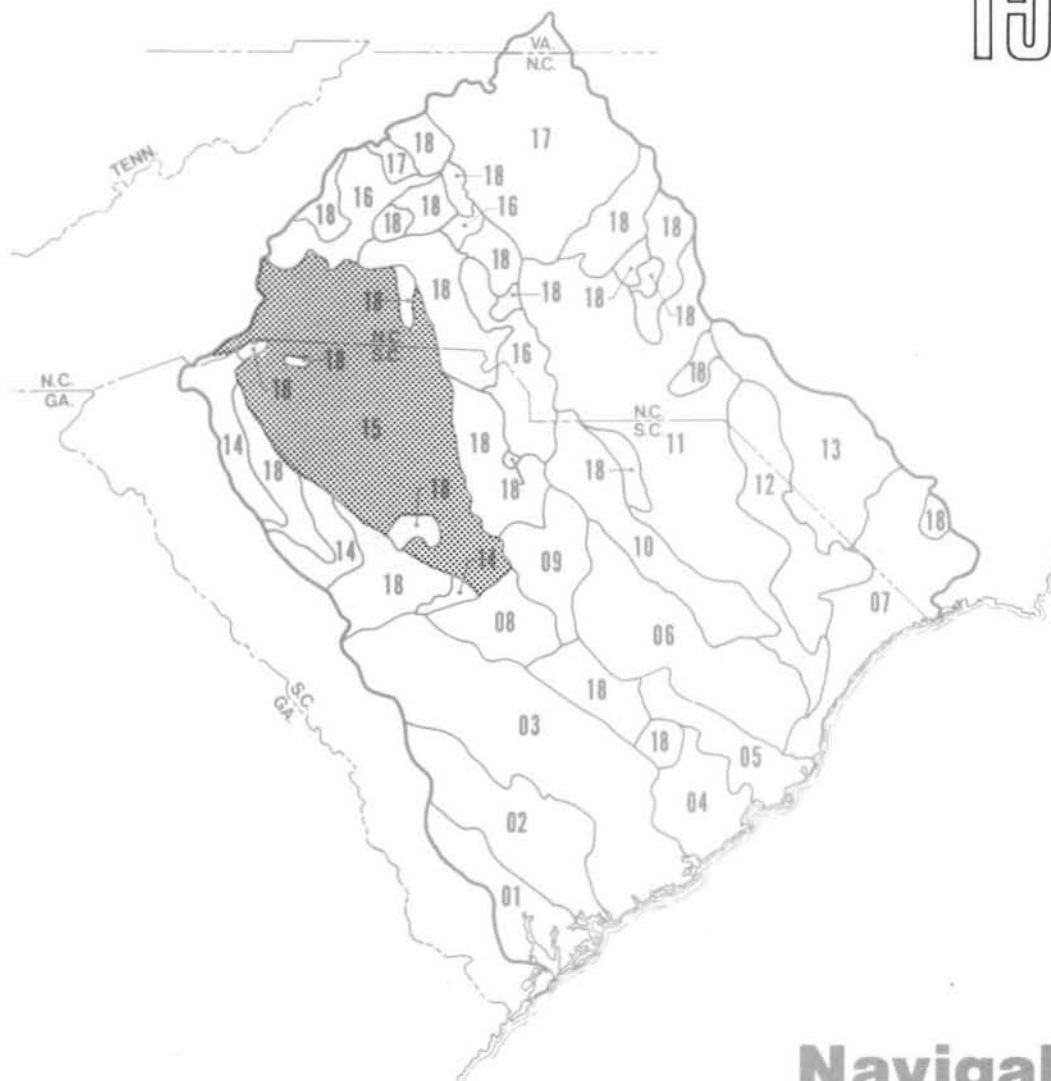
U.S. ARMY CORPS OF ENGINEERS
CHARLESTON DISTRICT
Charleston, South Carolina



BROAD RIVER BASIN

Report No.

15



**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	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 15-1, the Broad River basin is located in both the northwestern portion of South Carolina and the western portion of North Carolina and makes up part of the Santee-Cooper drainage basin. The headwaters of the basin are formed on the eastern slopes of the Blue Ridge Mountains in North Carolina near Chimney Rock and flow southeasterly approximately 350 miles where they join with the Saluda River to form the Congaree River. Additional information on the Santee, Cooper, Saluda, and Congaree Rivers is presented in Reports 05, 04, 14, and 08, respectively.

The Broad River is the largest river in the basin. The river flows the length of the basin, changing from a small mountain stream in the upper reaches to a wide, sandbar-spotted river in the lower reaches. Several dams, most of which are power generating facilities, as well as a diversion canal, hamper the natural flow and distort to a certain extent some of the general characteristics of the river. For the most part, the river has well defined channel banks with occasional back-water areas in some of the pools.

Most of the dams, the largest of which are Parr Shoals Reservoir, Buffalo Lake, and Lake William C. Bowen, are located in the central and upper reaches of the basin and are operated primarily by power companies, industrial mills, or municipalities. (1) The diversion canal was initially used to navigate around falls but now is used for power generation. Additional information on Parr Shoals Reservoir and other large lakes is presented in Report 18. Additional information on the diversion canal is presented in Sections 3, 4, and 5 of this report.

The Pacolet, Tyger, and Enoree Rivers are major tributaries to the Broad River and are located primarily in the central portion of the basin. Information on these rivers is presented in Sections 5 and 6.

Plates 15-2 through 15-5 indicate the significant features in the basin. Table 1 presents selected key physical characteristics such

as approximate drainage area, mean discharge, and elevation changes for the Broad River and its major tributaries. The methodology used in developing these characteristics is defined in the Summary Report.

Table 2 presents information on key USGS gaging stations located on the Broad River.

TABLE 1

PHYSICAL CHARACTERISTICS (2)(3)(4)(5)*

<u>Stream & Code</u> ¹⁾	<u>Length-Mouth to Headwaters</u> ²⁾ (mi)	<u>Elevation Change</u> (ft)	<u>Drainage Area</u> (sq.mi.)	<u>Mean Discharge at Mouth</u> (cfs)	<u>Limit of Tidal Influence</u> River Mile (R.M.)	<u>Confluence With Broad River</u> (R.M.)	<u>Present Navi- gable Waters of the U. S.</u> (R.M.)
Broad 15-01	168	2,440	5,340	6,520	None	--	None
Enoree 15-01-16	100	715	740	1,040	None	38	None
Tyger 15-01-17	95	740	810	1,130	None	43	None
Pacolet 15-01-26	70	730	500	700	None	71	None

1) See Summary Report for explanation of code.

2) From mouth (or downstream report basin boundary) to a remote point in the basin having a mean annual flow of five cfs.

* See Bibliography for these references.

TABLE 2

KEY STREAM GAGING STATIONS (2) (4) (6) (7)

<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>
Broad River	02151500	Near Boiling Springs, N. C., Cleveland Co., on bank upstream from Sands Run Creek and Secondary Road 1186	864	1,489	N/A	N/A
Broad River	02156500	Near Carlisle, S. C., Union Co., on State Highway 72 bridge, just upstream from Sandy River (R.M. 226)	2,790	4,026	1,240	6,800
Broad River	02161500	At Richtex, S. C., Richland Co., on bank upstream from Little River (R.M. 191.2)	4,850	6,196	1,780	11,000

1) Exceeded or equaled 90 percent of the time.

2) Exceeded or equaled 10 percent of the time.

SECTION 3 - NAVIGATION IMPROVEMENT PROJECTS

Federal Navigation Projects

No Federal navigation projects have been authorized for the Broad River basin. The only mention of the Broad River in any reference material was found in Senate Document 189, 78th Congress, Second Session, transmitted to Congress 24 April 1944. In this report the Chief of Engineers recommended improvement of the Santee, Congaree, and Broad Rivers for navigation, power development, and other beneficial uses.
(5) (8) (9)

Other Navigation Projects

As discussed later in Section 4, in the late 1700's and early 1800's the state of South Carolina passed several acts to open navigation on the Broad River. The Columbia Canal was constructed during this period and is still partially intact, although evidence of most improvements no longer exists. The Columbia Canal was used to by-pass a series of shoals near Columbia and provided for a 3 mile long navigable canal with four lifting locks. The locks are no longer operational and the canal is primarily used for power generation.

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 Broad River.

SECTION 4 - INTERSTATE COMMERCE

Past

The Broad River served as the dividing line between lands claimed by the Cherokees and the Catawbas before white settlers came to the region. The name which these Indians gave the river signified, apparently, "dividing line," and the Spaniard De Soto may have been the first European to see it. (10) The first British subjects to visit the Broad River basin on a regular basis were the so-called Carolina traders, who, by the early 1700's operated out of Charleston and sold goods to the Indians in exchange for deerskins.

As with the Saluda and other river basins in the Carolina Piedmont area, permanent settlement by Europeans came in the mid-18th Century, when groups of Scotch-Irish and English settlers pushed south from Pennsylvania and Virginia. They were joined by groups arriving directly from Ireland, as well as by miscellaneous contingents from Germany, Scotland, and Switzerland. The Indian fur trade gave way to a trade in cattle and game; some of this was, according to local traditions, shipped down to Charleston, although the rocky ledges located at the fall line -- at present-day Columbia, South Carolina -- would have necessitated considerable and difficult portaging. The exports supposedly shipped to Charleston comprised corn, horses, tobacco, cattle, wheat, and bacon. (11)

Other accounts, however, insist that neither the Broad nor any of its tributaries -- the Pacolet, the Tyger, or the Enoree -- could offer very much in the way of water transportation. Instead, Indian traders, fur traders, and cattle traders in the 18th Century had to rely upon trails through the woods; the numerous rocky stretches in the rivers made passage by boats impossible. (12)

South Carolina sought to alter this situation during the period following the Revolution and to 1830 by making the Broad River a water highway by which goods could be cheaply and easily moved from the backcountry down to the state's ports of Georgetown and Charleston.

With the advent of the cotton gin, long staple upland cotton became a money crop. It was principally the movement of this commodity which induced numerous schemes for river improvement. However, before the cotton gin, in 1785, the General Assembly passed "An Ordinance for clearing Edisto, Wateree ... and ... Broad ... rivers." This effort was followed three years later by "An Act to establish a Company for opening the navigation of Broad and Pacolet Rivers." Additional acts followed in 1791, 1803, and 1813, but did not succeed in accomplishing their aim, although they did spark a similar effort in North Carolina. (13)

North Carolina's schemes for improving the river were never quite so ambitious as those in South Carolina. North Carolina was prompted, however, by South Carolina's efforts then underway which resulted in the passage, by 1810, of "An Act to facilitate and open the navigation of Broad River ... from the South Carolina line, to the mouth of Green River." (14) Further legislative action soon vested the development of the river in the Broad River Navigation Company. (15) By 1820, the North Carolina stretch of the Broad had received some \$2,548 in the form of appropriations voted by the General Assembly. However, by 1833, that expenditure had come to be regarded as "a total loss" -- the project had simply failed to achieve the desired results. (16)

Meanwhile, in South Carolina, the state's Civil and Military Engineer, John Wilson, had examined the Broad. His report indicated that "The obstructions to the Broad River commence from its mouth at Young's Mill-dam, by a rocky shoal 200 yards in length." (17) While other obstructions occurred above that point, in Wilson's view, other parts of the river were navigable. Wilson designed a series of canals and channels; by 1820, the Beard's shoals canal was "nearly complete," as was the canal around Lockhart's shoals. These developments may have prompted the somewhat optimistic view that "Broad River extends its navigable waters about forty miles above the North Carolina line." (18)

A more specific statement in the Report of 1822 declared that, "From Columbia to Hyler's shoals, a distance of 18 miles by water, the canals have opened a good navigation for boats, carrying a hundred

bales of cotton." (19) The principal boats employed on the river were approximately 54 feet long, drew about 18 inches of water when loaded with fifty bales of cotton, and were manned by five boatmen. They were used on the river above Columbia, and according to Robert Mills, were referred to as "mountain boats." By 1826, Mills could report that "the navigation for small boats extends to King's Creek (R.M. 263), with the aid of Lockhart's Canal, ... seven locks in two miles." (20) Above that point, Mills felt compelled to admit, there were "several rapids and extensive falls." Locks would be required to get past these obstructions, but once passed, "the navigation to the foot of the mountains is only obstructed by a few rapids." (21)

The various reports compiled by the Civil and Military Engineer, or by the later Board (and Commission) of Public Works which succeeded him, also describe the Broad's tributaries in this period. "The Pacolet River," as Wilson commented in 1818, "falls into Broad River about a hundred miles* above its confluence with the Saluda [but has] ... not been examined, nor could any satisfactory information be obtained as to its capability of being rendered navigable" (22) Eight years later, however, Mills noted that the Pacolet "is now navigable 12 miles, to Grindall's Shoals." (23) Turkey Creek, which fed into the Broad, was not navigable owing to "the great rapidity of the current," whereas the Tyger (also Tiger) River was, by 1826, "now navigable seven or eight miles." (24)

Despite Wilson's plans and Mills' hopes -- supported by what was in both relative and absolute terms a major expenditure of public money by South Carolina -- the projects on the Broad failed to live up to expectations. The old faith in inland navigation was soon displaced by a new faith in railway transportation. But fifty years later, in 1883, the Broad could still be pronounced "navigable for 113 miles in South Carolina, above Columbia, and for 28 miles more in North Carolina" for pole boats carrying fifty bales of cotton. (25)

* This distance does not correspond to river miling developed as a part of this study.

However, the Corps of Engineers examination of 1918 indicated that the Broad "has not been used to any extent for navigation purposes since 1850 and the lower part is not open." The Corps' report noted that "No work has ever been done on Broad River by the United States," and that "There is no commerce on the stream." (26) There was no commerce reported for, or any listing of, the Broad River in the 1953 volume of Waterborne Commerce of the United States. (27)

Present

The Broad River is not currently being used for purposes of waterborne interstate commerce. (28)

The head of navigation on the Broad River cannot be established precisely on the basis of historical records. However, during the early 19th Century, the Broad River appears to have been an artery for moving interstate commerce from at least 86 miles above its mouth.

The head of navigation for poleboats appears to have been, at one time or another, at a point "forty miles above the North Carolina line", "twenty-eight miles" (R.M. 318) above the North Carolina line, or at Kings Creek (R.M. 263), depending upon the literature source. In 1965, the Broad was described as follows: "Trib. of Congaree Riv. Non-navigable." (5)

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 Broad River and its tributaries for interstate commerce in future years is difficult to predict. It is anticipated, however, that the river has some potential to be utilized for shipment of goods into other states. Although, the upstream reaches of the basin are not currently used for interstate commerce, future potential commerce could be significant on

the river due to the more commercial-industrial developed urban areas of Columbia and Spartanburg, South Carolina. Industrial and commercial activity is presently dependent 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 Broad River basin (5). The case is briefly summarized below.

State of South Carolina ex rel. Maybank v. South Carolina Electric and Gas Co.* - In this case, the court held that the question of navigability was not germane and that the action, seeking specific performance of a contract and to recover damages for breach thereof, did not really and substantially involve a controversy within the jurisdiction of the Federal Court. The court did state, however, that the Federal statutes provide that it "shall be" the duty of the Secretary of War to prescribe regulations for the use, administration, and navigation of navigable waters; and it "shall be" the duty of district attorneys of the U. S. to prosecute offenders against the

* 41 F. Supp. 111 (1941).

provision of the chapter relating to protection of navigable waters and of harbor and river improvements, and to impose mandatory requirements. No discretion may be exercised in these respects.

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 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, the private ownership of the bed does not affect the rights of the public to the use of navigable waters.

A review of legal documentation indicates several state court decisions which apply to navigation in the Broad River basin. (29) These cases are briefly summarized below.

Cates v. Wadlington* - In this case dealing with the Enoree River, suit was brought on a bond for the sale price of land conveyed by the plaintiff to the defendant. The defendant sought an adjustment of the amount due since a portion of the acreage conveyed included part of the Enoree River, which could not, it was contended, be conveyed since it was capable of navigation. The trial court ruled that streams were proper subjects of grant even if capable of being made navigable until the state actually made them so. On appeal, the supreme court avoided the navigability issue by holding that the grantor conveyed whatever interest he had in the bed and that was what the grantee got and should pay for. The court did, by way of dictum, go on to discuss the navigability-property issues. While not necessarily de-emphasizing the property question, the court found that, if the river were only capable of being made navigable, ownership of the bed might not be impaired if it were subsequently declared and made navigable. As to an actual rule of navigability, the closest that the court came was to suggest a rule of non-navigability:

"And although we cannot define by technical terms what constitutes a navigable river in this state, yet I presume we may venture to say that cannot be considered a navigable river, the natural obstructions of which prevent the passage of boats of any description whatever."

Accordingly, the case held that there was no act in the state declaring which, or whether any, of the state's rivers were to be considered as public or navigable.

Noble v. Cunningham** - This case deals with the Little River, tributary of the Broad River. The court decided that a deed listing the Little River as a boundary conveyed the title to one-half the bed, since the river was non-navigable; and the grantee was required to pay for the underwater acreage.

State v. Thompson*** - In this court action, the legislature had authorized the Pacolet River "to be made navigable" by a private corporation. The defendant was indicted for damming the stream and

* 1 McCord 580, 10 Am. Dec. 699 (S. C. 1822).

** McMul. Eq. 289 (S. C. 1841).

*** 2 Strobe 12 (S. C. 1847).

defended on the grounds that, since the legislature directed that the Pacolet be "made navigable", it had declared that it was not then navigable so that the indictment would be improper. This conviction was affirmed, however, because the court found that the stream was navigable in fact and:

"the appropriation by the Legislature to facilitate navigation ought not to extinguish the common law character of a river as a public highway for navigation; else we might not have, perhaps, a single such river in the state. I could conceive that the Broad River might have been such a stream, even in the hunter age, provided it was capable for and was navigated by the canoes of the day. And if the advancement of the age induced the Legislature to apply means that should render it capable of sustaining steam-boats or pole-boats, it did not appear that the stream would lose its primary dignity on that account."

Shands v. Triplet* - This case dealt with the Tyger River. In reviewing an equity decision denying a purchaser of land adjustment of price for acreage below an alleged navigable stream, the court observed:

"It is assumed in the ground of appeal, that the soil covered by waters of a navigable river belongs to the state, and not to the riparian proprietors. The term navigable is equivocal. By the common law, rivers are regarded as navigable only to such extent as the tide flows and ebbs; and the property in the beds of rivers navigable in this sense, is undoubtedly in the State. But in our statutes, and in popular speech, navigable rivers mean those which may be navigated by ships or boats; and as to rivers of this class above tide water, it is not to be conceded that the State remains owner of the beds after granting the lands on both sides."

Accordingly, the Tyger River was deemed navigable by the state court in the sense of supporting navigation.

State v. Columbia Water Power Co.** - In this case, the state sought to enjoin the Water Company from obstructing the Columbia Canal by its water intake pipe located just above the surface. The Broad and Congaree Rivers near the city of Columbia were declared to be navigable in fact based upon capacity for navigation. Since the issue was "whether in its present condition (the canal) is navigable",

* S. Rich. Eq. 76 (S. C. 1852).

** 82 S. C. 181, 63 S. E. 884 (1909).

the court proceeded to examine that question by three approaches. Looking first to the legislature, the court found it had intended that the canal be constructed for navigation purposes and for the purpose of supplying water to the city. In fact, it was not being used for navigation since a lock was inoperative at one end, but was being used by the Water Company for its other intended purpose - water supply. Nevertheless, the court concluded that the intended use for navigation was clear for purpose of preventing obstructions. As to its navigability, the court provided what may be the clearest though strictest guidelines to that term:

"It is true, that according to the generally accepted definition water is navigable when in its ordinary state it forms by itself or its connection with other waters a continued high-way over which commerce is or may be carried in the customary mode in which such commerce is conducted by water ... Under the definition, a stream not naturally navigable but made so by artificial means is not navigable in a legal sense ... (However) the canal is to be regarded as a part of ... (the Broad and Congaree Rivers) and navigable, just as any other portion of them is navigable."

The fact that there was now no commerce on the canal was not controlling because:

"the navigability of water does not depend on actual use for navigation, but on its capacity for such use ... It is true that where the character of the water is in doubt, the fact that it has never been used for navigation after long settlement of the country might possibly be evidence tending to show that it was not susceptible for navigation; but it would be nothing more than evidence."

In a third approach, the court found that, by the terms of the grants to the property of the canal, its continued use for navigation was required.

North Carolina State Court Cases

The issue of navigability has arisen in a number of actions in the state courts of North Carolina. However, most of these cases concern coastal areas not within the boundary of the Charleston District.

North Carolina does not follow the English common-law rule that streams are navigable only as far as tidewater extends. Thus, unlike

South Carolina as discussed previously, North Carolina conforms to the majority rule within the U. S. (i.e., state ownership of land beneath navigable waterways).

A review of the legal documentation indicates there are no North Carolina state court cases which specifically deal with navigation considerations in the Broad River basin.

Recent Federal Litigation

A review of recent Federal litigation concerning the Charleston District reveals no court actions pertaining to navigation in the Broad 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.

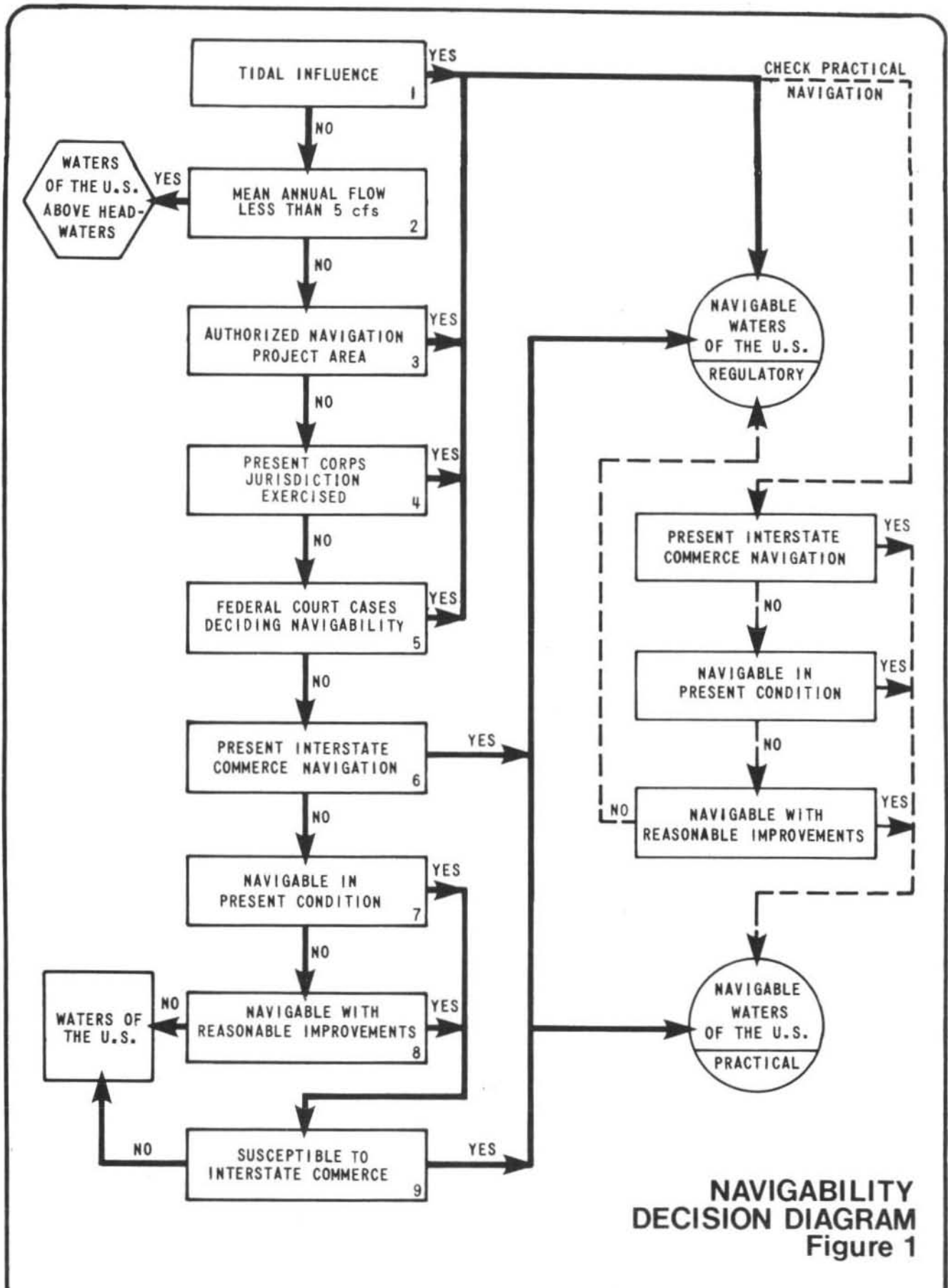
SECTION 6 - NAVIGATION OBSTRUCTIONS AND CLASSIFICATIONS

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). (5) 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 neither the Broad River nor any other streams in the basin are classified as "navigable waters of the U. S." (5)(8)(29)

Historically Navigable Waters

As discussed in Section 4, historically there is some contradiction as to the extent for which the Broad River was used for navigation. Estimates of the limit of historic navigation, which peaked during the mid-1820's, ranged from R.M. 263 to R.M. 330. (River mileage on Broad river has been continued from Congaree River, R.M. shown - 177 = mileage from mouth of Broad River). See Plate 15-5 which shows the uppermost limit for historic navigation.

Recommended and Practical Navigable Waters of the U. S.

The Broad River and its tributaries are not recommended for classification as "navigable waters of the U. S." This recommendation is based on review of the present classification (none), as well as an investigation into the practicality of navigation. From the mouth to approximately R.M. 3.0, a series of falls and rapids block the river

from navigation. None of the 10 dams on the Broad River, including those on either end of the Columbia diversion canal are provided with operational locking structures. In addition, the river is spotted with shoals and steep sloped reaches, ranging in length from a few hundred yards to several miles, and with slopes as high as 7 feet per mile. To overcome these obstacles, significant improvements, such as canals to navigate the shoal areas, extensive modifications to existing dams, and possibly additional dams to reduce the slope would be required to allow for practical navigation.

The Enoree, Tyger, and Pacolet Rivers are not recommended for classification as "navigable waters of the U. S." either. This recommendation is based on review of the present classifications as well as the isolated location of these tributaries from a continuous navigable waterway, due to the non-navigability of the Broad River.

These conclusions on the navigation limit 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.

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 Broad River. Each point is located by stream code, stream name, latitude and longitude, and a mileage reference.

Appendix B lists the lakes located in the Broad 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 Broad 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 location 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. Presently there are no streams classified as "navigable waters of the U. S." in the Broad River basin.
2. Historically, the navigable length of the Broad River has been estimated between R.M. 263 - R.M. 330.
3. No practical limit of navigation is recommended for the Broad River or its tributaries. These streams are all considered to be non-navigable for interstate commerce purposes.
4. No streams in the basin are recommended for classification as "navigable waters of the U. S."
5. All streams in the Broad River basin are recommended for classification as "waters of the U. S." throughout their entire length.

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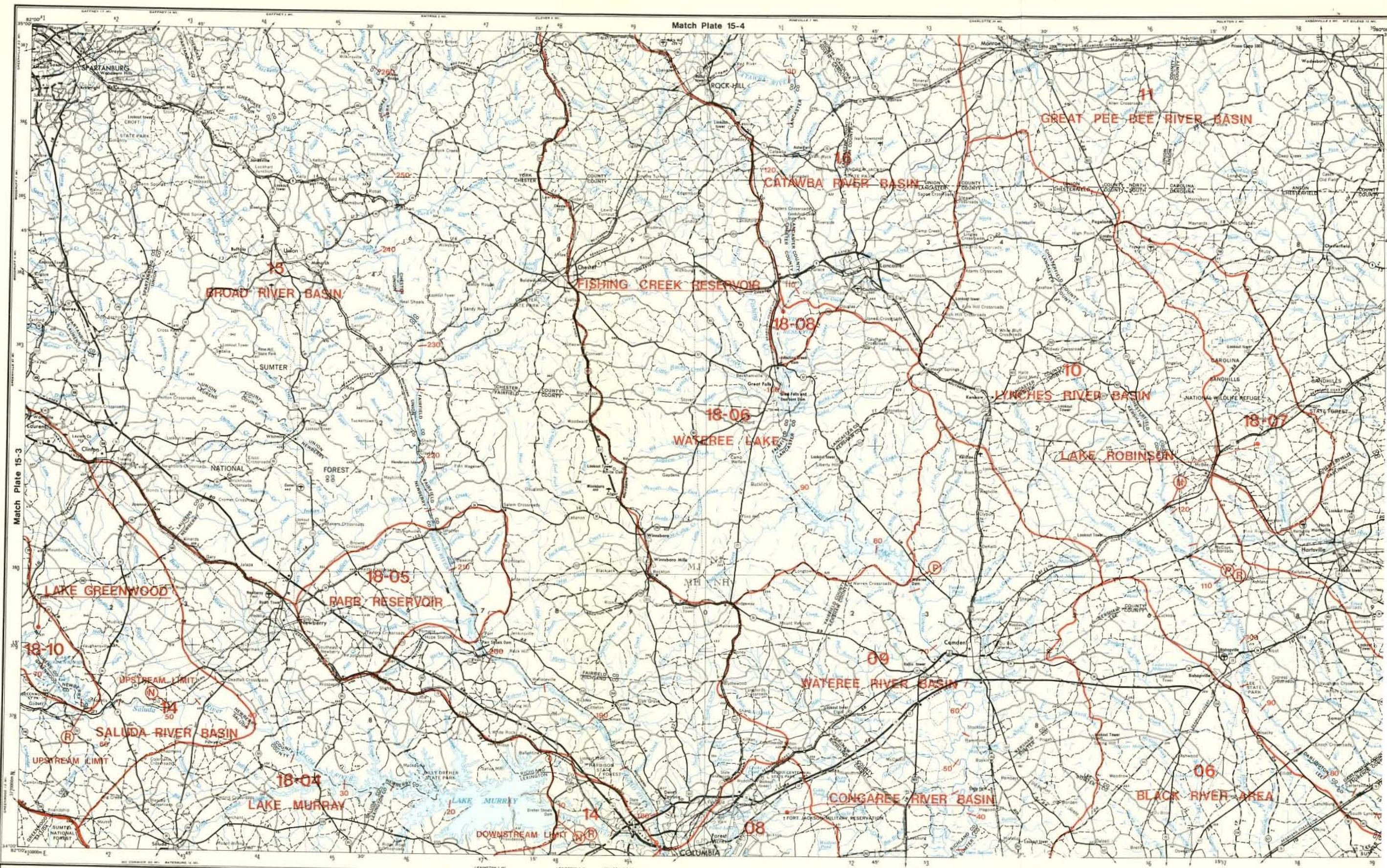
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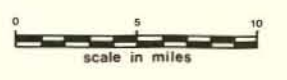
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NEW ORLEANS CHARLOTTE CHARLESTON	
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1:100,000	1:100,000
1:250,000	1:250,000
1:500,000	1:500,000
1:1,000,000	1:1,000,000
1:2,500,000	1:2,500,000
1:5,000,000	1:5,000,000
1:10,000,000	1:10,000,000
1:25,000,000	1:25,000,000
1:50,000,000	1:50,000,000
1:100,000,000	1:100,000,000
1:250,000,000	1:250,000,000
1:500,000,000	1:500,000,000
1:1,000,000,000	1:1,000,000,000

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



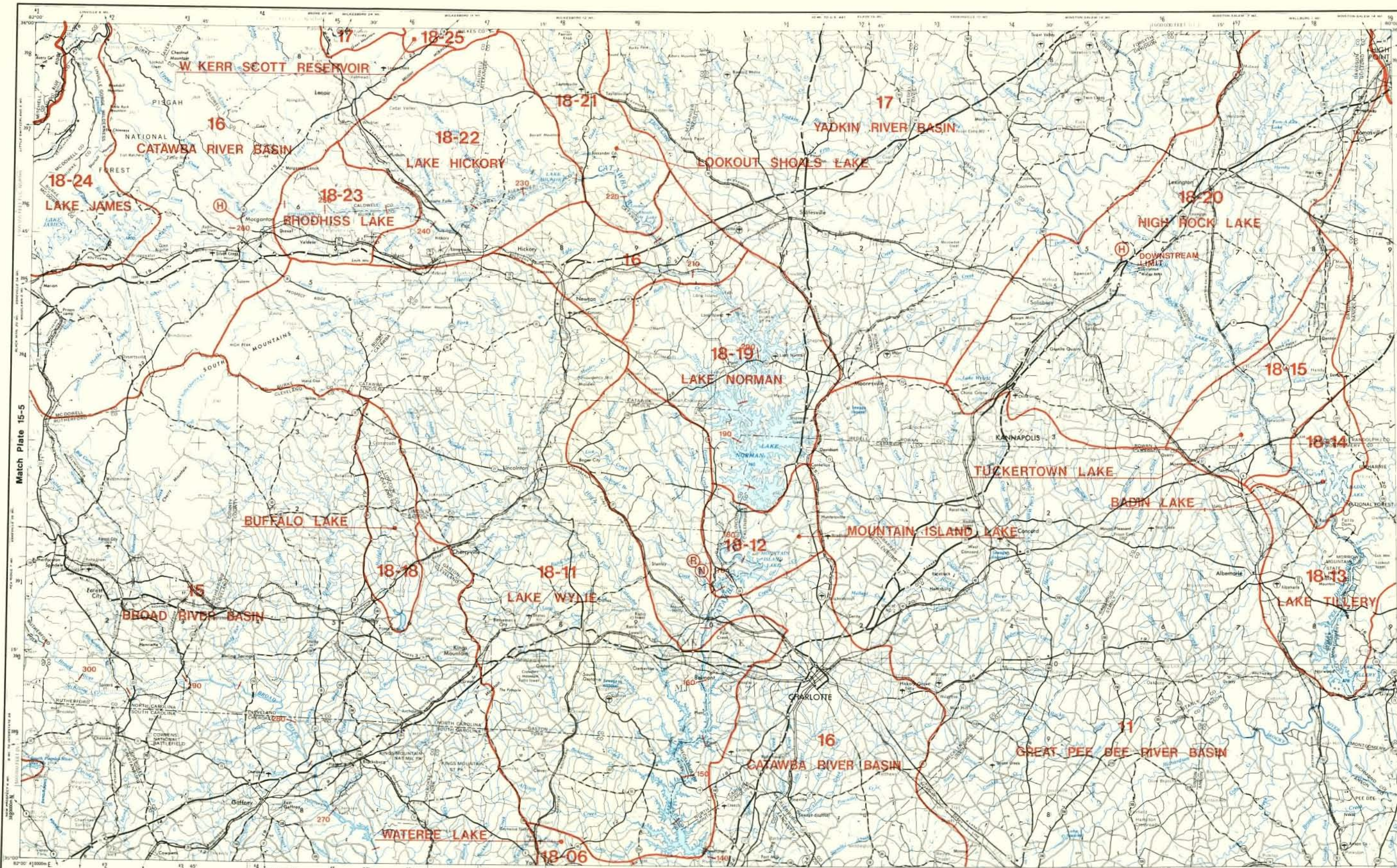
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- (N) PRESENT LIMIT OF NAVIGABLE WATERS OF THE U.S.
 - (H) HISTORIC LIMIT OF NAVIGATION
 - (P) PRACTICAL LIMIT OF NAVIGATION (RECOMMENDED)
 - (R) LIMIT OF NAVIGABLE WATERS OF THE U.S. (RECOMMENDED)
 - RIVER MILE



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Charleston, South Carolina
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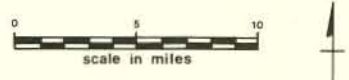
SIGNIFICANT FEATURES
BROAD RIVER BASIN
Report No. 06, 08, 09, 10, 11, 14, 15, 16, 18
NAVIGABILITY STUDY
Plate 15-2

1977



NEW ORLEANS
 CHARLOTTE
 CHARLESTON
 CHARLESTON DISTRICT
 CHARLESTON, SOUTH CAROLINA

USGS BASE MAP
 CHARLOTTE, N.C.; S.C.
 1953, Revised 1974
 NI 17-2



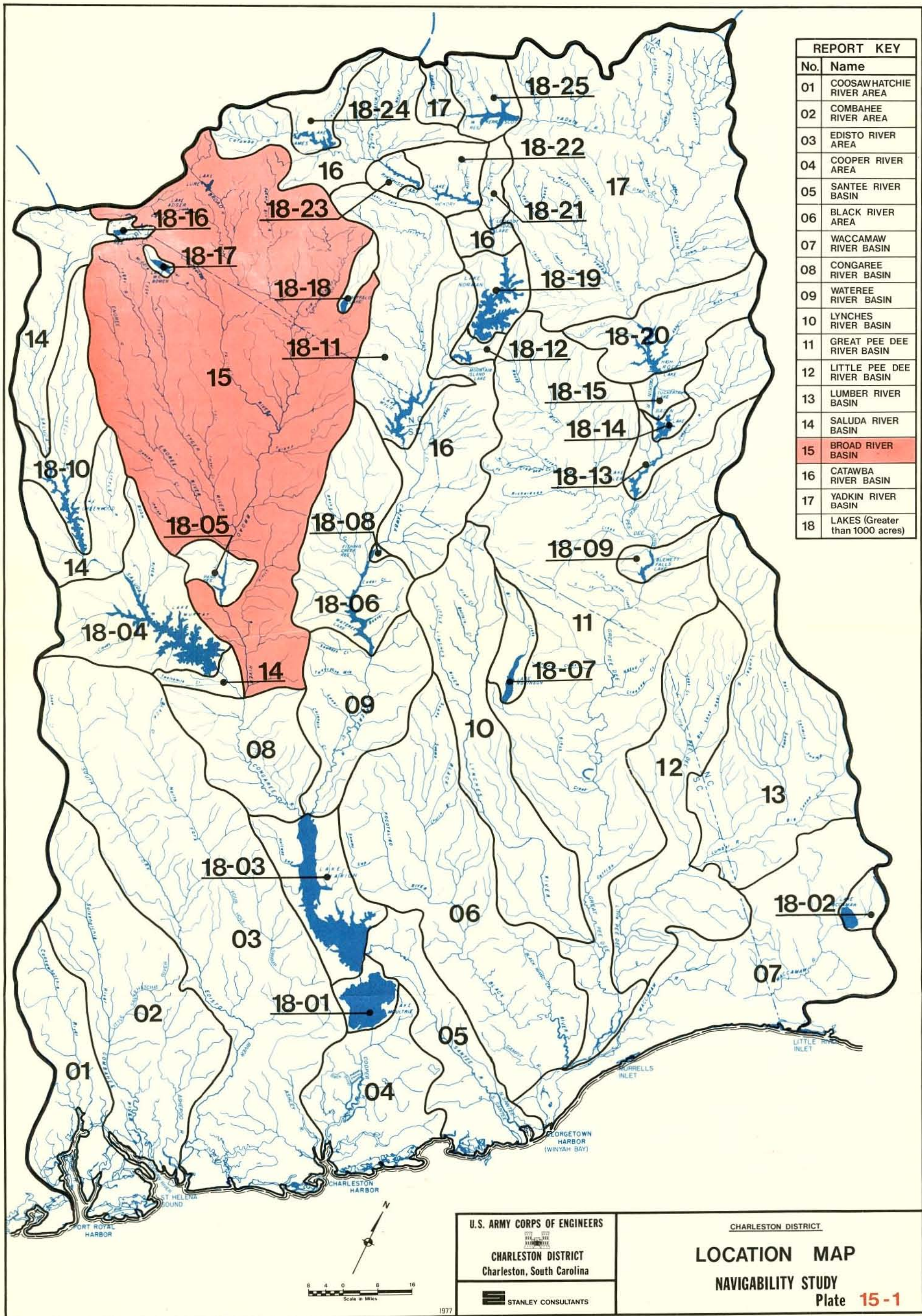
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 (H) HISTORIC LIMIT OF NAVIGATION
 (P) PRACTICAL LIMIT OF NAVIGATION (RECOMMENDED)
 (R) LIMIT OF NAVIGABLE WATERS OF THE U.S. (RECOMMENDED)
 (RM) RIVER MILE



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SIGNIFICANT FEATURES
 BROAD RIVER BASIN
 Report No. 11, 15, 16, 17, 18
NAVIGABILITY STUDY
 Plate 15-4

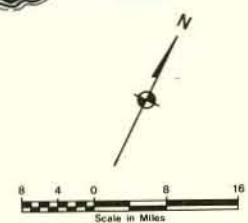
1977



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)

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 Charleston, South Carolina
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CHARLESTON DISTRICT
LOCATION MAP
 NAVIGABILITY STUDY
 Plate 15-1



APPENDIX A
STREAM CATALOG

This appendix presents a coded listing of all streams located in the Broad 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 Parr Shoals Reservoir (18-05), Buffalo Lake (18-18), or Lake Bowen (18-17); 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	
15	01						Broad River #	35 34 00	82 16 55	0.3		Tom Creek
		01					Smith Branch	34 01 50	81 03 10	1.4		Broad River
		02					Crane Creek	34 07 40	80 55 00			Confluence-Sorghum Branch
			01				Unnamed Tributary	34 05 55	81 01 25	0.3		Crane Creek
			02				North Branch					
				01			Dry Fork Creek					
					01		Swygert Creek	34 09 00	81 00 35	0.6		Dry Fork Creek
					02		Beasley Creek	34 10 40	80 59 40	0.5		Robertson Branch
				03			Roberts Branch	34 08 05	80 58 30	0.8		Dry Branch
			03				Slatestone Creek	34 06 10	81 05 50	1.4		Broad River
			04				Nicholas Creek	34 06 50	81 09 05	0.4		Swygert Branch
			05				Cedar Creek	34 16 15	80 59 40	2.7		Center Creek
				01			Harmon Creek	34 09 45	81 04 20			Confluence-Little Horse Branch
			02		Little Cedar Creek	34 17 50	81 04 50	4.6		Chappel Branch		
				01	Crooked Run Creek	34 15 25	81 08 25	3.8		Little Cedar Creek		

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		
15	01	05	03				Horse Creek	34 12 40	81 03 30	2.6		Cedar Creek	
			04				Persimmon Fork	34 13 45	81 03 40	0.7		Cedar Creek	
			05				Center Creek						
				01			Boney Creek	34 14 45	81 00 05	1.7		Cedar Creek	
				06			Hollinshead Creek	34 09 10	81 13 50			Confluence-Boyd Br	
				07			Little River						
					01		Gibson Branch						
						01	Manns Branch	34 15 00	81 11 20	0.9		Gibson Branch	
						02	Morris Creek	34 18 05	81 09 50	6.1		Little River	
						03	Mill Creek	34 19 45	81 07 40	6.2		Robinson Branch	
						04	Crompton Creek	34 20 30	81 15 40	0.7		Little River	
						05	Jackson Creek	34 23 20 34.3886	81 07 20 81.1222			Confluence-Moore Cr & Winnsboro Branch	
						01	Sand Creek	34 22 10	81 07 50	2.4		Jackson Creek	
						06	West Fork Little River						
						01	Opossum Branch	34 25 30	81 15 10	0.2		West Fork Little R	
			02	Weir Spring Branch	34 32 45	81 16 30			Confluence-Spring Br				

15-A3

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	
15	01	07	07				Dumpers Creek	34 29 00	81 09 50	5.2		Little River
				01			Unnamed Tributary	34 27 10	81 10 00	1.1		Dumpers Creek
			08				Big Creek	34 34 20	81 11 40	2.2		Little Creek
		08					Wateree Creek	34 10 10	81 17 55	1.4		Risters Creek
			01				Risters Creek	34 11 10	81 20 15	2.9		Wateree Creek
		09					Crims Creek	34 13 45	81 26 45	0.4		I-26 Highway Bridge
			01				Rocky Creek	34 13 40	81 24 25	2.6		Summers Branch
		10					Cannons Creek #	34 16 50	81 33 40	0.2		Rocky Branch
		11					Hellers Creek #	34 21 25	81 31 00	0.1		U.S. 176 Highway Bridge
		12					Frees Creek #	34 21 40	81 19 50	5.5		Broad River
		13					Terrible Creek	34 24 10	81 20 05	4.4		Broad River
		14					Rocky Creek	34 26 10	81 21 25	3.6		Broad River
		15					Beaver Creek	34 29 10	81 19 20			Confluence-Reedy Br
			01				McClures Creek	34 32 10	81 20 55	1.6		S.C. 215 Highway Bridge

15-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	
15	01	15	02				Chicken Creek	34 29 05	81 22 00	1.3		Beaver Creek	
			03				Sandy Fork	34 28 10	81 20 20	0.2		Beaver Creek	
			16					Enoree River	34 59 15 <i>34.9875</i>	82 26 35 <i>82.4431</i>	1.3		U.S. 25 Highway Bridge <i>Greenville County</i>
		01					Kings Creek						
				01				South Fork Kings Creek	34 20 10	81 36 00	4.3		Kings Creek
				02				Little Kings Creek	34 22 55	81 34 35	0.7		South Fork Kings Cr
				02				Indian Creek	34 26 20	81 47 50	1.5		S.C. 66 Highway Bridge
					01			Hunting Creek	34 26 40	81 34 20	1.8		Indian Creek
					02			Gilders Creek	34 21 40	81 38 55		0.4	1-26 Highway Bridge
					03			Pattersons Creek	34 26 15	81 39 00	2.5		Indian Creek
					04			Headleys Creek	34 25 50	81 42 00	2.8		Indian Creek
					05			Long Branch	34 22 50	81 42 10			Confluence-Buncombe Branch
			03			Duncan Creek	34 33 10 <i>34.5528</i>	81 57 50 <i>81.9638</i>	1.2		S.C. 49 Highway Bridge		

15-A5

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	
15	01	16	03	01		South Fork Duncan Creek	34 27 50 ^{.4639}	81 45 40 ^{.7611}	5.4		Ned Wesson Branch	
					01	Ned Wesson Branch	34 28 10	81 42 50	1.9		South Fork Duncan Cr	
				02		Allisons Branch	34 29 40	81 47 40	0.1		S.C. 72 Highway Bridge	
				03		Sand Creek Fork	34 29 25	81 49 50		0.3	I-26 Highway Bridge	
				04		Beards Fork Creek	34 29 30	81 53 45	0.8		S.C. 308 Highway Bridge	
				05		Long Branch	34 32 05	81 53 50	0.8		Duncan Creek	
			04			Johns Creek	34 35 35	81 46 10	1.6		Enoree River	
			05			Frenchman Creek	34 36 25	81 48 05	1.9		Enoree River	
			06			Elishas Creek	34 36 15	81 50 20	0.4		Enoree River	
			07			Cedar Shoals Creek	34 39 45	81 53 50	2.7		S.C. 49 Highway Bridge	
			08			Warrior Creek	34 35 45	82 04 10	6.2		U.S. 221 Highway Bridge	
			09			Two Mile Creek	34 42 10	81 58 55	4.3		Enoree River	
			10			Beaver Dam Creek	34 37 30	82 05 40	4.3		Wallace Branch	

15-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	
15	01	16	11			Durbin Creek	34 43 25	82 11 40	0.8		Howard Branch	
					01	South Durbin Creek	34 40 30	82 07 35		Confluence-Reedy Cr		
					02	Little Durbin Creek	34 43 15	82 07 45		2.0	Durbin Creek	
					12	Gilder Creek	34 47 10	82 17 25		2.0	Bridge Fork Creek	
					01	Horsepen Creek	34 46 10	82 12 50		1.7	Gilder Creek	
					13	Peters Creek	34 47 45	82 11 40		2.3	Enoree River	
					14	Abner Creek	34 51 45	82 09 45		3.1	Enoree River	
					15	Dillard Creek	34 51 20	82 12 40		1.5	Enoree River	
					16	Rocky Creek	34 51 05	82 17 05		5.1	Enoree River	
					17	Brushy Creek	34 52 45	82 20 00		7.0	Enoree River	
					18	Unnamed Tributary	34 54 40	82 15 20		1.5	Enoree River	
					19	Mountain Creek	34 55 45	82 21 35		4.5	U.S. 29 Highway Bridge	
					20	Beaverdam Creek	34 58 20	82 24 50		4.6	Enoree River	
					21	North Enoree River	35 00 15	82 24 10		1.0	Enoree River	
	17					Tyger River						
		01				Cane Creek	34 35 10	81 29 15	0.3	Seaboard Coast Line Railroad Bridge		

15-A7

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		
15	01	17	01	01			Brocks Creek	34 31 10	81 27 50	1.2		Cane Creek	
			02				Padgetts Creek	34 33 40	81 38 25	3.1		Tyger River	
			03				Johnsons Creek	34 33 30	81 32 45	1.2		Tyger River	
			04				Tinker Creek	34 39 50	81 35 05	0.8		Henry Creek	
				01			Brushy Creek	34 38 15	81 33 40	2.1		Tinker Creek	
				05			Fairforest Creek	34 57 40	82 00 15	0.7		Southern Railroad Bridge	
					01		Morris Branch	34 39 25	81 37 35	2.2		Fairforest Creek	
					02		Shoal Creek						
						01	Unnamed Tributary	34 42 10	81 39 25	1.7			S.C. 49 Highway Bridge
						03	Buffalo Creek	34 44 10	81 39 25	1.6			S.C. 215 Highway Bridge
						04	Sugar Creek	34 44 25	81 47 10	7.7			Fairforest Creek
						05	Mitchell Creek	34 44 30	81 43 30	1.3			Fairforest Creek
						06	Rocky Creek	34 47 10	81 40 05	3.1			Fairforest Creek
						07	Swink Creek	34 47 40	81 41 50	1.0			Fairforest Creek

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	
15	01	17	05	08			Spear Creek	34 48 50	81 42 50	1.6		Beaverdam Creek
				09			Kennedy Creek	34 52 30	81 47 00			Confluence-Isons Cr
					01		Cunningham Creek	34 50 45	81 45 45	0.4		Kennedy Creek
				10			McElwain Creek	34 48 50	81 47 35			Confluence-Mineral Spring Branch
				11			Kelsey Creek	34 53 45	81 51 50	2.8		Thompson Creek
				12			Dugan Creek	34 50 45	81 50 10	1.0		Fairforest Creek
				13			Beaverdam Creek	34 54 20	81 56 20	2.3		Reedy Creek
				06			Dutchman Creek	34 48 10	81 53 10	0.4		Smith Creek
				01			Carson Branch	34 45 25	81 49 50	0.4		Dutchman Branch
				07			Hackers Creek	34 40 10	81 50 10	1.6		Tyger River
				08			Cane Creek	34 44 50	81 52 10	3.0		Tyger River
				09			Jimmies Creek	34 44 10	81 58 10	1.4		I-26 Highway Bridge
				10			South Tyger River					
					01		Big Ferguson Creek	34 47 25	82 05 15	3.4		Charleston & Western Carolina RR Bridge

APPENDIX A
STREAM CATALOG

REPORT NUMBER	MAJOR RIVER	PRIMARY	STREAM CODE				STREAM NAME	HEADWATER LOCATION (Mean Flow = 5 cfs)				
			SECONDARY	TERTIARY	FOURTH ORDER	FIFTH ORDER		LATITUDE (° ' '')	LONGITUDE (° ' '')	STREAM MILES		FROM
										UP	DOWN	
15	01	17	10	01	01	Little Ferguson Creek	34 47 20	82 01 20			At U.S. 221 Highway Bridge	
				02		Bens Creek	34 50 40	82 05 40	2.3		South Tyger River	
				03		Brushy Creek	34 51 30	82 05 00	1.3		South Tyger River	
				04		Maple Creek	34 55 00	82 12 45			At S.C. 101 Highway Bridge	
				05		Clear Creek	34 58 30	82 17 00	1.4		South Tyger River	
				06		Beaverdam Creek	35 00 20	82 20 45			At S.C. 253 Highway Bridge	
				07		Mush Creek	35 02 45	82 24 30	0.1		Johnson Creek	
					01	Meadow Fork Creek	35 04 50	82 23 00	1.4		Mush Creek	
					02	Johnson Creek	35 03 20	82 24 40	0.9		Mush Creek	
				08		Pax Creek	35 04 00	82 20 30	1.3		South Tyger River	
				09		Barton Creek	35 05 20	82 21 10	1.1		McKinney Creek	
					01	McKinney Creek	35 05 55	82 23 45	2.9		Noe Creek	
			11			North Tyger River	35 01 50	82 10 45	6.6		U.S. 29 Highway Bridge	

15-A10

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		
15	01	17	11	01			Wards Creek	34 49 15	81 57 15	1.9		Tanyard Branch	
				02			Middle Tyger River	35 06 30	82 20 15	6.0		Campbell Creek	
					01		Beaverdam Creek						
						01	Foyster Creek	35 01 30	82 16 20	0.7		Beaverdam Creek	
						02	Meadow Creek	35 01 15	82 11 45	0.5		Middle Tyger River at Lyman Lake	
						03	Barnes Creek						
							01	Beaverdam Creek	35 05 05	82 16 05	1.8		Barnes Creek
							04	Unnamed Tributary	35 06 55	82 17 10	1.0		Middle Tyger River
						03	Ranson Creek	34 52 40	81 59 50	0.4		North Tyger River	
						04	Jimmies Creek	34 55 00	82 03 10	1.5		North Tyger River	
						05	Frey Creek	34 57 00	82 02 45	1.3		North Tyger River	
						06	Jordan Creek	35 00 15	82 06 25	3.9		North Tyger River	
						18		Sandy River	34 45 50	81 13 40	2.8		S.C. 97 Highway Bridge
			01		Johns Creek	34 34 40	81 21 15	2.8		Sandy River			

15-A11

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	
15	01	18	02				Little Sandy River	34 37 50	81 13 20	4.5		Mobley Creek
				01			Mobley Creek	34 37 00	81 15 25	2.3		Little Sandy River
			03				Brushy Fork Creek	34 42 10	81 23 50	1.1		Smith Creek
			04				Seeley Creek	34 44 55	81 16 00	0.3		S.C. 97 Highway Bridge
			05				Caney Fork Creek (Chester State Park)	34 40 05	81 14 00			Confluence-Threemile Branch
			06				Dry Fork	34 41 40	81 15 05	1.1		Sandy River
		19					Coxs Creek	34 35 40	81 26 25	1.3		Broad River
		20					Unnamed Tributary	34 39 50	81 28 25	0.3		Neals Creek
			01				Hobson Creek	34 38 50	81 28 45	1.6		Unnamed Tributary
			02				Neals Creek	34 40 25	81 28 30	2.4		Hobson Creek
		21					Clarks Creek	34 41 40	81 26 55	0.3		Broad River
		22					Big Browns Creek	34 46 30	81 36 40	0.9		Bethlehem Creek
			01				Gregorys Creek	34 42 25	81 31 30	3.0		Browns Creek
			02				Little Browns Creek	34 46 50	81 33 50	3.0		S.C. 49 Highway Bridge

15-A12

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	
15	01	22	03				Meng Creek	34 43 50	81 36 25	2.3		S.C. 49 Highway Bridge
			23				Hughes Creek	34 45 10	81 30 10		0.7	S.C. 49 Highway Bridge
			24				Turkey Creek	34 58 50	81 17 10	1.5		Ross Branch
				01			Mill Creek	34 46 35	81 20 40		2.7	S.C. 97 Highway Bridge
					01		Rodens Creek	34 46 10	81 23 15	0.9		Mill Creek
					02		Susybole Creek	34 49 50	81 18 15	0.7		Little Susybole Cr
					01		Little Susybole Creek	34 49 25	81 17 50	1.1		Susybole Creek
					03		Rainey Branch	34 49 40	81 23 00			Confluence-Palmer Br
					04		Little Turkey Creek	34 53 55	81 14 30	2.3		Lindsey Creek
						01	McClures Branch	34 55 25	81 16 45	2.0		Little Turkey Creek
					05		Ross Branch	34 57 55	81 16 30	0.5		Turkey Creek
				25			Fanning Creek	34 48 50	81 32 15	1.4		Sharps Creek
				26			Pacolet River					
						01	Gault Creek	34 52 00	81 34 10	0.9		Pacolet River

15-A13

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	
15	01	26	02				Peter Hawks Creek	34 50 45	81 36 35	2.5		Pacolet River
			03				Sandy Run Creek	34 51 50	81 38 40	1.4		Pacolet River
			04				Mill Creek	34 53 20	81 41 40	1.1		Jumping Run Creek
			05				Browns Branch	34 56 15	81 44 10	1.4		Pacolet River
			06				Richland Creek	34 55 30	81 47 45	1.4		Pacolet River
			07				Lawsons Fork Creek	35 01 55	82 05 20	3.7		I-26 Highway Bridge
				01			Chinguepin Creek	34 58 05	81 56 10	1.6		Lawsons Fork Creek
				02			Big Shoally Creek	35 02 05	81 57 25	2.1		Little Shoally Creek
				03			Fawn Branch	35 01 45	82 00 05	0.9		Lawsons Fork Creek
				04			Meadow Creek	35 03 40	82 02 15	2.0		Greene Creek
					01		Greene Creek	35 01 55	82 03 35	1.7		Meadow Creek
				08			Peters Creek	35 00 00	81 51 45	1.3		Mineral Spring Br
				09			Cherokee Creek	35 02 50	81 52 30		0.1	Little Cherokee Cr
				10			Island Creek					
		01		Zekial Creek	35 06 30	81 48 45	0.6		S.C. 110 Highway Bridge			

15-A14

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	
15	01	26	11				Casey Creek	35 04 45	81 54 00	1.2		Pacolet River
			12				Buck Creek	35 10 35	81 58 10	3.1		S.C. 11 Highway Bridge
				01			Little Buck Creek	35 07 30	81 53 00	1.3		Rocky Ford Branch
			13				Thompson Creek	35 05 50	81 56 50	0.6		Pacolet River
			14				North Pacolet River	35 12 15	82 21 45			Confluence-Shop Cr
				01			Obed Creek	35 08 40	82 03 00	0.7		S.C. 9 Highway Bridge
				02			Bear Creek	35 11 05	82 02 00	0.7		North Pacolet River
				03			Hughes Creek	35 12 50	82 05 25	2.8		North Pacolet River
				04			Hooper Creek	35 12 00	82 07 15	2.2		North Pacolet River
				05			Wolfe Creek	35 11 50	82 10 00	0.3		North Pacolet River
				06			Horse Creek	35 13 40	82 12 00	0.6		North Pacolet River
				07			Vaughn Creek	35 11 00	82 15 10	2.3		Little Creek
				15			South Pacolet River	35 09 05	82 17 30	5.0		Belue Creek
				01			Alexander Creek #	35 07 20	82 07 00	1.1		Lake William C. Bowen

15-A15

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	
15	01	26	15	02	01	Holston Creek	35 05 10	82 08 40	2.1		Motlow Creek	
						Motlow Creek	35 05 35	82 10 45	3.4		Holston Creek	
						03	Unnamed Tributary	35 08 40	82 11 00	1.2		North Pacolet River
						04	Jamison Mill Creek	35 09 05	82 12 45	1.7		North Pacolet River
				27			Bullock Creek	35 04 20	81 18 50			Confluence-Gin Br
						01	Bells Creek	34 52 45	81 24 50			Confluence-Prater Cr
						02	Loves Creek	34 56 20	81 26 00	1.8		Bullock Creek
						03	Clark Fork	35 07 20	81 20 30	2.5		Long Branch
						04	Buckhorn Creek	35 02 20	81 18 30	0.4		S.C. 5 Highway Bridge
				28			Beaverdam Creek	34 56 25	81 27 25	0.8		McDaniel Branch
				29			Thicketty Creek	35 04 40	81 46 45	3.5		Thicketty Mountain Creek
						01	Gilkey Creek	35 00 50	81 36 30			Confluence-Spencer Branch
						02	Minkum Creek	34 58 10	81 37 05	1.8		Thicketty Creek
						03	Goucher Creek	34 58 45	81 43 20	1.5		S.C. 150 Highway Bridge

15-A16

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	
15	01	29	04				Little Thicketty Creek	35 01 45	81 47 20		1.8	I-85 & U.S. 29 Highway Bridge
				01			Cowpens Creek	35 00 25	81 44 55	0.7		Little Thicketty Cr
			05				Limestone Creek	35 01 20	81 41 05			Confluence-Skelton Creek
			06				Irene Creek	35 03 50	81 41 15			Confluence-Cole Cr
			07				Thicketty Mountain Cr	35 05 30	81 44 10	0.5		Thicketty Creek
			30				Abingdon Creek	35 00 05	81 32 00	0.7		Service Branch
			31				Guyonmoore Creek	35 00 05	81 26 25	3.4		Broad River
			32				Kings Creek	35 11 55	81 21 30	1.7		S.C. Secondary 2245 Highway Bridge
				01			Bells Branch	35 03 50	81 28 15	0.7		Kings Creek
				02			Jumping Branch	35 06 50	81 27 30	0.5		Kings Creek
			33				Doolittle Creek	35 05 50	81 31 20	3.0		Broad River
			34				Peoples Creek	35 04 20	81 35 25			Confluence-Furnace Creek
			35				Cherokee Creek	35 05 45	81 37 00			Confluence-Providence Creek

15-A17

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	
15	01	36				Buffalo Creek	35 30 40	81 30 05		2.3	S.C. 27 Highway Bridge	
			01			Beason Creek	35 13 30	81 24 15			At S.C. Secondary 2250 Highway Bridge	
				01		Long Branch	35 12 35	81 26 30	0.4		Wolf Branch	
			02			Muddy Fork	35 20 50	81 23 45	5.7		Persimmon Creek	
				01		Potts Creek	35 15 35	81 24 20	3.5		Muddy Fork	
				02		Persimmon Creek	35 17 05	81 25 05			Confluence-Little Persimmon Creek	
				03		Unnamed Tributary	35 21 15	81 24 45	0.8		Muddy Fork	
			03			Whiteoak Creek #	35 18 35	81 26 55		3.3	Seaboard Coast Line Railroad Bridge	
			04			Little Buffalo Creek	35 26 10	81 27 15	2.4		Buffalo Creek	
			05			Unnamed Tributary	35 28 15	81 29 25	0.3		Buffalo Creek	
		37				Bowens River	35 10 20	81 34 55	1.1		Wyllies Creek	
		38				Ross Creek	35 09 35	81 40 00			At U.S. 150 Highway Bridge	

15-A18

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	
15	01	38	01				Sarratt Creek	35 10 10	81 39 50	0.5		Ross Creek
		39					First Broad River					
			01				Beaverdam Creek	35 17 45	81 36 15	0.7		U.S. 74 Highway Bridge
			02				Shoal Creek	35 12 40	81 35 25	0.6		First Broad River
			03				Hickory Creek	35 16 50	81 31 45	0.5		U.S. 74 Highway Bridge
			04				Brushy Creek	35 22 50	81 38 40			Confluence-East Fork Brushy Creek
			05				West Fork Brushy Creek	35 22 45	81 39 05	0.5		Brushy Creek
			06				Big Harris Creek	35 23 25	81 34 00	1.5		Little Harris Creek
			07				Maple Creek	35 26 05	81 32 30	2.1		First Broad River
			08				Knob Creek	35 32 10	81 32 30			At S.C. 10 Highway Bridge
				01			Little Knob Creek	35 30 20	81 35 10			Confluence-Bald Knob Creek
			09				Crooked Run Creek	35 27 40	81 35 30	1.5		First Broad River
			10				Hinton Creek	35 26 00	81 45 10	1.2		Taylor Branch

15-A19

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	
15	01	39	11				Duncans Creek	35.48056 35 28 50	81.7593 81 45 30	2.0		Isham Fork
			12				Wards Creek	35 32 40	81 36 40			Confluence-Tim Cr
			13				Brier Creek	35 32 25	81 42 15		Confluence-Pot Br	
			14				Sputh Creek	35 30 50	81 46 50		Confluence-Buck Hollow Branch	
			15				North Fork	35 34 25	81 46 00		Confluence-Negro Cr	
				01			Sally Queen Creek	35 34 05	81 45 25	0.6		North Fork
			16				Little First Broad R	35 32 30	81 47 50			Confluence-Smalley Creek
			40				Sandy Run	35 22 40	81 43 25	1.1		Bowen Branch
				01			West Fork	35 21 00	81 43 35	2.3		Buck Branch
			41				Ashworth Creek	35 11 50	81 44 40	2.4		Broad River
			42				Suck Creek					
				01			Unnamed Tributary	35 10 10	81 46 40	0.3		Suck Creek
			43				Second Broad River	35 35 40	81 01 30	1.3		Hicks Branch
	01			Hills Creek	35 16 40	81 45 50	2.6		U.S. 221 Highway Bridge			

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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	
15	01	43	02				Webbs Creek	35 20 30	81 48 25	0.4		U.S. 74 Highway Bridge
			03				Puzzle Creek	35 22 50	81 48 15	1.9		Seaboard Coast Line Railroad Bridge
			04				Roberson Creek	35 27 10	81 48 10	1.2		Sunshine Road
				01			Hunting Creek	35 26 00	81 51 10	2.2		Roberson Creek
				02			Heaveners Creek	35 24 40	81 48 45	1.3		Roberson Creek
				05			Catheys Creek	35 29 50	81 59 45	0.8		Nannytown Road
				01			Hollands Creek	35 23 00	81 55 15			At Whiteside Road
				02			Cherry Creek	35 26 45	81 57 15	0.3		Catheys Creek
				03			Unnamed Tributary	35 28 30	82 00 30	1.3		Catheys Creek
				06			Cane Creek	35 33 55	81 51 05			Confluence-Shoal Cr
				07			Big Camp Creek	35 30 40	81 54 25	0.5		Frog Creek Road
					01		Little Camp Creek	35 29 00	81 53 05	1.6		Centennial Road
				44			Big Horse Creek	35 10 50	81 50 30			Confluence-Little Horse Creek

15-A21

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	
15	01	45										
			01									
			02				35 19 15	81 52 10		0.1		Brackett Road
							35 15 50	81 54 50	1.5			Floyds Creek
		46					35 12 00	81 55 15	1.8			Arrowood Branch
		47					35 16 00	81 54 45		0.5		Dark Corner Road
		48					35 13 45	81 57 20	2.3			Broad River
		49					35 15 10	81 57 00	0.8			Broad River
		50					35 10 00	82 33 50				Confluence-South Prong Green River
			01				35 15 15	82 10 05	5.8			Little White Oak Cr
				01			35 14 20	82 01 30	1.4			White Oak Creek
				02			35 15 30	82 03 20	1.9			White Oak Creek
				03			35 18 20	82 08 50				Confluence-Canal Cr
					01		35 17 05	82 08 35	1.8			Little White Oak Cr
			02				35 22 25	82 10 30	6.7			Green River
			03				35 22 45	82 13 15				Confluence-Spicer Cove

15-A22

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	
15	01	50	04				Ostin Creek	35 18 20	82 13 00	2.1		Lake Adger
			05				Rash Creek					
				01			Brights Creek	35 20 00	82 16 30			Confluence-Harm Cr
			06				Cove Creek	35 15 10	82 17 40	1.9		Casey Branch
			07				Camp Creek	35 15 40	82 20 45	1.1		Green River
			08				Hungry River	35 21 30	82 17 55	5.6		Little Hungry River
				01			Tumblebug Creek	35 19 50	82 21 05	0.9		Hungry River
				02			Little Hungry River	35 20 50	82 20 00	3.0		Hungry River
			09				Bobs Creek	35 11 15	82 26 50			Confluence-Terry Cr
			10				Joe Creek	35 12 50	82 28 05			Confluence-Cabin Cr
			11				Rock Creek	35 12 00	82 30 55	0.4		North Prong Rock Cr
				01			North Prong Rock Creek	35 12 40	82 30 45	0.5		Long Branch
				51			Cleghorn Creek	35 20 55	81 57 25	0.7		Stonecutter Creek
				01			Stonecutter Creek	35 20 25	81 57 30	0.2		Cleghorn Creek
				52			Mountain Creek					
	01			Maple Creek	35 22 35	82 03 00	2.5		Mountain Creek			

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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	
15	01	52	02				West Branch Mountain Cr	35 26 15	82 02 30			Confluence-Piney Knob Creek
			03				East Branch Mountain Cr	35 27 10	82 01 10	1.0		Carpenter Road
		53					Knob Creek	35 25 30	82 04 45	0.3		U.S. 64, 74 Highway Bridge
		54					Cove Creek	35 34 40	82 02 50			Confluence-Morgan Cr
			01				Bills Creek	35 26 45	82 08 20	1.8		Cove Creek
			02				Cedar Creek	35 31 00	82 10 15	0.5		Taylor Creek
				01			Taylor Creek	35 30 30	82 10 30			Confluence-Bailey Cr
		55					Unnamed Tributary	35 28 20	82 12 30	1.5		Lake Lure
		56					Reedypatch Creek	35 24 30	82 19 10			Confluence-Turnbreeches Creek
			01				Little Creek	35 26 05	82 17 30	0.4		Reedypatch Creek
		57					Hickory Creek	35 28 25	82 20 15	2.2		Middle Fork
		58					Flat Creek	35 33 10	82 18 45	1.6		Eads Gap Road

15-A24

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 Broad 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. Hydrologic Information Storage and Retrieval System, Register of Dams for North Carolina (computer printout).
3. 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 (NORTH CAROLINA)
	MAJOR RIVER	PRIMARY	SECONDARY	TERTIARY	FIFTH ORDER				
15	01					Lake Lure	70	--	Rutherford
15	01					Lake Lure	800	35,000	Rutherford
15	01	50				Adger Lake	438	1,270	Polk
15	01	36				Beam Pond	25	--	Cleveland
15	01	52				Brooks Lake	15	--	Rutherford
15	01	32				Unnamed Lake	33	--	Cleveland
15	01	26	14			Bull Eye Pond	10	--	Polk
15	01	32				Unnamed Lake	40	--	Cleveland
15	01	45				Community College Pond	12	--	Rutherford
15	01	45	01			Unnamed Lake	15	--	Rutherford
15	01	39	12			Cox Creek	16	--	Cleveland
15	01	32				Lake Montonia	30	--	Cleveland
15	01	32				Davidson Lake (Kings Mountain)	35	497	Cleveland
15	01	53				Forest Lake	25	--	Rutherford
15	01					Houser Lake	30	--	Cleveland
15	01	26	14			Mahler Pond	10	--	Polk

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 (NORTH CAROLINA)
	MAJOR RIVER	PRIMARY	SECONDARY	TERTIARY	FIFTH ORDER				
15	01	26	14			Pace Pond	10	--	Polk
15	01	39	14			Pioneer Girl Scouts Pond	15	480	Rutherford
15	01	26	14			Red Fox Golf Course Pond	19	--	Polk
15	01	26	14			Sandy Plains Lake	22	--	Polk
15	01	50				Summit Lake	324	13,200	Henderson
15	01					Thompson Pond	10	--	Rutherford
									(SOUTH CAROLINA)
15	01					City of Columbia	12	96	Richland
15	01	02	01			Dr. A. F. Burnside	40	278	Richland
15	01	02	01			Walker & Brooker	16	90	Richland
15	01	02	02			Keels Lake	12	60	Richland
15	01	02	02			Smith Pond	12	60	Richland
15	01	02				Lake Elizabeth	60	240	Richland
15	01	02	03			Covingtons Lake (Crescent Lake)	28	112	Richland
15	01	02	03			Harts Lake (Stevensons Lake)	12	48	Richland
15	01	02				Epworth Lake	16	48	Richland
15	01	02				S. C. Mental Health	22	66	Richland

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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				
15	01	02				S. C. Dept. of Corrections	20	64	Richland
15	01	02				Clarks Lake	30	120	Richland
15	01	02				Crafts Farrow Hospital	14	58	Richland
15	01					Walden Farm Pond	10	40	Richland
15	01					J. G. Richards School	12	48	Richland
15	01					Michael Mungo	11	35	Richland
15	01	06				John A. Meetze	10	72	Richland
15	01	05	03			Mullers Lake	20	100	Richland
15	01	02				Eugene Frick	10	60	Fairfield
15	01	02				John J. Hood	33	200	Fairfield
15	01	02				John J. Hood	15	75	Fairfield
15	01	07	03			City of Winnsboro	26	130	Fairfield
15	01	07	03			Jackson Mill Creek Watershed #7	192	2,600	Fairfield
15	01	07	03			A. E. Davis Estate	10	40	Fairfield
15	01	07	02			W. M. Estes	15	80	Fairfield
15	01	07	02			Martin Marietta Co.	16	62	Fairfield

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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				
15	01					Ed Stevenson, Jr.	22	80	Fairfield
15	01	14				Winnsboro Blue Granite Co.	15	150	Fairfield
15	01	09				V. F. Epting	12	86	Newberry
15	01	10	02			Caldwells Pond #	10	80	Newberry
15	01	17	01			Jeters Lake	10	60	Union
15	01	17	01			Gus Jeters Lake	11	70	Union
15	01					Cone Mill	33	200	Union
15	01	17	04			Reno Lake	11	65	Union
15	01	23				Adams Lake	10	65	Union
15	01	26	04			City of Jonesville	35	560	Union
15	01	17	05			Hughes Lake (White Pines Lake)	10	60	Union
15	01	16	03			Duncan Cr. Watershed #7	25	103	Laurens
15	01	16	03			Duncan Cr. Watershed #8	10	76	Laurens
15	01	16	03			Duncan Cr. Watershed #2	28	139	Laurens
15	01	16	03			Clinton Millpond	26	571	Laurens
15	01	16	03			Duncan Cr. Watershed #10	13	40	Laurens
15	01	16	03			Duncan Cr. Watershed #5	28	139	Laurens

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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				
15	01	16	03			Duncan Cr. Watershed #6B	73	396	Laurens
15	01	16	03			City of Clinton	20	200	Laurens
15	01	16	08			Zonolite Co.	60	240	Laurens
15	01	16	08			Zonolite Co.	20	160	Laurens
15	01	16				Zonolite Co.	28	280	Laurens
15	01	16	08			G. M. Burdick	11	70	Laurens
15	01	17	10			B. H. Workman	10	80	Spartanburg
15	01	17	10			J. O. Sexton Silver Lake	58	1,040	Spartanburg
15	01	17	10			Berry Shoales Startex Mill	60	700	Spartanburg
15	01	17	11			L. P. Pitts	25	400	Spartanburg
15	01	17	11			L. P. Pitts	25	380	Spartanburg
15	01	17	11			Elbert C. Atkins	15	105	Spartanburg
15	01	17	11			A. B. Taylor	11	88	Spartanburg
15	01	17	11			Cecil O. Smith	12	80	Spartanburg
15	01	17	11			Paul Black	25	500	Spartanburg
15	01	17	11			Lyman Lake - Lowenstein Corp.	500	6,200	Spartanburg
15	01	17	10			Appalache - J. P. Stevens Co.	70	980	Spartanburg

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				
15	01	17	06			Sherberts Lake	10	50	Spartanburg
15	01	17	05			Edwin Johnson - S. C. Wildlife Commission	83	660	Spartanburg
15	01	17	05			S. C. Wildlife Commission	24	230	Spartanburg
15	01	26	14			Fairview Farms	18	108	Spartanburg
15	01	17	05			Lake Zimmerman	40	220	Spartanburg
15	01	17	05			Lyles Lake	11	45	Spartanburg
15	01	17	05			Stewart Johnson	30	180	Spartanburg
15	01	17	05			Claytons Rec. Park	16	96	Spartanburg
15	01	26	07			Pierces Lake	18	150	Spartanburg
15	01	26	07			Hillbrook Lake	20	160	Spartanburg
15	01	26	07			Floyds Lake	18	140	Spartanburg
15	01	17	05			Duncan Park Lake	14	210	Spartanburg
15	01	26	07			Smith - Cantrell	17	135	Spartanburg
15	01	26	07			Valley Falls Mill	14	88	Spartanburg
15	01	26	07			Roger Milliken	13	91	Spartanburg
15	01	26	15			Rainbow Lake	301	2,920	Spartanburg

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				
15	01	16	12			Caldwell Harper	40	520	Greenville
15	01	16	16			Hoke Smith	17	204	Greenville
15	01	26	14			Lake Lanier	90	1,800	Greenville
15	01	16	16			Oak Grove Lake	13	130	Greenville
15	01	16	16			Huntington Lake	12	120	Greenville
15	01	16	20			Greenville Water Works (Paris Mountain)	14	140	Greenville
15	01	17	10			Lake Cunningham (Greer Res.)	250	2,200	Greenville
15	01	17	10			South Tyger R. Watershed #5	15	87	Greenville
15	01	17	10			South Tyger R. Watershed #2	12	42	Greenville
15	01	17	10			Lake Chinquapin	12	120	Greenville
15	01	17	10			Dysart Lake	15	--	Greenville
15	01	17	10			Berry's Millpond	20	--	Greenville
15	01					M. G. Johnson, Jr.	10	100	Cherokee
15	01					M. G. Johnson, Jr.	27	208	Cherokee
15	01	29	01			Frank Sossoman	13	120	Cherokee

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APPENDIX B
SUMMARY OF 10 TO 1,000 ACRE LAKES

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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				
15	01	29	03			Thicketty Cr. Watershed #13 (Hammett Lake)	31	129	Cherokee
15	01	29	04			Thicketty Cr. Watershed #25	54	438	Cherokee
15	01	29	04			Sunny Slope Farm	10	120	Cherokee
15	01	29	04			Sunny Slope Farm	10	120	Cherokee
15	01	29	04			Sunny slope Farm	20	240	Cherokee
15	01	29	06			Thicketty Cr. Watershed #16A	18	65	Cherokee
15	01	29				Thicketty Cr. Watershed #18	17	107	Cherokee
15	01	29	07			Thicketty Cr. Watershed #20	14	88	Cherokee
15	01	29				Thicketty Cr. Watershed #19	19	103	Cherokee
15	01	29				Thicketty Cr. Watershed #26	100	1,004	Cherokee
15	01	29				Carolina Orchard	14	103	Cherokee
15	01					Lake Cherokee - S. C. Wildlife Resources	45	500	Cherokee
15	01	35				Gaffney Board of Public Works (Lake Whelchel)	180	4,300	Cherokee
15	01	42				Webb Blanton	11	88	Cherokee
15	01	31				L. Dewitt Hardin	10	61	York

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				
15	01	24	04			Springs Farms	14	84	York
15	01	24				City of York (Caldwell Lake)	15	91	York
15	01	24	05			City of York	37	236	York
15	01	27				Leroy W. Adams	10	61	York
15	01	27	03			Kings Mountain State Park (Lake York)	50	450	York
15	01	18				W. S. Winter Mountain Lakes	80	675	Chester
15	01	18				W. S. Winter Mountain Lakes	52	400	Chester
15	01	18	05			Chester State Park	138	1,200	Chester
15	01	18	05			W. C. White	10	48	Chester
15	01	18	05			James H. Fanning	20	144	Chester
15	01	18	05			George Gaskey - Harvey White	16	64	Chester
15	01	18	05			George Gaskey - Harvey White	12	58	Chester
15	01	18	05			Carllyle White	15	72	Chester
15	01	18				City of Chester Reservoir	80	650	Chester
15	01	18				W. C. White	23	138	Chester

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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				
15	01	18				W. C. White	14	67	Chester
15	01	18				W. C. White	12	57	Chester
15	01	18				W. C. White	10	48	Chester
15	01	18				W. C. White	10	48	Chester

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