

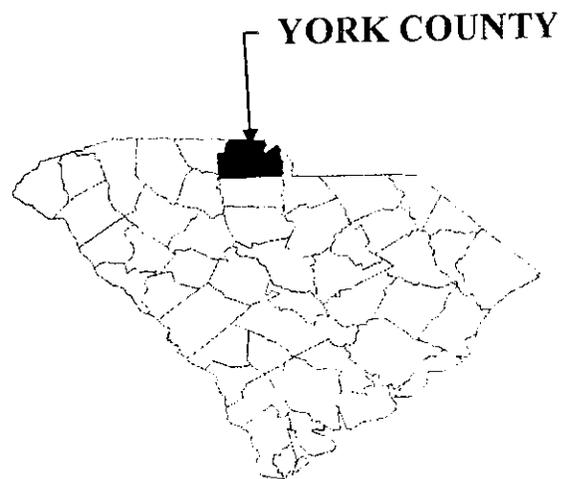
FLOOD INSURANCE STUDY



YORK COUNTY, SOUTH CAROLINA AND INCORPORATED AREAS

VOLUME 1 OF 3

Community Name	Community Number
CATAWBA INDIAN NATION	450041
CLOVER, TOWN OF	450194
FORT MILL, TOWN OF	450195
HICKORY GROVE, TOWN OF	450038
McCONNELLS, TOWN OF	450243
ROCK HILL, CITY OF	450196
*SHARON, TOWN OF	450035
*SMYRNA, TOWN OF	450034
TEGA CAY, CITY OF	450036
YORK, CITY OF	450197
YORK COUNTY (UNINCORPORATED AREAS)	450193
*NON-FLOODPRONE COMMUNITY	



SEPTEMBER 26, 2008



Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
45091CV001A

**NOTICE TO
FLOOD INSURANCE STUDY USERS**

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

Part or all of this FIS may be revised and republished at any time. In addition, part of this FIS may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current FIS components.

Initial Countywide FIS Effective Date: September 26, 2008

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FLOOD INSURANCE STUDY YORK COUNTY, SOUTH CAROLINA AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This countywide Flood Insurance Study (FIS) revises and updates information on the existence and severity of flood hazards in the geographic area of York County, South Carolina, including Catawba Indian Nation, the Cities of Rock Hill, Tega Cay, and York; as well as the Towns of Clover, Fort Mill, Hickory Grove, McConnells, Sharon, and Smyrna, and the unincorporated areas of York County (referred to collectively herein as York County). The FIS aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood-risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

Communities of York County which are non-floodprone include Towns of Sharon, and Smyrna.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

For the York County Unincorporated Areas FIS, May 1981, the hydrologic and hydraulic analyses for this study were performed by the U.S. Geological Survey, Water Resources Division for the Federal Insurance Administration, under Interagency Agreement No. IAA-H-9-77, Project Order No. 18. This study was completed in March 1979.

For the York County Unincorporated Areas FIS revision, March 18, 1991, the hydrologic and hydraulic analyses were performed by U.S. Army Corps of Engineers (COE), Charleston District for the Limited Map Maintenance Program (LMMP), under Interagency Agreement No. IA-EMW-88-E-2868, Project Order 3A, T.O. Number 2-CHAR. The Federal Emergency Management Agency (FEMA) reviewed and accepted these data for purposes of this revision.

For the York County Unincorporated Areas FIS revision, February 3, 1993, the hydrologic and hydraulic analyses for this Revisions Description were performed by Wilbur Smith Associates, Inc., under Contract No. EMW-89-C-2827. The Federal

Emergency Management Agency (FEMA) reviewed and accepted these data for purposes of this revision.

For the Town of Clover FIS, November, 1979, the hydrologic and hydraulic analyses for this study were performed by the USGS, Water Resources Division, Columbia, South Carolina, at the request of the Federal Insurance Administration U.S. Department of Housing and Urban Development (HUD) for the Federal Insurance Administration under Interagency Agreement No. IAA-H-9-77, Project Order No. 15. This work, which was completed in May 1978, covered all significant flooding sources in the Town of Clover.

For the Town of Fort Mill FIS, December 1979, the hydrologic and hydraulic analyses for this study were performed by the U.S. Geological Survey, for the Federal Insurance Administration, under Inter-Agency Agreement No. IAA-H-9-77, Project Order No. 15. This work, which was completed in April 1978, covered all significant flooding sources affecting the Town of Fort Mill.

For the City of Rock Hill FIS, April 1981, the hydrologic and hydraulic analyses for this study were performed by the U.S. Geological Survey, for the Federal Insurance Administration, under Inter-Agency Agreement No. IAA-H-9-77, Project Order No. 15. This work, which was completed in February 1979, covered all significant flooding sources affecting the City of Rock Hill.

For the City of Rock Hill FIS revision, February 3, 1993, the hydrologic and hydraulic analyses for this Revisions Description were performed by Wilbur Smith Associates, Inc., under Contract No. EMW-89-C-2827. The Federal Emergency Management Agency (FEMA) reviewed and accepted these data for purposes of this revision.

For the City of York FIS, November 3, 1981, the hydrologic and hydraulic analyses for this study were performed by the U.S. Geological Survey, Water Resources Division, for the Federal Emergency Management Agency, under Inter-Agency Agreement No. IAA-H-9-77, Project Order No. 15. This work, which was completed in November 1978, covered all significant flooding sources affecting York.

The hydrologic and hydraulic analyses for this study were performed by Watershed Concepts (the Study Contractor) for the State of South Carolina (Cooperating Technical Partner), under the South Carolina Flood Map Modernization Initiative Project No. P24 - N085 - MJ. This study was completed in September 2005.

1.3 Coordination

For the York County Unincorporated Areas FIS, May 1981, streams requiring detailed study were identified at a meeting attended by representatives of York County, the Federal Insurance Administration (FIA) and the U.S. Geological Survey (USGS). An announcement of intent to perform the Flood Insurance Study for York County and request for information was published in the Evening Herald once weekly for three consecutive weeks in November 1977. On December 11, 1980, the results of the study were reviewed at a final coordination meeting attended by personnel of the USGS, the FIA, and representatives of York County.

For the Town of Clover FIS, November, 1979, a consultation and coordination meeting

to explain the nature and purpose of the Flood Insurance Study, to verify problem areas and areas to be studied in detail, and to give a detailed presentation of Flood Insurance Study procedures was held in York, South Carolina on November 19, 1975. Representatives from the FIA, the U.S. Geological Survey (USGS), the Town of Clover and local citizens were in attendance. Basic data were obtained from many sources. Data on local flooding problems were obtained from local residents by the USGS during the course of the field work. On January 26, 1979, a final consultation and coordination meeting was held in Clover. Representatives of the USGS, FIA, Town of Clover and local citizens were in attendance.

For the Town of Fort Mill FIS, December 1979, streams requiring detailed study were identified at a meeting in November 1975 attended by representatives of the Town of Fort Mill, the Federal Insurance Administration, and the U.S. Geological Survey. The results of this study were reviewed at a final community coordination meeting held on June 15, 1979. Attending the meeting were representatives of the Federal Insurance Administration, the study contractor, and the town. No problems were raised at the meeting.

For the City of Rock Hill FIS, April 1981, streams to be studied by detailed and approximate methods were identified at a meeting attended by representatives of the community, the Federal Insurance Administration, and the study contractor. The U.S. Army Corps of Engineers and the Rock Hill Planning Commission provided information which was used in this study. The results of this study were reviewed at a final community coordination meeting held on January 29, 1980. Attending the meeting were representatives of the Federal Insurance Administration, the study contractor, and the city. This study incorporates all appropriate comments, and all problems have been resolved.

For the City of York FIS, November 3, 1981, streams requiring detailed and approximate study were identified at a meeting held in November 1975 and attended by representatives of the City of York, the Federal Emergency Management Agency, and the study contractor. The City of York provided information used to develop this study. The final coordination meeting was held on June 8, 1981, and was attended by representatives of the Federal Emergency Management Agency, the study contractor, and the city. No problems were raised at the meeting.

For this revision, an initial coordination meeting was held with representatives of FEMA, York County, and the Study Contractor on January 20, 2004. Coordination with county officials and Federal, State, and regional agencies produced a variety of information pertaining to floodplain regulations, available community maps, flood history, and other hydrologic data.

On November 16, 2005, the results of this Flood Insurance Study were reviewed and accepted at a final coordination meeting attended by representatives of the Study Contractor, FEMA, and the communities.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study revision covers the geographic area of York County, South

Carolina, including the Catawba Indian Nation and the incorporated communities of the Cities of Rock Hill, Tega Cay, and York; and the Towns of Clover, Hickory Grove, McConnells, Fort Mill, Sharon, and Smyrna.

For the York County Unincorporated Areas FIS, May 1981, streams studied in detail were Steele Creek, Sugar Creek, Blankmanship Branch, Jackson Branch, Johnnytown Branch, Catawba River, Burgis Creek, Manchester Creek, Manchester Creek Tributary 1, Big Dutchman Creek, Little Dutchman Creek, Little Dutchman Creek Tributary 1, Little Dutchman Creek Tributary 4, and Stoney Branch. The 100-year lake elevation for Lake Wylie on Catawba River was delineated by the approximate method because of regulation even though a step-backwater analysis was computed. Small tributaries to Little Dutchman Creek, delineated as Zone B's because their drainage areas were less than one square mile, have step-backwater analyses computations.

For the York County Unincorporated Areas FIS revision, March 18, 1991, the 100-year discharge, base flood elevations and floodway for the Catawba River were revised from its confluence with Sugar Creek upstream to the Lake Wylie Dam. The 100-year profiles for Big Dutchman Creek, Little Dutchman Creek, Sugar Creek, Manchester Creek and Johnnytown Branch were revised to reflect the new backwater elevations as a result of the restudy of the Catawba River. Zone designations were not revised because no new 10-year profile was calculated for the Catawba River.

For the York County Unincorporated Areas FIS revision, February 3, 1993, streams studied in detail included Tools Fork Creek, Wildcat Creek, Manchester Creek Tributary 2, Big Dutchman Creek, Blankmanship Branch, Manchester Creek, Manchester Creek Tributary 1, Steele Creek, Little Dutchman Creek downstream of State Route 161, and Little Dutchman Creek Tributary 4, downstream of Twin Lakes Road.

For the Town of Clover FIS, November 1979, streams studied by detailed methods are Allison Creek and Calabash Branch.

For the Town of Fort Mill, December 1979, Mooneys Hill Branch, Dye Branch, Dye Branch Tributary 1, and Leroy Branch were all studied in detail at the request of the Federal Insurance Administration, as recommended by local officials.

For the City of Rock Hill FIS, April 1981, streams studied by detailed methods were Little Dutchman Creek, Little Dutchman Creek Tributary No. 1, Little Dutchman Creek Tributary No. 1-A, Catawba river Tributary, Manchester Creek, Manchester Creek Tributary No. 2, Manchester Creek Tributary No. 3, Taylors Creek Tributary No. 1, Taylors Creek Tributary No. 2, Wildcat Creek Tributary No. 1, Wildcat Creek Tributary No. 2, and Stoney Branch.

For the City of Rock Hill FIS revision, February 3, 1993, streams studied by detailed methods were Wildcat Creek, Tools Fork Creek, Big Dutchman Creek, Manchester Creek Tributary 1, Little Dutchman Creek, Manchester Creek downstream of confluence of Manchester Creek Tributary 3, Manchester Creek Tributary 2, and Manchester Creek Tributary 3.

For the City of York FIS, November 3, 1981, the streams studied by detailed methods were Ross Branch, Ross Branch Tributary No. 1, Ross Branch Tributary No. 2,

Creekside Branch, Creekside Branch Tributary No. 1, Creekside Branch Tributary No. 2, Langham Branch, Langham Branch Tributary No. 1, Fishing Creek Tributary No. 1, Fishing Creek Tributary No. 1-A, and Fishing Creek Tributary No. 1-B. Those areas studied by detailed methods were chosen with consideration given to all proposed construction and forecasted development through 1983.

For this York County and Incorporated Areas revision, September 30, 2005, the streams studied by detailed methods were Big Allison Creek, Catawba River, Creekside Branch Tributary 1, Crowders Creek, Fishing Creek, Fishing Creek Tributary 2, Little Allison Creek, Manchester Creek, Manchester Creek Tributary 1, Taylors Creek, Taylors Creek Tributary 1, Taylors Creek Tributary 2, Wildcat Creek. The following tabulation shows streams that have a different name from a previous study.

Community	Old Stream Name	New Stream Name
City of Rock Hill	Catawba River Tributary	Hidden Creek

Numerous flooding sources in the county were studied by approximate methods in the countywide study. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon, by FEMA and York County.

2.2 Community Description

York County Unincorporated Areas

York County is located in the northern part of South Carolina along the North Carolina border and covers an area of approximately 685 square miles. York, in the west-central part of the county, is the county seat. Kings Mountain Battleground, a historical site in York County, is a National Park. The Catawba Indian Reservation is located in York County. The inhabitants of the reservation are survivors of a once-powerful Indian tribe. An amusement park, Carowinds, on the NC-SC border is partially in York County.

According to U.S. Census Bureau figures, the population has increased from 85,216 in 1970 to 164,614 in 2000 (Reference 1). Approximately 40-50 percent of all county residents live in unincorporated parts of the county. The majority of the growth and development has been concentrated in the eastern part of the county, in the Rock Hill, Lake Wylie and I-77 corridor area.

The climate of York County is mild and temperate, and is characterized by warm, humid summers and mild winters. Annual precipitation varies from about 40-55 inches and is fairly well distributed throughout the year. Most of the precipitation falls as rain; however, light snows occur occasionally during the winter. The summer rains are largely local thundershowers with tropical storms or hurricanes occurring once or twice in a decade. The 100-year 3-hour rainfall is 4.5 inches while the 100-year 6-hour rainfall is 6 inches (Reference 3).

The two major rivers in York County are the Broad and Catawba Rivers. The Broad River flows along the western border of the County and is not in a fast developing

area. The Catawba River flows along the eastern part of York County. The major tributaries of these rivers in York County are Fishing, Allison, Crowders, Sugar, Kings, Bullocks, and Turkey Creeks. Lake Wylie on the Catawba River covers an area of approximately 12 square miles in York County.

York County is entirely within the Piedmont Plateau. The relief ranges from nearly level to steep, but is generally gently sloping to moderately steep. Elevations range from 500 feet above National Geodetic Vertical Datum of 1929 (NGVD) in the southern part of the county to about 1,200 feet NGVD at Henry Knob in the northwestern part of the county. York County has nine general soil associations (Reference 4). Soils along the Creeks are generally mixed alluvial land derived from many kinds of rocks along with sandy silt loam. Vegetation along the flood plains are generally made up of hardwoods with underbrush except in developed areas.

Town of Clover

The town of Clover, located in the northern part of York County in the Piedmont Province, is just south of the North Carolina border and approximately 14 miles south of Gastonia, North Carolina. The population of Clover was 3,506 in 1970 (1970 census) and had grown to 4,014 in 2000 (Reference 1).

Clover is characterized by gently to moderately rolling terrain. Elevations range from 740 to 810 feet. Soils in Clover consist mostly of the Appling-Cecil-Louisburg association which have gently sloping to moderately steep sandy loam soil with red or brown sub-soil. Generally, the permeability and infiltration are moderate and the available moisture capacity is medium (Reference 4).

The average annual rainfall in Clover is 46 inches. The 100-year, 2-hour rainfall is 4.5 inches (Reference 3).

The business area of Clover (small business, stores, shops and etc.) is located in the center of town on a ridge. The residential area surrounds the business area and is made-up primarily of single family dwellings. The flood plains are in undeveloped or residential areas.

Town of Fort Mill

The Town of Fort Mill is located in the Piedmont Province, in north-eastern York County, in north-central South Carolina. Fort Mill is situated very near the North Carolina-South Carolina state line. State Highway 160 and U.S. Highway 21 (Business Route) intersect in the middle of the town. Drainage is generally northward or southward from State Highway 160. The average elevation is approximately 600 feet, with a relief of approximately 50 feet. Annual rainfall averages approximately 45 inches and is fairly well distributed throughout the year. The average temperature is approximately 60°F. The soils are generally Cecil-clay loams, Cecil-sandy clay loams, or Lloyd-clay loams. These are underlain by a firm clay subsoil, which is, in turn, generally underlain by mica gneiss (Reference 4).

The economy of the Town of Fort Mill is based upon the manufacture of textiles. Except for the business district of several blocks and the buildings and grounds of the textile factories, most of the town is taken up with single-family dwellings with their

accompanying lots. The corporate limits encompass an area of approximately 2 square miles. The population in 1970 was 4,505 and increased to 7,587 by 2000 (Reference 1).

City of Rock Hill

Rock Hill is in southeastern York County, in northern South Carolina, near the North Carolina border. The city, which is in the Piedmont province, is entirely surrounded by unincorporated areas of York County. Incorporated in 1870, Rock Hill is now the fifth largest city in South Carolina. The population in 1975 was 35,346 and increased to 49,765 by 2000 (Reference 1).

Development in the city is a mixture of residential areas, small businesses, shopping centers, and educational centers. Much of the flood plain area is undeveloped. The sparse development there is similar to that in the rest of the city. Primary and secondary highways and complete railroad facilities service the city.

Drainage is generally away from the center of the city. It flows in all directions into small streams. There are no major rivers in Rock Hill; however, the Catawba River is a short distance to the northeast.

The land is nearly level to strongly sloping, except in the northwest; where it is gently sloping to moderately steep.

Soils along the streams are a mixture of alluvial types and sandy silt loam. In the northwest, the subsoil is red to brown and friable to slightly plastic, and the remainder of the city has a yellowish brown to red, firm clay subsoil (Reference 4).

Vegetation in the undeveloped flood plains consists of hardwoods and underbrush. The climate is characterized by mild summers and winters. The average annual temperature is approximately 60°F. The fairly well distributed annual precipitation averages approximately 46 inches. The 100-year, 3-hour rainfall is 4.5 inches, and the 100-year, 6-hour rainfall is 6 inches (Reference 3).

City of York

York is located in central York County, in north-central South Carolina. This area is in the Piedmont province near the North Carolina border. South Carolina Highways 5 and 49 and U.S. Highway 321 intersect in the heart of the city, which is on a hill at an approximate elevation of 750 feet.

York has a land area of approximately 5 square miles. The 1970 population was 5081 (Reference 1), and by 2000, the population had increased to 6,985. The average annual temperature is approximately 60 °F. The average annual rainfall of 45 inches is fairly well distributed throughout the year. The 100-year, 1-hour rainfall is 3.5 inches (Reference 3).

Soils in York are of the Lloyd-Cecil-Enon Association, which are generally red to brown, friable to slightly plastic subsoil, with mixed alluvium along the streams (Reference 4). The terrain is gently sloping to moderately steep, with an average elevation of approximately 720 feet, and a relief of approximately 110 feet. Drainage

is away from the city in all directions. Vegetation in the flood plains is generally mixed hardwoods, with underbrush or grass.

Development in York consists of a business district of several blocks near the center of the city, surrounded primarily by single-family dwellings.

2.3 Principal Flood Problems

York County Unincorporated Areas FIS – May 1981

Major floods on small streams in York County occur as a result of tropical storms (hurricanes) or local thunderstorms.

Trees and brush that grow along the streams are natural flood flow obstructions, and man-made obstructions such as bridges, culverts, buildings and dams which inhibit the flood flow are the principal flood problems in York County.

Streamflow records were not available for the small streams in York County. However, significant flooding has occurred in March 1959, August 1967, January 1973 and less severe on other numerous occasions. Streamflow records are available for the Broad and Catawba Rivers. The USGS has operated gaging stations at Broad River near Gaffney, SC and Catawba River near Rock Hill, SC also near Catawba, SC. Maximum known discharge, Catawba River near Rock Hill of 151,000 cubic feet per second (cfs) occurred on May 23, 1901. Maximum known stage, Catawba River near Catawba was 40.4 feet on July 16, 1916. These two floods would probably not be represented by the Catawba River system today because of regulation by Lake Wylie and other power plants upstream.

Flooding from the Broad and Catawba Rivers and the larger creeks in York County would have a longer duration than the small streams.

Town of Clover FIS – November 1979

Allison Creek and Calabash Branch are the major sources of flooding in Clover. Since the headwaters of these streams are located in Clover, intense local rainstorms are the cause of most of the flooding in the area.

Town of Fort Mill – December 1979

Low-lying areas adjacent to Leroy and Mooneys Hill Branches are subject to temporary flooding caused primarily by backwater from the highway embankments crossing the streams.

Along Mooneys Hill Branch, culverts at both Williamson Street and Patterson Street contain several feet of silt, while the smaller culvert at Link Street (the most downstream) is relatively free of silt. This indicates that the culvert and roadway at Link Street is probably the controlling hydraulic feature for the two upstream culverts and that upstream backwater-flooding may be caused by the Link Street culvert being too small.

Backwater from culverts along Leroy Branch also appears to be the major cause of

flooding and over-the-road flows. Little flooding in Fort Mill is caused by encroachment along the stream flood plains. Floods that do occur are caused by a semi-damming effect of roadfill at street crossings, accompanied by insufficient openings to accomodate a stormflood runoff.

Because the drainage areas of all streams in the area are small and the streambeds have good slopes, flooding that does occur is of a temporary nature.

City of Rock Hill FIS – April 1981

Major floods in Rock Hill occur as a result of tropical storms (hurricanes) or local thunderstorms. Due to the fairly steep slopes and the small size of the drainage basins, the streams rise rapidly after an intense rainfall, and floods occur within a short time. The principal flood problems in Rock Hill are caused by trees and brush that grow along the streams and manmade obstructions, such as bridges, culverts, buildings, and dams.

Flooding has occurred on numerous occasions. Although streamflow records are not available for the streams in Rock Hill, significant flooding is *known* to have occurred in March 1959, August 1967, and January 1973.

City of York FIS – November 3, 1981

The streams are normally shallow and subject to flooding during intense rainfall because of the hilly nature of the topography. Flooding is aggravated by street crossings. The drainage areas of all the streams studied are less than 2 square miles, and the streambeds have good slopes. Flooding that does occur is of a temporary nature. Records of past floods occurring in York are unavailable.

2.4 Flood Protection Measures

York County Unincorporated Areas FIS – May 1981

The power plants on the Catawba River serve to some extent as flood protection measures. The National Oceanic and Atmospheric Administration (NOAA) maintains year-round surveillance of weather conditions at Rock Hill. Tornado watch alerts, flood warnings, and anticipated weather conditions for York County are issued by the National Weather Service Office at Columbia, SC.

3.0 **ENGINEERING METHODS**

For the flooding sources studied by detailed methods in the community, standard hydrologic and hydraulic study methods were used to determine the flood-hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood

that equals or exceeds the 100-year flood (1-percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied by detailed methods affecting York County.

York County Unincorporated Areas FIS – May 1981

A flood frequency report by Arthur L. Putnam (Reference 5), an open file report by the USGS, was used to determine flood frequencies for streams studied in detail except the Catawba River and Stoney Branch. This report is based on log-Pearson Type III analysis (Reference 6) of individual station records and a regionalization of the frequency data and basin characteristics using multiple-regression techniques.’ Discharges for Catawba River were based on log-Pearson III analysis of gaging station records near Rock Hill (02146000) and Near Catawba (02147000).

Flood discharges for Stoney Branch and Stoney Branch Tributaries were taken from Flood Plain Information Report by the U.S. Army Corps of Engineers (COE) (Reference 7). The Intermediate Regional Flood was used as the 100-year flood.

York County Unincorporated Areas FIS Revision – March 18, 1991

The hydrologic analyses were performed by the COE using the HEC-1 computer program (Reference 8). The 100-year rainfall distribution and amounts were obtained from TP-40 and TP-49 (References 9 and 10). Detailed information on the hydrologic parameters is contained in a report, titled “Report Summary, York County, South Carolina, LMMP Project,” prepared by the COE, Charleston District.

York County Unincorporated Areas FIS Revision – February 3, 1993

The hydrologic analyses were performed using the COE HEC-1 computer program (Reference 8). The periodic rainfall distributions and amounts were obtained from Technical Paper No. 40 (Reference 9).

Town of Clover FIS – November 1979

A flood frequency report by Authur L. Putnam, Effect of Urban Development on Floods in the Piedmont Province of North Carolina, (Reference 5), was used to determine flood frequencies. The flood frequencies were checked with discharges computed using a USGS administrative report entitled “Estimating the Magnitude of Peak Discharges for Selected Flood Frequencies for Small Streams in South Carolina” by Benjamin H. Whetstone, September 1975 adjusted for urbanization effect. Both of

these reports are based on log-Pearson Type III analysis (Reference 6) of individual station records and the regionalization was developed using multiple-regression techniques.

Town of Fort Mill – December 1979

There are no stream gages located in the immediate vicinity of Fort Mill.

A flood-frequency report by Authur L. Putnam (Reference 5), which is an open-file report by the U.S. Geological Survey, was used to determine flood frequencies for streams studied in detail. This report is based on a log-Pearson Type III analysis (Reference 6) of individual station records and a regionalization of the frequency data and basin characteristics using multiple-regression techniques.

City of Rock Hill FIS – April 1981

A flood frequency report by the U.S. Geological Survey (Reference 4) was used to determine flood frequencies for streams studied in detail. This report is based on a log-Pearson Type III analysis (Reference 5) of individual station records and a regionalization of the frequency data and basin characteristics using multiple-regression techniques. Flood discharges for Stoney Branch and Stoney Branch Tributary No. 3 were taken from a Flood Plain Information report by the U.S. Army Corps of Engineers (Reference 7). The Intermediate Regional Flood was used as the 100-year flood. Peak discharge-drainage area relationships for Little Dutchman Creek, Little Dutchman Creek Tributary No. 1, Little Dutchman Creek Tributary No. 1-A, Catawba River Tributary, Manchester Creek, Manchester Creek Tributary No. 2, Manchester Creek Tributary No. 3, Taylors Creek Tributary No. 1, Taylors Creek Tributary No.2, Wildcat Creek Tributary No. 1, Wildcat Creek Tributary No. 2, and Stoney Branch are shown in Table 1.

City of Rock Hill FIS Revision – February 3, 1993

The hydrologic analyses were performed using the U.S. Army Corps of Engineers (COE) HEC-1 computer program (Reference 8). The periodic rainfall distributions and amounts were obtained from TP-40 (Reference 3).

City of York FIS – November 3, 1981

A flood frequency report by the U.S. Geological Survey (Reference 5) was used to determine flood frequencies for streams studied in detail. This method is based on a log-Pearson Type III analysis (Reference 6) of individual station records and a regionalization of the frequency data and basin characteristics using multiple-regression techniques.

York County and Incorporated Areas FIS Revision – September 2005

The hydrologic approach used for this Flood Insurance Study includes the U.S. Geological Survey (USGS) regression equations for North Carolina described in USGS Water Resource Investigation Reports (WRIR) 01-4207 and 96-4084 for all the streams in the county except for the Catawba River. The North Carolina equations

were used based on guidance provided in USGS Water Resource Investigation Reports (WRIR) 02-4140. This report states that, “Until the streamflow characteristics in this area are sufficiently defined by higher flow measurements, the North Carolina rural flood-frequency equations by Pope and others (2001) and the North Carolina urban flood-frequency equations by Robbins and Pope (1996) can be used to estimate the magnitude and frequency of floods in the York and Chester County area.” The North Carolina rural flood-frequency equations are:

$$Q_{10} = 334 * (DA^{0.662})$$

$$Q_{50} = 602 * (DA^{0.635})$$

$$Q_{100} = 745 * (DA^{0.625})$$

$$Q_{500} = 1160 * (DA^{0.605})$$

Where DA = Drainage Area

The North Carolina urban flood-frequency equations are:

$$Q_{10} = (122 * (DA^{0.655})) * (IA^{0.515})$$

$$Q_{50} = (296 * (DA^{0.602})) * (IA^{0.396})$$

$$Q_{100} = (374 * (DA^{0.593})) * (IA^{0.358})$$

$$Q_{500} = \text{extrapolation of the } Q_{100} \text{ flows on a log-log scale}$$

Where DA = Drainage Area and IA = Impervious Area

The North Carolina urban flood-frequency equations were used to determine hydrology only in those basins that have an impervious area greater than 10%.

Hydrology along the stretch of the Catawba River from just downstream of the Lake Wylie Dam to the confluence with Sugar Creek was determined by stream gage analysis.

Stream Gage Analysis

There are six USGS stream gages that measure data on streams that flow through York County, South Carolina. Two of these gages are located on the Catawba River. The remaining gages are located on Crowders Creek, Clarks Creek, Bullock Creek, and Turkey Creek. Information on these four gages is shown in Table 1, “Stream Gages.”

Table 1: Stream Gages

<u>Gage ID</u>	<u>Flooding Source and Location</u>	<u>Computed Drainage Area (Square Miles)</u>	<u>Published Drainage Area (Square Miles)</u>	<u>Period of Record</u>
2145642	Crowders Creek at SR 1104 near Clover, SC	88.9	89.0	1999-2003
2153780	Clarks Fork Creek near Symnra, SC	24.1	24.1	1980-2002
2153800	Bullock Creek near Sharon, SC	84.5	84.3	2000-2003
21563931	Turkey Creek near Lowrys, SC	80.7	81.5	1990-2003

Flood frequency analyses were performed for each of these gages using guidelines

describe in Bulletin 17B (Reference 27). The results of these analyses were not used to adjust regression equation discharges, however, because the gages all have short periods of record. Therefore, the Catawba River is the only river in York County where hydrology was obtained by a method other than the North Carolina urban or rural flood-frequency equations.

The methodology used for the hydrologic analysis for the studied reach of the Catawba River is an extension of the hydrologic analysis used to determine recurrence interval discharges on the Catawba River upstream of Lake Wylie for the Mecklenburg County, N.C. Flood Insurance Study (Reference 43).

There are 7 reservoirs on the Catawba River. Based on the completion dates of the reservoirs on the Catawba River there are 4 periods of flow conditions to consider:

- 1) prior to any regulation (prior to 1915)
- 2) period of dam construction (1915-1928)
- 3) regulated, pre-Lake Norman (1929-1963)
- 4) regulated, post-Lake Norman (1963-date).

USGS stream gage data is available for the Catawba River, the South Fork Catawba River, and the Broad River. The Broad River Basin is contiguous to the Catawba River Basin and has similar topography and climate. The South Fork Catawba River is an unregulated tributary of the Catawba. It is located in North Carolina and is not part of this countywide study.

The peak flow record for Catawba River near Rock Hill (1896-1903; 1942-date) spans the unregulated period, the Pre-Lake Norman regulated period, and the Post-Lake Norman regulated period. A relation was developed between regulated peak flows at Catawba River near Rock Hill and unregulated peak flows at Broad River at Richtex, S.C. (USGS station number 02161500) for the period after the completion of Lake Norman (1963-date). This relation was used along with peak flows from Broad River at Richtex to adjust peak flows for the periods 1896-1903 and 1942-1962 at Catawba River at Rock Hill to reflect the effects of current flow conditions.

A review of stream gage records as well as information on large regional floods from newspapers and other published sources indicates that the largest floods experienced in recent times on the Catawba River occurred in 1908 and 1916 and that these floods are the largest since at least 1886. There are no recorded peak flows for the 1908 and 1916 floods at Catawba River near Rock Hill; however, peak flows were recorded for these floods at Wateree River near Camden, S.C. (USGS station number 02148000). The peak flows for the 1908 and 1916 event were transposed upstream to the Catawba River near Rock Hill gage location using the slope of the North Carolina flood-frequency equation for the Piedmont hydrologic area; at the time of these floods, there were no reservoirs between the two gage locations. The transferred peak flows were then adjusted for regulation using the relation between unregulated observed peaks flows and estimated regulated flows at Catawba River near Rock Hill for the period 1897-1903.

Flood frequency discharges for Catawba River near Rock Hill were computed by fitting the base 10 logarithms of the annual peak discharges at the gage site to a Pearson Type III distribution, following the guidelines found in Bulletin 17B. The

annual peak record used in the analysis included observed annual peak discharges from the period 1963-date and the annual peak discharges from the periods 1896-1903 and 1942-1962 that were adjusted to current flow conditions. A historic correction was applied to the analysis, using the 1908 and 1916 annual peak discharges as historic peaks and a historic period of 116 years (1886-2001). The flood frequency discharges computed at the gage location were transposed to ungaged locations within the study reach of the Catawba River by multiplying the discharge at the gage location by the ratio of the ungaged drainage area to the gaged drainage area, raised to a transposition exponent. The transposition exponent used was the slope of the linear relation between the base-10 logarithms of discharge and drainage area determined by a hydrologic analysis of the Catawba River Basin conducted by Duke Engineering and Services (DE&S).

Several sub-basins in York County were determined to have sufficient urbanization to require application of the USGS North Carolina regression equations for urban basins. Recurrence interval discharges for basins with cumulative percent imperviousness greater than 10% were computed using the North Carolina urban regression equations. Because there is no regression equation for the 500-year urban discharge presented in WRIR 96-4084 the 500-year urban discharge was estimated by linear extrapolation from the 50- and 100-year urban discharges, using the log of discharge and log of exceedence probability.

Peak discharges for the 1% annual chance of exceedence flood event were determined for the study reach of the Catawba River by extrapolation of recurrence interval discharges estimates at a USGS stream gage, Catawba River near Rock Hill, S.C. (USGS station number 02146000). The gage is downstream of the Lake Wylie dam.

A summary of the drainage area-peak discharge relationships for the streams studied by detailed methods is shown in Table 2, "Summary of Discharges."

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cfs)			
		10 % Annual Chance	2 % Annual Chance	1 % Annual Chance	0.2 % Annual Chance
ALLISON CREEK Station 16,750 Corporate Limits	0.13	160	310	400	680
BIG ALLISON CREEK At mouth	66.57	8,151	11,342	12,356	15,043
Just upstream of confluence of Little Allison Creek	51.89	6,797	9,624	10,524	12,924
Just upstream of confluence of Big Branch	43.97	5,583	8,139	8,972	11,226

TABLE 2: SUMMARY OF DISCHARGES - continued

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cfs)			
		10 % Annual Chance	2 % Annual Chance	1 % Annual Chance	0.2 % Annual Chance
BIG ALLISON CREEK (continued)					
Just upstream of Riverfork Road	41.44	5,353	7,834	8,643	10,835
Just upstream of confluence of Big Allison Tributary 1	37.82	5,148	7,534	8,307	10,397
About 2,000 feet downstream of confluence of Rock Branch	36.08	5,025	7,361	8,115	10,157
BIG DUTCHMAN CREEK					
At mouth	18.0	5,100	7,370	8,140	10,600
Just upstream of confluence of Little Dutchman Creek	9.2	2,690	3,940	4,360	5,720
At Homestead Road	5.8	1,840	2,710	3,010	3,960
BLANKMANSHIP BRANCH					
At mouth	4.3	1,260	1,920	2,150	2,890
At state boundary	1.5	510	750	830	1,090
BURGIS CREEK					
At mouth	1.42	320	533	644	940
At Sea Road	7.06	1,400	2,360	2,780	3,900
At Hopewell Road	4.41	1,150	1,950	2,310	3,400
At U.S. Highway 21	2.56	900	1,550	1,840	2,600
CALABASH BRANCH					
Station 18,00 Corporate Limits	0.4	310	580	720	1,140
Station 19,570 Section G	N/A	220	420	530	850
Station 24,000 Hampshire Lane	0.1	130	260	340	560
CATAWBA RIVER					
At county boundary	3690	N/A	N/A	118,000	N/A
At Hwy 5	3530	N/A	N/A	113,100	N/A
Upstream of Haggins Branch	3367	56,565	90,615	108,100	157,065
Just upstream of confluence of Sugar Creek	3080	51,981	83,270	99,300	144,334
At U.S. Highway 21	3050	51,500	82,500	98,400	143,000

TABLE 2: SUMMARY OF DISCHARGES - continued

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cfs)			
		10 % Annual Chance	2 % Annual Chance	1 % Annual Chance	0.2 % Annual Chance
CATAWBA RIVER TRIBUTARY					
At mouth	1.42	570	1,010	1,270	1,900
At South Carolina Highway 161	0.82	440	810	1,000	1,500
CREEKSIDE BRANCH					
Above confluence with Creekside Branch Tributary 1	0.89	470	850	1,050	1,650
Above confluence with Creekside Branch Tributary 2	0.35	260	510	640	1,000
At Southern Railroad Bridge	0.26	250	470	590	960
CREEKSIDE BRANCH TRIBUTARY 1					
At mouth	0.25	220	430	540	880
CREEKSIDE BRANCH TRIBUTARY 2					
At mouth	0.33	260	500	630	1,000
Above Woodland Drive	0.20	180	360	460	750
CROWDERS CREEK					
About 2,000 feet upstream of mouth	117.57	7,840	12,423	14,659	20,749
About 2,200 feet downstream of Charlotte Highway	114.90	7,721	12,244	14,450	20,463
About 3,500 feet upstream of Charlotte Highway	111.81	7,583	12,034	14,206	20,128
DYE BRANCH					
At corporate limits	0.95	520	940	1,100	1,800
At cross-section B	0.73	440	800	980	1,300
DYE BRANCH TRIBUTARY 1					
At mouth	0.19	190	370	470	750
FISHING CREEK					
About 1,300 feet upstream of Oak Park Road	46.61	5,537	7,907	8,765	11,109

TABLE 2: SUMMARY OF DISCHARGES - continued

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cfs)			
		10 % Annual Chance	2 % Annual Chance	1 % Annual Chance	0.2 % Annual Chance
<i>FISHING CREEK (continued)</i>					
Just upstream of confluence of Fishing Creek Tributary	41.86	5,155	7,618	8,431	10,646
About 1,220 feet downstream of Russell Road	37.09	4,805	7,132	7,897	9,983
About 2,300 feet downstream of Gordon Road	35.33	4,706	6,984	7,731	9,766
About 1,400 feet upstream of Gordon Road	33.64	4,619	6,852	7,581	9,565
About 1,500 feet upstream of Gordon Road	31.62	4,578	6,764	7,470	9,388
Just upstream of confluence of Langham Branch	19.82	3,378	5,114	5,673	7,201
About 500 feet upstream of Park Place Road	17.85	3,168	4,818	5,348	6,799
Just upstream of confluence of Fishing Creek Tributary 2	14.73	2,723	4,208	4,689	6,012
About 2,500 feet downstream of Old York Road	13.54	2,582	4,006	4,466	5,735
FISHING CREEK TRIBUTARY 1					
At corporate limits	1.66	700	1,220	1,480	2,200
Above confluence with Fishing Creek Tributary 1-A	0.46	355	655	810	1,250
Above confluence with Fishing Creek Tributary 1-B	0.23	195	390	500	820
FISHING CREEK TRIBUTARY 1-A					
At mouth	0.45	295	560	700	1,100
FISHING CREEK TRIBUTARY 1-B					
At mouth	0.19	190	370	480	780

TABLE 2: SUMMARY OF DISCHARGES - continued

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cfs)			
		10 % Annual Chance	2 % Annual Chance	1 % Annual Chance	0.2 % Annual Chance
FISHING CREEK TRIBUTARY 2					
At mouth	1.97	759	1,293	1,464	1,950
About 1.1 miles upstream of Confluence of Fishing Creek	1.36	639	1,092	1,235	1,639
HIDDEN CREEK					
At mouth	1.42	570	1010	1270	1900
At South Carolina Highway 161	0.82	440	810	1000	1500
JACKSON BRANCH					
At mouth	2.96	900	1,570	1,870	2,740
Above Interstate Highway I-77	N/A	830	1,450	1,720	2,520
At Road 22	1.73	760	1,320	1,580	2,300
JOHNNYTOWN BRANCH					
At mouth	2.17	790	1,380	1,660	2,400
Above State Road 251	N/A	670	1,170	1,400	2,000
Above Tributary (1.1 miles above mouth)	0.80	420	790	970	1,500
LANGHAM BRANCH					
At corporate limits	0.75	470	840	1,050	1,550
Above confluence with Langham Branch Tributary 1	0.38	310	560	690	1,030
LANGHAM BRANCH TRIBUTARY 1					
At mouth	0.29	240	470	590	950
LEROY BRANCH					
At corporate limits	0.14	150	300	390	650
LITTLE ALLISON CREEK					
About 3,000 feet downstream of Paraham Road	2.78	1,338	2,279	2,762	4,124

TABLE 2: SUMMARY OF DISCHARGES - continued

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cfs)			
		10 % Annual Chance	2 % Annual Chance	1 % Annual Chance	0.2 % Annual Chance
LITTLE ALLISON CREEK <i>(continued)</i>					
About 5,100 feet downstream of Hands Mill Highway	2.37	2,056	3,280	3,683	4,806
About 980 feet above mouth	1.97	2,519	3,899	4,342	5,559
Just upstream of Paraham Road	1.85	1,015	1,748	2,127	3,202
LITTLE DUTCHMAN CREEK					
At mouth	7.00	2,483	3,560	3,920	5,080
Above confluence of Little Dutchman Creek Tributary 1	3.44	1,050	1,790	2,110	3,150
Above confluence of Little Dutchman Creek Tributary 3	2.31	920	1,550	1,840	2,650
Above confluence of Little Dutchman Creek Tributary 4	0.99	520	940	1,140	1,750
LITTLE DUTCHMAN CREEK TRIBUTARY 1					
At mouth	3.6	1,260	2,060	2,410	3,400
Above confluence of Little Dutchman Creek Tributary 1-a	2.5	880	1,510	1,800	2,620
At Ebinport Road	N/A	760	1,320	1,580	2,320
At corporate limits	1.4	650	1,140	1,370	2,020
LITTLE DUTCHMAN CREEK TRIBUTARY 1-A					
At mouth	1.0	500	910	1110	1720
LITTLE DUTCHMAN CREEK TRIBUTARY 4					
At mouth	1.4	582	853	944	1,238
MANCHESTER CREEK					
At mouth	11.9	3,760	5,320	5,840	7,510
Just upstream of Red River Road	10.2	3,013	4,387	4,783	5,835

TABLE 2: SUMMARY OF DISCHARGES - continued

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cfs)			
		10 % Annual Chance	2 % Annual Chance	1 % Annual Chance	0.2 % Annual Chance
MANCHESTER CREEK <i>(continued)</i>					
Just upstream of confluence of Manchester Creek Tributary 1	5.9	2,372	3,458	3,757	4,546
Just upstream of confluence of Manchester Creek Tributary 2	2.7	780	1,140	1,240	1,620
MANCHESTER CREEK TRIBUTARY 1					
At mouth	2.7	2,045	2,855	3,042	3,519
MANCHESTER CREEK TRIBUTARY 2					
At mouth	1.0	341	496	549	718
MANCHESTER CREEK TRIBUTARY 3					
At mouth	0.9	524	747	822	1,061
MOONEYS HILL BRANCH					
At corporate limits	0.38	300	560	700	1,100
At Patterson Street	0.33	290	540	670	1,000
ROSS BRANCH					
At corporate limits	1.66	720	1,250	1,510	2,250
At California Street	1.58	720	1,250	1,510	2,250
At confluence with Ross Branch Tributary 2	1.33	660	1,150	1,390	2,050
Above confluence with Ross Branch Tributary 2	0.82	460	840	1,020	1,600
At West Liberty Street	0.77	460	840	1,020	1,600
ROSS BRANCH TRIBUTARY 1					
At corporate limits	0.23	220	420	540	890
At U.S. Highway 321 Bypass	0.17	180	360	460	750
ROSS BRANCH TRIBUTARY 2					
At mouth	0.51	370	680	840	1,310

TABLE 2: SUMMARY OF DISCHARGES - continued

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cfs)			
		10 % Annual Chance	2 % Annual Chance	1 % Annual Chance	0.2 % Annual Chance
STEELE CREEK					
At mouth	34.3	6,450	9,540	10,590	14,000
At State Route 270	33.0	6,340	9,390	10,430	13,800
At U.S. Route 21 Business	30.6	6,020	8,860	9,830	12,970
Just upstream of confluence of Jackson Branch	23.5	4,820	7,060	7,820	10,290
Just upstream of confluence of Blankmanship Branch	17.7	3,780	5,480	6,060	7,920
At state boundary	14.2	3,130	4,600	5,100	6,720
STONEY BRANCH					
At mouth	3.15	1,000	1,750	2,250	3,300
At State Highway 243	2.66	950	1,600	2,170	3,000
Above Stoney Branch Tributary 1	1.75	820	1,380	1,840	2,600
Above Stoney Branch Tributary 2	1.08	680	1,160	1,550	2,170
SUGAR CREEK					
At mouth	274.0	18,900	23,800	24,500	30,100
Below Steele Creek	235.0	18,600	23,300	24,000	29,200
Below McAlpine Creek	220.0	18,000	22,600	23,300	28,400
Below Little Sugar Creek	120.0	12,200	15,900	16,700	20,900
Above Little Sugar Creek	71.0	8,050	11,000	11,800	14,600
At state boundary	68.7	8,050	11,000	11,800	14,600
TAYLORS CREEK					
About 3,200 feet downstream of Oakdale Road	15.41	3,719	5,371	5,859	7,154
At the confluence of Taylors Creek Tributary 1	12.33	3,183	4,662	5,100	6,268
About 3,200 feet upstream of Mount Holly Road	9.92	2,742	4,069	4,462	5,517
About 6,600 feet upstream of Mount Holly Road	8.59	2,572	3,819	4,184	5,164
About 7,000 feet upstream of Mount Holly Road	6.03	2,067	3,117	3,424	4,249

TABLE 2: SUMMARY OF DISCHARGES - continued

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cfs)			
		10 % Annual Chance	2 % Annual Chance	1 % Annual Chance	0.2 % Annual Chance
TAYLORS CREEK TRIBUTARY 1					
At mouth	1.46	880	1,406	1,556	1,968
About 3,500 feet upstream of Mount Holly Road	1.00	738	1,183	1,308	1,648
At Albright Road	0.40	320	620	770	1,480
TAYLORS CREEK TRIBUTARY 2					
Just upstream of mouth	2.5	1,329	2,031	2,226	2,749
At most upstream corporate limits	1.8	760	1,320	1,580	2,370
At Blackman Street	0.8	440	760	1,000	1,700
TOOLS FORK CREEK					
At mouth	15.5	3,010	4,400	4,870	6,400
At State Route 322	13.9	2,980	4,400	4,880	6,430
WILDCAT CREEK					
At State Route 101	26.5	5,280	7,630	8,430	11,010
Just upstream of confluence of Tools Fork Creek	10.2	2,700	3,760	4,120	5,280
At confluence of Wildcat Tributary 2 About 1,200 feet upstream of McConnells Highway	6.5	2,154	3,241	3,559	4,415
Just upstream of confluence of Wildcat Tributary 4	3.9	1,436	2,259	2,507	3,186
About 2,000 feet downstream of Olde Creek Road	1.8	874	1,426	1,592	2,051
1.3	681	1,139	1,278	1,668	
WILDCAT CREEK TRIBUTARY 1					
At corporate limits	1.58	750	1,300	1,550	2,250
At Reynolds Street	0.52	340	640	800	1,240
WILDCAT CREEK TRIBUTARY 2					
At most upstream corporate limits	0.70	390	710	880	1,360
At West Main Street	0.48	310	590	750	1,180

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the FIRM represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data tables in the FIS report. For construction and/or floodplain management purposes, users are encouraged to use the flood elevation data presented in this FIS in conjunction with the data shown on the FIRM.

Cross sections for the flooding sources studied by detailed methods were obtained from field surveys. All bridges, dams, and culverts were field surveyed to obtain elevation data and structural geometry.

Channel roughness factors (Manning's "n") used in the hydraulic computations were determined on the basis of field inspections of the channels and floodplain areas and are listed at the end of this section.

York County Unincorporated Areas FIS – May 1981

Roughness coefficients (Manning's "n") for the computations were assigned on the basis of field inspection of stream channels and flood plain areas (Reference 11). Roughness values selected range from 0.040 for the main channels to 0.100 for the flood plains for all floods.

Water-surface elevations of the floods of the selected recurrence intervals for the stream reaches studied in detail were computed through use of the USGS E431 step-backwater computer program (Reference 12). Star tiny water-surface elevations were determined by the slope-conveyance method. Supercritical flow-routing procedures were used to compute water-surface elevations at a few sections in the upper reaches of some of the streams in the study area. Where supercritical water-surface elevations were found the elevations were converted to alternate elevations and the alternate elevations were used on the profiles.

Some of the highway and railroad stream crossings on the small streams form embankments which act as "ponds." The resulting storage is significant because the small drainage areas involved would tend to reduce the computed flood levels as well as peak outflow. An inflow hydrograph was developed and routed through the individual "ponds." A reservoir routing report by Marshall E. Jennings (Reference 13) was used to determine elevations of the various floods at these crossings. This report routes a known inflow hydrograph downstream through an uncontrolled reservoir to form an outflow hydrograph. The inflow hydrograph was developed from rainfall-runoff relations and hydrographs from other small streams. The rainfall data were taken from Weather Bureau Technical Paper No. 40 (Reference 3). A modified Puls Method was used for routing computations. Downstream discharges were not reduced thus allowing for the possibility of improved drainage through upstream embankments. Flood profiles for streams studied in detail were drawn showing computed water-surface elevations to an accuracy at 0.5 foot for floods of selected recurrence intervals (Exhibit 1).

Flood profiles of the 100-year flood for Stoney Branch and Stoney Branch Tributaries are shown in the flood plain information report by the COE (Reference 7).

York County Unincorporated Areas FIS Revision – March 18, 1991

The COE step-backwater computer model, HEC-2, (Reference 14) was used to calibrate the existing E-431 step-backwater computer model (Reference 15) and the existing 100-year profile. The revised 100-year discharge was then input into the calibrated model and a new 100-year profile was generated.

Roughness coefficients (Manning's "n") were taken from the E-431 model used in the December 1981 Flood Insurance Study (Reference 16).

York County Unincorporated Areas FIS Revision – February 3, 1993

Water-surface elevations were determined using the COE HEC-2 step-backwater computer program (Reference 17).

Town of Clover FIS – November 1979

Roughness coefficients (Manning's "n") for these computations were assigned on the basis of field inspection of stream channels and flood plain areas (Reference 11). Roughness coefficients were selected assuming the flooding to occur during times (summer months) when "n" values would be the highest and averaged for the reach of streams, except for bridges or culverts. Roughness values, generally used, were 0.040 for main channel and 0.080 for overbank areas.

Water-surface profiles were developed using the USGS step-backwater computer program (Reference 12). Profiles were computed for the 10-, 50-, 100-, and 500-year floods. Supercritical flow-routing procedures were used to compute water-surface elevation at a few sections. Where supercritical water-surface elevations were found the elevations were converted to alternate elevations and the alternate elevations were used on the profiles. Starting surface elevations were obtained using the slope-area method.

Town of Fort Mill FIS – December 1979

Water-surface elevations of the floods of the selected recurrence intervals for the stream reaches studied in detail were computed through use of the U.S. Geological Survey E-431 step-backwater computer program (Reference 12). Starting water-surface elevations were determined by the slope-conveyance method. Supercritical flow-routing procedures were used to compute water-surface elevations at a few sections in the upper reaches of some of the streams in the study area. Where supercritical water-surface elevations were found, critical depth was assumed.

Leroy Branch has street crossings at approximately 350-foot intervals, and these crossings form embankments that cause a series of ponds. The resulting storage is significant because of the small drainage areas involved and would tend to reduce the computed flood levels, as well as peak outflow. An inflow hydrograph was developed and routed through the individual ponds. A reservoir-routing report by Marshall E. Jennings (Reference 13) was used to determine elevations of the various floods on

Leroy Branch. This report routes a known inflow hydrograph downstream through an uncontrolled reservoir to form an outflow hydrograph. The inflow hydrograph was developed from rainfall-runoff relations and hydrographs from other small streams. The rainfall data were taken from Weather Bureau Technical Paper No. 40 (Reference 3). A modified Puls method was used for routing computations. The same inflow hydrograph (with no peak reduction) was used for each pond, thus allowing for the possibility of improved drainage through upstream embankments.

Roughness coefficients (Manning's "n") for the computations were assigned on the basis of field inspection of stream channels and flood plain areas (Reference 11). Roughness values selected ranged from 0.040 for the main channels to 0.080 for the flood plains for all floods.

City of Rock Hill FIS – April 1981

Water-surface elevations for floods of the selected recurrence intervals were computed through use of the U.S. Geological Survey E-431 step-backwater computer program (Reference 12).

Roughness coefficients (Manning's "n") for the computations were assigned on the basis of field inspection of stream channels and flood plain areas (Reference 11). The average roughness values selected were 0.040 for the main channels and 0.100 for the flood plain areas.

Starting water-surface elevations were determined by the slope-conveyance method.

Some of the highway and railroad stream crossings form embankments which act as ponds. The resulting storage is significant because of the small drainage areas involved and because the storage would tend to reduce the computed flood levels as well as the peak outflow. An inflow hydrograph was developed and routed through the individual ponds. A reservoir routing report (Reference 13) was used to determine elevations of the various floods at these crossings. This report routes a known inflow hydrograph downstream through an uncontrolled reservoir to form an outflow hydrograph. The inflow hydrograph was developed from rainfall-runoff relations and hydrographs from other small streams. The rainfall data were taken from U.S. Weather Bureau Technical Paper 40 (Reference 3). A modified Puls method was used for routing computations. Downstream discharges were not reduced, thus allowing for the possibility of improved drainage through upstream embankments.

City of Rock Hill FIS Revision- February 3, 1993

The COE HEC-2 step-backwater computer program (Reference 14) was used in the hydraulic analyses. Roughness coefficients (Manning's "n") were assigned on the basis of field inspection.

City of York FIS – November 3, 1981

Water-surface elevations for floods of the selected recurrence intervals for the streams studied in detail were computed through use of the U.S. Geological Survey E-431 step-backwater computer program (Reference 12).

Roughness coefficients (Manning's "n") for the computations were assigned on the basis of field inspection of stream channels and flood plain areas (Reference 11). Roughness values selected were 0.035 for the main channels and 0.100 for the overbank areas.

Starting water-surface elevations were determined by the slope-conveyance method. Supercritical flow-routing procedures were used to compute water-surface elevations at a few cross sections of some of the streams in the study area. Where supercritical water-surface elevations were found, the elevations were converted to alternate elevations, and the alternate elevations were used on the profiles.

The Southbrook Drive and Woodland Drive crossings on Creekside Branch Tributary No. 2 and the Ross Cannon Street crossing on Fishing Creek Tributary No. 1 have roadway embankments that cause temporary storage of water during floods. This storage significantly reduces the computed flood levels as well as peak outflow. An inflow hydrograph was developed and routed downstream through the storage area. A reservoir routing computer program (Reference 13) that uses a modified Puls method was used to determine elevations of the various floods for these areas. The inflow hydrograph was developed from rainfall-runoff relations and hydrographs from other small streams. The rainfall data were taken from U.S. Weather Bureau, Technical Paper 40 (Reference 3).

York County and Incorporated Areas FIS Revision – September 2005

The hydraulic model used was the U. S. Army Corps of Engineers Hydraulic Engineering Center River Analysis System, version 3.1.2 (HEC-RAS 3.1.2).

Starting conditions for the hydraulic models were set to normal depth using starting slopes calculated from water surface elevation values taken from the LIDAR data or, where applicable, derived from the water surface elevations of existing effective flood elevations. Manning's n-values used in hydraulic computations were field investigated and delineated on aerial photography provided by York County (Reference 44). Table 3, "Summary of Roughness Coefficients," shows the ranges of the channel and overbank roughness factors (Manning's "n") used in the hydraulic computations for all of the streams studied by detailed methods.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the Flood Insurance Rate Map (Exhibit 2).

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the Flood Profiles (Exhibit 1) are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

All elevations are referenced to the North American Vertical Datum of 1988 (NAVD).

Table 3: Manning's "n" Values

<u>Stream</u>	<u>Channel "n"</u>	<u>Overbank "n"</u>
Big Allison Creek	0.035-0.040	0.070-0.140
Catawba River	0.036-0.050	0.045-0.130
Creekside Branch Tributary 1	0.038-0.050	0.150
Crowders Creek	0.035-0.038	0.070-0.160
Fishing Creek	0.040-0.050	0.060-0.140
Fishing Creek Tributary 2	0.048	0.060-0.150
Little Allison Creek	0.037-0.043	0.100-0.145
Manchester Creek	0.037-0.040	0.065-0.135
Manchester Creek Tributary 1	0.039-0.040	0.070-0.125
Taylors Creek	0.043-0.045	0.065-0.150
Taylors Creek Tributary 1	0.042-0.045	0.080-0.150
Taylors Creek Tributary 2	0.037-0.045	0.080-0.140
Wildcat Creek	0.030-0.050	0.060-0.150

3.3 Vertical Datum

All FIS reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum in use for newly created or revised FIS reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD 29). With the finalization of the North American Vertical Datum of 1988 (NAVD 88), many FIS reports and FIRMs are being prepared using NAVD 88 as the referenced vertical datum.

Table 4, "Datum Shift Conversion factors for York County, South Carolina," shows the values of the datum shift for the area of York County, South Carolina.

Flood elevations shown in this FIS report and on the FIRM are referenced to NAVD 88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. It is important to note that adjacent counties may be referenced to NGVD 29. This may result in differences in base flood elevations across county lines

For information regarding conversion between the NGVD and NAVD, refer to the FEMA publication entitled *Converting the National Flood Insurance Program to the North American Vertical Datum of 1988* (FEMA, June 1992), or contact the Vertical Network Branch, National Geodetic Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, Rockville, Maryland 20910 (Internet address <http://www.ngs.noaa.gov>).

Table 4: Datum Shift Conversion Factors
for York County, South Carolina

<u>Quad Name</u>	<u>Corner</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Conversion from NGVD29 to NAVD 88</u>
Grover	SE	-81.375	35.125	-0.702
Kings Mountain	SE	-81.250	35.125	-0.656
Gastonia South	SE	-81.125	35.125	-0.696
Belmont	SE	-81.000	35.125	-0.755
Kings Creek	SE	-81.375	35.000	-0.702
Filbert	SE	-81.250	35.000	-0.673
Clover	SE	-81.125	35.000	-0.696
Lake Wylie	SE	-81.000	35.000	-0.735
Fort Mill	SE	-80.875	35.000	-0.745
Wilkinsville	SE	-81.500	34.875	-0.614
Hickory Grove	SE	-81.375	34.875	-0.666
Sharon	SE	-81.250	34.875	-0.686
Tirzah	SE	-81.125	34.875	-0.722
Rock Hill West	SE	-81.000	34.875	-0.712
Rock Hill East	SE	-80.875	34.875	-0.741
Blaskburg South	SE	-81.500	35.000	-0.705
Average				-0.700

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each Flood Insurance Study provides 100-year flood elevations and delineations of the 100- and 500-year floodplain boundaries and 100-year floodway to assist communities in developing floodplain management measures.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied by detailed methods, the 100- and 500-year floodplain boundaries have been delineated using the flood elevations determined at each cross section.

In the original York County Unincorporated Areas FIS, the boundaries were interpolated between cross sections, using various topographic maps. Topographic maps (scale 1" = 200', contour = 5') used in the vicinity of Rock Hill were furnished by

the City of Rock Hill (Reference 11). Topographic maps used outside of the Rock Hill area were USGS quadrangle maps. In areas of detail study, these maps were enlarged (scale 1" = 1,000' contour interval = 10'). In cases where the 100-year and the 500-year flood boundaries are close together, only the 100-year boundary has been shown. For the streams studied by approximate methods, the boundary of the 100-year flood was developed from normal depth calculations and the topographic maps referenced above. The boundaries of the 100-year flood for Stoney Branch and Stoney Branch Tributaries were transferred from the maps in the Flood Plain Information Report, prepared by the COE (Reference 7).

In the York County Unincorporated Areas FIS revision, March 18, 1991, revised flood boundaries along the Catawba River were delineated using flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:12000, with a contour interval of 10 feet (Reference 19).

In the York County Unincorporated Areas FIS revision, February 3, 1993, the boundaries were interpolated between cross sections, using topographic maps at a scale of 1:24000 with a contour interval of 10 feet (Reference 20).

In the Town of Clover FIS, November 1979, the boundaries were interpolated between cross sections, using topographic maps at a scale of 1"=500' with a contour interval of 20 feet (Reference 21).

In the Town of Fort Mill FIS, December 1979, the boundaries were interpolated between cross sections, using topographic maps at a scale of 1:24,000, enlarged to a scale of 1:6,000, with a contour interval of 10 feet (Reference 22).

In the City of Rock Hill FIS, April 1981, the boundaries were interpolated between cross sections, using topographic maps at a scale of 1:2400, with a contour interval of 5 feet (Reference 23).

In the City of Rock Hill FIS revision, February 3, 1993, the boundaries were interpolated between cross sections, using topographic maps at a scale of 1:24000 with contour intervals of 10 feet and 3 meters, respectively (Reference 24).

In the City of York FIS, November 3, 1981, the boundaries were interpolated between cross sections, using topographic maps at scales of 1:24,000 and 1:62,500, with contour intervals of 10 and 20 feet, respectively, (References 25 and 26).

In this York County and Incorporated Areas FIS revision, the boundaries were interpolated between cross-sections using topographic maps with a contour interval of 5 feet and a scale of 1 inch = 500 feet along detailed streams and 1 inch = 1000 feet everywhere else.

The 100- and 500-year floodplain boundaries are shown on the Flood Insurance Rate Map (Exhibit 2). On this map, the 100-year floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE), and the 500-year floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 100- and 500-year floodplain boundaries are close together, only the 100-year floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations

but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 100-year floodplain boundary is shown on the Flood Insurance Rate Map (Exhibit 2).

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 100-year floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

In the York County Unincorporated Areas FIS revision, March 18, 1991, floodway computations for the Catawba River were revised as a result of the revised hydraulic analyses. The floodways were computed on the basis of equal conveyance reduction from each side of the floodplain. The results of these computations were tabulated at selected cross sections for each stream segment for which a floodway was revised and are presented in Table 2, Floodway Data.

In the York County Unincorporated Areas FIS revision, February 3, 1993, Floodway computations for Tools Fork Creek, Wildcat Creek, Manchester Creek Tributary 2, Big Dutchman Creek, Blankmanship Branch, Manchester Creek, Manchester Creek Tributary 1, Steele Creek, Little Dutchman Creek, and Little Dutchman Creek Tributary 4 were revised or added.

In the Town of Clover FIS, November 1979, no floodway has been delineated because the streams in Clover are small (drainage areas of less than one half square mile) and several sections on Allison Creek and Calabash Branch encounters hazardous velocities under normal conditions. For these streams, it is recommended that no encroachment be allowed on the 100-year flood plain except in areas of little or no conveyance.

In the City of Rock Hill FIS revision, February 3, 1993, floodway computations for Wildcat Creek, Tools Fork Creek, Big Dutchman Creek, Manchester Creek Tributary 1, Little Dutchman Creek, Manchester Creek downstream of confluence of Manchester Creek Tributary 3, Manchester Creek Tributary 2, and Manchester Creek Tributary 3 were revised or added as a part of this revision.

In the City of York FIS, November 3, 1981, because of the hazardous velocities involved on Ross Branch Tributary 1, no encroachment was attempted. Therefore, the floodway boundary coincides with the 100-year flood boundary. The flood plains of

Fishing Creek Tributary 1, 1-A, and 1-B consist of areas with road overflow and areas that are already developed. Consequently, the computation of floodways on these streams was not a requirement of this study.

The floodways presented in this FIS report and on the FIRM was computed for certain stream segments on the basis of equal-conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. Results of the floodway computations on detailed studied streams are tabulated for selected cross sections (see Table 5, "Floodway Data"). In cases where the floodway and 100-year floodplain boundaries are either close together or collinear, only the floodway boundary is shown. Similarly, for limited detailed studied streams, BFE computations have been compiled (see Table 6, "Limited Detailed Base Flood Elevation Data", in Volume 2 of this study).

Sugar Creek was studied via limited detailed methods. A "non-encroachment zone" was also determined. While not a FEMA designated floodway, the "non-encroachment zone" is alike, as how it represents that area around the stream that should be reserved to convey the 1% annual chance flood event. The "non-encroachment zone" was determined in HEC-RAS using method 4 and a 0.7-foot target surcharge. As with a floodway, all surcharges fall within the acceptable range of 0.0 to 1.0 foot. The results of this "non-encroachment zone" determination are shown in Table 7, "Sugar Creek Non-Encroachment Zone Data".

The area between the floodway and 100-year floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1, "Floodway Schematic".

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base (100-year) flood elevations (BFEs) or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by detailed methods. Whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
BIG ALLISON CREEK								
A	23,153	365	2,285	4.6	570.0	569.3 ²	570.3	1.0
B	23,800	395	2,692	3.9	570.0	570.0 ²	570.8	0.8
C	24,335	374	2,563	4.1	570.5	570.5	571.2	0.6
D	25,009	516	4,583	2.3	571.9	571.9	572.4	0.4
E	25,804	273	2,624	4.0	572.5	572.5	572.9	0.4
F	26,682	246	2,376	4.4	573.2	573.2	573.5	0.3
G	27,669	317	3,466	3.0	574.2	574.2	574.6	0.3
H	28,360	206	2,304	4.6	574.4	574.4	574.7	0.4
I	29,004	284	2,700	3.3	575.2	575.2	575.5	0.4
J	29,702	290	3,050	2.9	575.7	575.7	576.5	0.8
K	30,598	255	2,860	3.1	577.9	577.9	578.3	0.4
L	31,305	515	6,248	1.4	579.0	579.0	579.5	0.5
M	32,079	808	8,105	1.1	579.2	579.2	579.8	0.6
N	33,194	496	5,615	1.6	579.6	579.6	580.2	0.6
O	34,025	294	3,711	2.4	583.4	583.4	583.7	0.4
P	34,672	271	3,275	2.7	583.8	583.8	584.1	0.3
Q	35,438	423	5,812	1.5	585.9	585.9	586.1	0.3
R	36,322	415	5,256	1.6	586.0	586.0	586.3	0.3
S	37,639	147	1,883	4.6	586.5	586.5	586.8	0.3
T	38,401	121	1,697	5.1	587.5	587.5	588.0	0.5
U	39,480	183	2,495	3.5	588.9	588.9	589.6	0.7
V	40,201	381	4,747	1.8	589.6	589.6	590.4	0.8
W	40,626	349	3,938	2.2	589.8	589.8	590.6	0.8
X	41,326	114	1,460	5.9	591.1	591.1	591.7	0.6

¹ Feet above mouth

² Elevation computed without consideration of backwater effects from Lake Wylie

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

BIG ALLISON CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
BIG ALLISON CREEK (continued)								
Y	41,848	483	6,104	1.4	592.5	592.5	593.4	0.9
Z	42,595	684	8,141	1.1	592.7	592.7	593.6	0.9
AA	43,059	330	3,721	2.2	592.7	592.7	593.6	0.9
AB	44,219	148	1,714	4.9	593.4	593.4	594.3	0.9
AC	44,876	329	3,755	2.2	594.9	594.9	595.8	1.0
AD	45,311	602	6,592	1.2	595.2	595.2	596.2	1.0
AE	46,558	504	4,610	1.8	596.0	596.0	596.8	0.9

¹ Feet above mouth

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

BIG ALLISON CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
BIG DUTCHMAN CREEK								
A	5,500	165	1,651	4.9	515.1	515.1	516.0	0.9
B	5,630	99	1,078	7.5	515.4	515.4	516.1	0.7
C	8,645	294	2,460	3.3	522.1	522.1	522.9	0.8
D	9,675	499	3,571	1.2	523.5	523.5	524.4	0.9
E	10,470	94	732	6.0	523.6	523.6	524.5	0.9
F	10,950	90	1,095	4.0	526.1	526.1	526.5	0.4
G	12,130	70	637	6.8	528.3	528.3	528.8	0.5
H	12,780	166	1,106	3.9	530.2	530.2	530.6	0.4
I	15,150	154	1,043	4.2	535.9	535.9	536.9	1.0
J	17,110	327	2,052	2.1	543.4	543.4	543.6	0.2
K	19,050	87	744	5.9	546.9	546.9	547.9	1.0
L	21,400	150	1,207	3.6	553.6	553.6	554.6	1.0
M	23,550	239	2,458	1.2	557.9	557.9	558.4	0.5
N	25,163	30	244	12.3	557.9	557.9	558.5	0.6
O	28,200	69	526	5.7	571.0	571.0	571.9	0.9

¹ Feet above confluence with Catawba River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

BIG DUTCHMAN CREEK

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE'	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE	
BLANKMANSHIP BRANCH									
A	1,125	92	490	4.4	551.7	548.6 ²	549.4	0.8	
B	2,000	101	539	4.0	552.6	552.6	553.4	0.8	
C	2,600	216	2,799	0.8	565.1	565.1	565.9	0.8	
D	3,700	114	1,126	1.9	565.1	565.1	565.9	0.8	
E	4,359	106	996	2.2	565.5	565.5	566.3	0.8	
F	4,526	125	886	2.4	565.9	565.9	566.5	0.6	
G	5,000	75	534	4.0	566.4	566.4	567.0	0.6	
H	6,600	156	839	2.6	570.1	570.1	571.0	0.9	
I	7,400	35	250	8.6	572.0	572.0	572.7	0.7	
J	10,200	36	304	7.1	585.2	580.2	580.8	0.6	
K	11,500	30	285	7.5	592.6	588.5	589.4	0.9	
L	12,079	39	246	8.7	601.1	601.1	601.7	0.6	

¹ Feet above confluence with Steele Creek

² Elevation computed without consideration of backwater effects from Steele Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

BLANKMANSHIP BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
BURGIS CREEK								
A	14,450	160	1,360	1.7	550.3	550.3	550.3	0.0
B	14,550	100	450	5.1	550.5	550.5	550.5	0.0
C	16,300	160 ²	1,160	2.0	554.1	554.1	555.1	1.0
D	18,200	160	630	3.7	558.3	558.3	558.3	0.0
E	18,300	160	490	4.7	558.8	558.8	558.8	0.0
F	19,200	160	940	2.5	562.7	562.7	563.2	0.5
G	20,900	140	580	3.6	567.8	567.8	567.8	0.0
H	22,800	140	620	3.4	574.9	574.9	575.2	0.3
I	23,550	140	690	2.7	576.5	576.5	577.3	0.8
J	23,800	140	770	2.4	576.8	576.8	577.7	0.9
K	25,300	140	580	3.2	580.0	580.0	580.7	0.7
L	26,300	140	580	2.3	582.7	582.7	583.3	0.6
M	27,800	140	320	4.1	592.5	592.5	592.5	0.0

¹ Feet above confluence with Catawba River

² Value is inaccurate, as the floodway has been adjusted in this area to match topographic-based floodplain redelineation

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

BURGIS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
CATAWBA RIVER								
A	53,387	870	15,999	6.8	487.2	487.2	488.2	1.0
B	55,849	643	14,323	6.9	489.0	489.0	489.9	0.9
C	57,215	570	13,360	7.4	489.6	489.6	490.4	0.8
D	58,643	787	15,007	6.6	490.3	490.3	491.2	0.9
E	62,214	685	15,418	6.4	492.2	492.2	493.1	0.9
F	64,612	820	16,348	6.1	493.1	493.1	494.1	1.0
G	66,359	809	16,190	6.1	493.9	493.9	494.8	1.0
H	68,388	691	15,948	6.2	494.7	494.7	495.7	0.9
I	70,255	693	16,729	5.9	495.4	495.4	496.4	1.0
J	72,072	745	15,970	6.2	495.9	495.9	496.9	1.0
K	74,110	889	15,906	6.2	496.8	496.8	497.8	1.0
L	76,571	1,175	16,334	6.1	498.3	498.3	499.3	1.0
M	78,696	1,300	19,192	5.2	499.6	499.6	500.5	1.0
N	80,849	643	15,954	6.2	500.4	500.4	501.3	0.9
O	82,988	846	17,628	5.6	501.7	501.7	502.6	0.9
P	84,903	989	23,091	4.3	502.9	502.9	503.8	1.0
Q	86,671	751	15,535	6.4	504.0	504.0	504.9	0.9
R	88,875	819	16,475	6.0	505.3	505.3	506.2	0.9
S	90,813	593	14,754	6.7	506.0	506.0	506.9	0.9
T	92,607	988	20,402	4.9	507.3	507.3	508.2	1.0
U	96,220	659	14,589	6.7	509.0	509.0	509.8	0.8
V	100,704	638	15,287	6.4	511.3	511.3	512.0	0.7
W	102,671	560	15,790	6.2	512.0	512.0	512.6	0.7
X	104,416	635	16,473	6.0	512.5	512.5	513.1	0.7
Y	106,384	510	13,941	7.1	513.0	513.0	513.6	0.6
Z	109,784	1,880	14,715	6.7	514.4	514.2	514.8	0.6

¹Feet above county boundary

FLOODWAY DATA
CATAWBA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
AND INCORPORATED AREAS

TABLE 5

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE'	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
CATAWBA RIVER (continued)								
AA	112,778	1,087	22,721	4.3	517.0	517.0	517.6	0.6
AB	113,534	975	19,150	5.1	517.2	517.2	517.9	0.7
AC	114,064	597	11,837	8.3	517.2	517.2	517.8	0.6

Feet above county boundary

FLOODWAY DATA
CATAWBA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
AND INCORPORATED AREAS

TABLE 5

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
CATAWBA RIVER TRIBUTARY								
A	4,460	50	190	6.7	562.6	562.6	563.6	1.0
B	4,580	140	350	3.6	565.4	565.4	565.6	0.2
C	5,490	140	550	2.3	567.1	567.1	567.8	0.7

¹ Feet above confluence with Catawba River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

CATAWBA RIVER TRIBUTARY

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
CREEKSIDE BRANCH								
A	240	100	260	4.0	648.5 ²	647.3	648.3	1.0
B	1,080	100	220	4.8	652.6	652.6	653.2	0.6
C	1,920	100	270	3.9	657.4	657.4	658.2	0.8
D	2,850	100	290	3.6	662.4	662.4	662.7	0.3
E	3,470	70	170	3.8	665.8	665.8	665.8	0.0
F	4,190	70	120	5.6	673.7	673.7	673.7	0.0
G	4,390	70	740	0.9	684.5	684.5	684.5	0.0

¹ Feet above City of York Corporate Limits

² Elevation computed without consideration of backwater effects from private dam located approximately 2,000 feet downstream

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

CREEKSIDE BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
CREEKSIDE BRANCH TRIBUTARY 1								
A	153	21	68	4.0	646.7	646.7	647.7	1.0
B	1273	19	41	6.5	659.0	659.0	659.0	0.0
C	1847	18	41	6.7	670.0	670.0	670.0	0.0
D	2087	129	919	0.3	680.3	680.3	680.4	0.1
E	2423	48	310	0.9	680.3	680.3	680.5	0.2
F	2770	23	64	4.2	680.6	680.6	681.0	0.4

¹ Feet above confluence with Creekside Branch

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

CREEKSIDE BRANCH TRIBUTARY 1

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
CREEKSIDE BRANCH TRIBUTARY 2								
A	220	50	80	7.9	665.3	665.3	665.3	0.0
B	380	150	460	1.4	671.5	671.5	671.5	0.0
C	1,130	60	120	5.2	675.5	675.5	675.5	0.0
D	1,970	70 ²	130	4.8	682.5	682.5	682.5	0.0
E	2,120	70	340	1.9	687.2	687.2	687.2	0.0
F	2,880	70 ²	100	6.3	698.0	698.0	698.0	0.0

¹ Feet above confluence with Creekside Branch

² Value is inaccurate, as the floodway has been adjusted in this area to match topographic-based floodplain redelineation

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

CREEKSIDE BRANCH TRIBUTARY 2

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
CROWDERS CREEK								
A	3,357	1546	11,528	1.3	570.0	569.6 ²	570.6	1.0
B	6,160	685	6,084	2.4	570.2	570.2	571.0	0.8
C	7,693	707	5,971	2.5	570.7	570.7	571.3	0.7
D	8,800	620	5,569	2.6	570.9	570.9	571.6	0.6
E	9,692	1006	9,021	1.6	571.2	571.2	571.7	0.6
F	10,463	775	7,148	2.1	571.2	571.2	571.8	0.6
G	11,173	641	5,923	2.5	571.4	571.4	571.9	0.6
H	12,000	604	5,958	2.5	571.6	571.6	572.1	0.5
I	13,042	511	5,198	2.8	571.7	571.7	572.2	0.5
J	14,000	573	5,805	2.5	571.9	571.9	572.4	0.5
K	15,162	507	4,806	3.0	572.2	572.2	572.6	0.4
L	15,896	265	2,619	5.5	572.6	572.6	573.0	0.4
M	16,793	281	2,825	5.1	573.8	573.8	574.3	0.5
N	17,575	605	6,450	2.2	574.6	574.6	575.3	0.7
O	18,691	596 ³	3,548	4.0	574.7	574.7	575.3	0.6
P	19,993	385	4,240	3.4	576.0	576.0	576.6	0.5
Q	20,758	345	3,966	3.6	576.7	576.7	577.2	0.5
R	21,587	400	4,111	3.5	577.6	577.6	578.1	0.5
S	22,227	560	5,876	2.4	578.1	578.1	578.7	0.6
T	23,588	813	8,862	1.6	579.3	579.3	580.2	0.9
U	24,284	700	6,725	2.1	579.5	579.5	580.4	0.9

¹ Feet above mouth

² Elevation computed without consideration of backwater effects from Lake Wylie

³ Value is inaccurate, as the floodway has been adjusted in this area to match topographic-based floodplain redelineation

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

CROWDERS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE'	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
DYE BRANCH								
A	4,360	60	100	9.8	534.7	534.7	534.7	0.0
B	5,070	60	120	8.2	546.5	546.5	546.6	0.1
C	5,155	20	100	9.8	547.4	547.4	547.8	0.4
D	5,240	60	260	3.8	549.2	549.2	549.3	0.1

Feet above US Highway 21

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

DYE BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE'	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
DYE BRANCH TRIBUTARY 1								
A	180	50	43	11.0	548.6	548.6	548.6	0.0
B	315	50	65	7.2	550.8	550.8	550.8	0.0
C	450	50	130	3.6	551.6	551.6	551.6	0.0
D	1,470	20	50	9.4	563.7	563.7	563.7	0.0

¹ Feet above confluence with Dye Branch

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

DYE BRANCH TRIBUTARY 1

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
FISHING CREEK								
A	68,176	275	2,279	4.3	547.2	547.2	548.2	1.0
B	68,605	338	3,247	2.9	548.3	548.3	549.2	0.9
C	69,672	215	1,959	4.9	549.6	549.6	550.5	0.9
D	70,599	310	3,185	3.0	551.2	551.2	551.9	0.7
E	71,119	360	3,017	3.2	551.5	551.5	552.3	0.8
F	72,093	325	3,358	2.8	552.4	552.4	553.1	0.7
G	73,225	350	4,461	2.1	555.1	555.1	556.0	0.9
H	74,093	380	4,309	2.2	555.4	555.4	556.4	1.0
I	75,172	518	6,393	1.5	556.0	556.0	557.0	1.0
J	76,189	392	3,715	2.6	556.2	556.2	557.2	1.0
K	77,232	295	3,711	2.6	557.1	557.1	557.9	0.8
L	78,589	346	3,932	2.4	557.9	557.9	558.8	0.9
M	79,799	281	3,379	2.6	558.8	558.8	559.7	0.9
N	81,346	300	4,067	2.1	561.5	561.5	562.3	0.8
O	82,672	705	8,791	1.0	562.0	562.0	562.8	0.8
P	83,629	732	8,270	1.1	562.2	562.2	563.0	0.8
Q	84,172	972	10,349	0.8	562.2	562.2	563.0	0.8
R	84,672	504	4,814	1.8	562.2	562.2	563.0	0.8
S	85,418	599	5,581	1.6	562.6	562.6	563.4	0.8
T	86,479	350	3,069	2.8	563.5	563.5	564.3	0.8
U	87,549	1070	8,987	1.0	564.8	564.8	565.7	0.9
V	88,839	249	2,184	3.8	565.7	565.7	566.5	0.8
W	89,706	596	5,986	1.4	568.2	568.2	568.7	0.5
X	90,758	766	7,345	1.1	568.7	568.7	569.4	0.7
Y	91,286	957	8,577	1.0	568.8	568.8	569.5	0.7
Z	91,708	875	7,470	1.1	568.9	568.9	569.6	0.7
AA	92,735	661	4,736	1.7	569.1	569.1	569.9	0.8

¹ Feet above mouth

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

FISHING CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
FISHING CREEK (continued)								
AB	93,672	1076	8,472	1.0	569.4	569.4	570.2	0.8
AC	94,790	994	6,656	1.2	569.8	569.8	570.7	0.9
AD	95,581	737	4,398	1.8	570.1	570.1	571.0	0.9
AE	96,696	480	2,165	3.7	572.0	572.0	572.9	0.9
AF	98,264	1173	5,317	1.1	574.2	574.2	575.0	0.8
AG	99,334	625	3,557	1.7	574.9	574.9	575.8	0.9
AH	100,509	231	1,774	3.3	579.9	579.9	580.0	0.1
AI	101,626	729	4,231	1.4	580.7	580.7	581.0	0.3
AJ	102,672	242	1,293	4.5	581.1	581.1	581.5	0.4
AK	103,667	534	3,161	1.8	583.2	583.2	584.2	1.0
AL	104,705	598	2,551	2.3	585.0	585.0	586.0	1.0
AM	105,487	720	3,607	1.6	587.3	587.3	588.2	0.9
AN	107,690	233	1,235	4.7	592.2	592.2	592.7	0.5
AO	108,880	482	3,307	1.5	597.2	597.2	597.6	0.4
AP	109,925	444	3,276	1.6	597.8	597.8	598.5	0.7
AQ	111,177	186	1,421	3.6	598.8	598.8	599.5	0.7
AR	112,131	161	1,136	4.5	599.7	599.7	600.7	1.0
AS	112,933	246	1,714	3.0	602.2	602.2	603.1	0.9
AT	114,148	447	3,411	1.5	604.0	604.0	604.8	0.8
AU	115,046	62	643	7.6	604.9	604.9	605.8	0.9
AV	116,077	130	866	5.6	608.1	608.1	608.7	0.6
AW	117,172	60	590	8.2	611.6	611.6	612.0	0.4

¹ Feet above mouth

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

FISHING CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
FISHING CREEK TRIBUTARY 2								
A	1,000	90	386	3.8	596.7	595.7 ²	596.6	0.9
B	1,910	123	640	2.3	599.3	599.3	600.2	0.9
C	2,928	52	357	4.1	606.3	606.3	606.6	0.3
D	3,968	103	463	3.2	609.8	609.8	610.7	0.9
E	5,000	90	351	4.2	613.9	613.9	614.5	0.6
F	6,000	48	218	5.7	620.0	620.0	621.0	1.0
G	7,000	64	264	4.7	627.9	627.9	628.8	0.9
H	8,000	38	151	8.2	636.3	636.3	636.9	0.6

¹ Feet above mouth

² Elevation computed without consideration of backwater effects from Fishing Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

FISHING CREEK TRIBUTARY 2

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
HIDDEN CREEK								
A	4,460	50	190	6.7	562.6	562.6	563.6	1.0
B	4,580	140	350	3.6	565.4	565.4	565.6	0.2
C	5,490	140	550	2.3	567.1	567.1	567.8	0.7

¹ Feet above confluence with Catawba River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

HIDDEN CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
JACKSON BRANCH								
A	450	180	720	2.6	541.8	540.3 ²	540.8	0.5
B	1,800	180	440	4.2	544.3	544.3	544.3	0.0
C	3,000	180	470	4.0	548.5	548.5	548.7	0.2
D	4,300	180	490	3.8	554.7	554.7	554.8	0.1
E	5,350	180	630	3.4	557.9	557.9	558.4	0.5
F	5,600	180	1,160	1.5	561.3	561.3	561.8	0.5
G	6,500	160	330	5.3	563.0	563.0	563.0	0.0
H	7,350	160	650	2.6	567.4	567.4	567.5	0.1
I	8,400	160	680	2.5	568.9	568.9	569.5	0.6
J	9,550	160	520	3.1	571.5	571.5	572.3	0.8
K	9,900	160	670	2.4	577.2	577.2	577.3	0.1
L	10,900	160	590	2.7	578.5	578.5	579.1	0.6

¹ Feet above confluence with Steele Creek

² Elevation computed without consideration of backwater effects from Steele Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

JACKSON BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
JOHNNYTOWN BRANCH								
A	2,000	100	330	5.0	514.5	508.8 ²	509.3	0.5
B	2,580	100	400	4.2	514.5	513.0 ²	513.0	0.0
C	2,750	100	480	2.9	514.5	514.7 ²	514.7	0.0
D	3,530	100	260	5.3	518.8	518.8	518.9	0.1
E	4,300	100	460	3.1	523.2	523.2	523.7	0.5
F	5,600	100	300	4.6	528.3	528.3	528.9	0.6

¹ Feet above confluence with Catawba River

² Elevations computed without consideration of backwater effects from Catawba River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

JOHNNYTOWN BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE'	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
LANGHAM BRANCH								
A	4,610	100	310	3.3	668.4	668.4	669.4	1.0
B	4,850	60	420	1.7	674.3	674.3	674.3	0.0
C	5,425	60	130	5.3	674.8	674.8	675.1	0.3
D	6,080	60	170	4.1	684.7	684.7	685.4	0.7

¹ Feet above confluence with Fishing Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

LANGHAM BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
LANGHAM BRANCH TRIBUTARY 1	450	50	120	4.8	674.6	674.6	675.1	0.5
	1,100	50	100	5.9	684.5	684.5	684.9	0.4

¹Feet above confluence with Langham Branch

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

LANGHAM BRANCH TRIBUTARY 1

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
LEROY BRANCH								
A	680	19	44	8.8	568.0	568.0	568.0	0.0
B	820	204	942	0.4	574.8	574.8	574.8	0.0
C	1,000	45	71	5.5	576.3	576.3	576.3	0.0
D	1,180	233	1,184	0.3	583.5	583.5	583.5	0.0
E	1,320	153	934	0.4	583.6	583.6	583.6	0.0
F	1,520	203	1,490	0.3	591.0	591.0	591.0	0.0
G	1,670	89	678	0.6	591.0	591.0	591.0	0.0
H	1,840	124	673	0.6	594.8	594.8	594.8	0.0
I	2,050	74	405	1.0	594.8	594.8	594.8	0.0

¹ Feet above confluence with Still Branch

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

LEROY BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
LITTLE ALLISON CREEK								
A	12,699	642	4,129	1.1	569.6	569.6 ²	570.6	1.0
B	15,382	552	3,130	1.4	569.8	569.8 ²	570.8	1.0
C	16,985	314	1,885	2.3	570.7	570.7	571.3	0.6
D	17,834	140	640	5.8	571.9	571.9	572.3	0.4
E	18,526	217	1,215	3.0	574.2	574.2	574.9	0.6
F	20,114	80	760	4.9	577.8	577.8	578.2	0.4
G	21,678	92	849	4.3	581.1	581.1	581.9	0.8
H	22,348	193	1,622	2.3	583.1	583.1	583.9	0.8
I	22,841	140	991	3.7	583.5	583.5	584.2	0.8
J	23,925	355	1,938	1.9	584.7	584.7	585.4	0.6
K	24,747	187	878	4.2	586.8	586.8	587.2	0.4
L	25,677	185	920	4.0	589.8	589.8	590.4	0.6
M	26,715	72	573	6.4	592.1	592.1	592.5	0.4
N	27,709	78	600	6.1	594.1	594.1	594.9	0.8
O	28,123	98	636	4.3	595.1	595.1	595.9	0.8
P	29,009	62	530	5.2	597.3	597.3	597.9	0.6
Q	29,635	257	1,456	1.9	598.9	598.9	599.4	0.5
R	30,211	378	1,609	1.7	599.3	599.3	599.8	0.5
S	31,620	142	763	2.8	603.7	603.7	604.1	0.5

¹ Feet above confluence with Lake Wylie

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

LITTLE ALLISON CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
LITTLE DUTCHMAN CREEK								
A	1,845	55	557	7.0	524.5	524.5	525.5	1.0
B	3,470	34	274	5.7	527.1	527.1	528.1	1.0
C	4,420	34	276	5.7	529.5	529.5	530.1	0.6
D	5,560	31	256	6.1	534.0	534.0	534.3	0.3
E	6,310	26	206	7.6	536.3	536.3	536.6	0.3
F	7,360	28	189	8.3	540.9	540.9	541.7	0.8
G	8,160	102	588	2.7	543.9	543.9	544.9	1.0
H	9,050	61	240	6.6	547.8	547.8	548.4	0.6
I	9,790	70	338	4.6	552.5	552.5	552.5	0.0
J	10,100	150	1,030	1.1	559.7	559.7	559.7	0.0
K	11,120	150	210	4.3	562.2	562.2	562.3	0.1
L	12,100	100	210	4.3	570.1	570.1	570.1	0.0

¹ Feet above confluence with Big Dutchman Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

LITTLE DUTCHMAN CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
LITTLE DUTCHMAN CREEK TRIBUTARY 1								
A	840	100	890	2.7	529.3	529.3	529.3	0.0
B	960	100	740	3.2	530.1	530.1	530.1	0.0
C	1,940	100	530	4.6	531.1	531.1	532.1	1.0
D	2,940	100	270	5.8	534.0	534.0	534.0	0.0
E	3,700	100	290	5.4	536.2	536.2	536.2	0.0
F	4,550	80	220	7.2	542.0	542.0	542.8	0.8
G	5,350	50	280	5.6	548.7	548.7	549.0	0.3
H	5,430	100	1,040	1.5	560.8	560.8	560.8	0.0
I	6,700	100	810	2.0	562.7	562.7	562.9	0.2
J	8,410	100	370	3.7	569.5	569.5	570.1	0.6
K	9,520	80 ²	160	8.6	571.5	571.5	572.5	1.0
L	10,500	100	210	6.5	581.1	581.1	581.1	0.0
M	11,350	100	190	7.1	587.4	587.4	587.4	0.0
N	11,430	100	450	3.0	588.8	588.8	588.8	0.0
O	12,400	100	150	6.9	595.3	595.3	596.3	1.0
P	13,880	50	230	4.5	609.5	609.5	609.5	0.0

¹ Feet above confluence with Little Dutchman Creek

² Value is inaccurate, as the floodway has been adjusted in this area to match topographic-based floodplain redelineation

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

LITTLE DUTCHMAN CREEK TRIBUTARY 1

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
LITTLE DUTCHMAN CREEK TRIBUTARY 1-A								
A	730	60	172	6.4	538.1	538.1	538.3	0.2
B	1,670	53	160	6.9	546.8	546.8	546.8	0.0
C	2,870	50	190	5.9	560.7	560.7	561.7	1.0
D	3,560	40	102	7.2	570.0	570.0	570.7	0.7

¹Feet above Little Dutchman Creek Tributary 1

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

LITTLE DUTCHMAN CREEK TRIBUTARY 1-A

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
LITTLE DUTCHMAN CREEK TRIBUTARY 4								
A	350	221	418	2.3	557.6	557.6	557.6	0.0
B	600	36	200	4.7	558.3	558.3	558.3	0.0
C	1,375	103	233	4.1	564.7	564.7	564.7	0.0
D	1,630	120	885	1.3	571.2	571.2	571.2	0.0
E	3,110	80	185	5.8	578.1	578.1	578.1	0.0

¹ Feet above confluence with Little Dutchman Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

LITTLE DUTCHMAN CREEK TRIBUTARY 4

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE'	WIDTH (FEET)	SECTION AREA (SQARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
MANCHESTER CREEK								
A	2,675	66	675	8.7	499.8	496.1 ²	496.7	0.6
B	3,530	52	454	12.9	500.6	500.6	501.2	0.6
C	3,810	92	905	6.5	505.6	505.6	505.6	0.0
D	4,160	189	1,421	4.1	506.2	506.2	506.3	0.1
E	5,310	68	893	6.5	508.0	508.0	508.5	0.5
F	6,810	122	992	5.9	510.5	510.5	511.1	0.6
G	7,685	201	1,624	3.6	512.7	512.7	513.3	0.6
H	8,805	152	1,011	5.8	514.7	514.7	515.2	0.5
I	9,338	352	2874	2.3	516.5	516.5	517.3	0.8
J	9,708	434	1637	4.0	516.9	516.9	517.7	0.8
K	10,527	336	3472	1.4	522.0	522.0	522.6	0.7
L	11,207	211	1965	2.4	522.1	522.1	522.8	0.7
M	11,622	48	558	8.6	521.8	521.8	522.4	0.6
N	12,023	112	1277	3.8	525.7	525.7	525.8	0.1
O	13,136	384	3192	1.5	526.5	526.5	526.9	0.4
P	14,797	84	791	6.1	532.6	532.6	533.0	0.4
Q	15,861	63	533	9.0	536.5	536.5	536.5	0.0
R	16,129	152	508	9.4	537.7	537.7	537.8	0.1
S	16,597	60	430	11.2	545.1	545.1	545.2	0.1
T	16,863	51	361	10.2	548.5	548.5	549.4	0.9
U	16,918	70	452	8.1	549.5	549.5	550.4	0.9
V	19,450	87	623	2.0	567.3	567.3	567.9	0.6
W	20,750	156	1,187	1.1	569.2	569.2	569.7	0.5
X	21,850	30	181	7.0	570.2	570.2	570.2	0.0
Y	22,730	60	230	5.5	575.1	575.1	575.1	0.0

¹ Feet above confluence with Catawba River

² Elevation computed without consideration of backwater effects from Catawba River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

MANCHESTER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
MANCHESTER CREEK (continued)								
Z	23,820	60	290	4.4	583.1	583.1	583.2	0.1
AA	24,040	60	200	5.3	583.7	583.7	584.3	0.6
AB	24,400	29	133	7.8	584.4	584.4	584.4	0.0
AC	25,090	50	190	5.4	591.5	591.5	591.6	0.1
AD	26,540	34	104	7.7	601.9	601.9	601.9	0.0

¹ Feet above confluence with Catawba River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

MANCHESTER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
MANCHESTER CREEK TRIBUTARY 1								
A	1,165	188	802	3.8	521.9	518.2 ²	519.2	1.0
B	1,896	105	667	4.6	522.7	522.7	523.3	0.6
C	2,150	130	796	3.8	523.6	523.6	524.1	0.5
D	3,229	206	2222	1.4	531.0	531.0	531.7	0.7
E	3,432	180	1901	1.6	531.1	531.1	531.8	0.7
F	3,928	203	1648	1.1	531.2	531.2	531.9	0.7
G	4,764	62	598	3.1	531.4	531.4	532.0	0.6
H	5,083	37	333	5.2	532.4	532.4	533.1	0.7
I	6,128	121	684	2.5	540.6	540.6	541.5	0.9
J	7,528	33	207	8.3	547.7	547.7	548.4	0.7

¹ Feet above confluence with Manchester Creek

² Elevation computed without consideration of backwater effects from Catawba River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

MANCHESTER CREEK TRIBUTARY 1

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
MANCHESTER CREEK TRIBUTARY 2								
A	1,100	15	82	6.7	566.6	566.6	566.8	0.2
B	1,571	13	73	7.5	568.2	568.2	568.5	0.3
C	2,965	71	242	2.3	573.0	573.0	573.4	0.4
D	3,900	479	11,741	0.0	609.0	609.0	610.0	1.0
E	5,190	379	5,342	0.1	609.0	609.0	610.0	1.0
F	5,620	325	3,739	0.1	609.1	609.1	610.0	0.9
G	6,980	51	177	3.1	609.1	609.1	610.0	0.9

¹Feet above confluence with Manchester Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

MANCHESTER CREEK TRIBUTARY 2

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
MANCHESTER CREEK TRIBUTARY 3								
A	315	14	91	9.0	572.3	572.3	572.3	0.0
B	626	38	191	4.3	574.6	574.6	575.5	0.9
C	1,200	240	365	2.3	578.9	578.9	578.9	0.0
D	1,800	37	150	5.5	587.4	587.4	588.0	0.6
E	2,475	41	148	5.6	596.7	596.7	597.1	0.4
F	3,225	24	149	5.5	604.5	604.5	605.5	1.0

¹ Feet above confluence with Manchester Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

MANCHESTER CREEK TRIBUTARY 3

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
MOONEYS HILL BRANCH								
A	2,060	25	71	9.9	576.0	576.0	576.0	0.0
B	2,170	35	72	9.7	582.4	582.4	582.4	0.0
C	2,280	50	93	7.5	586.4	586.4	586.4	0.0
D	2,400	50	211	3.3	587.2	587.2	587.5	0.3
E	2,500	50	134	5.2	587.2	587.2	587.6	0.4
F	2,600	50	181	3.9	587.9	587.9	588.1	0.2
G	2,680	50	140	5.0	588.2	588.2	588.5	0.3
H	2,760	50	161	4.2	588.4	588.4	588.6	0.2
I	3,320	32	99	6.8	591.3	591.3	591.3	0.0
J	4,190	25	92	7.3	598.9	598.9	599.0	0.1

¹ Feet above confluence with Unnamed Tributary on Right Bank

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

MOONEYS HILL BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
ROSS BRANCH								
A	2,500	60	370	4.0	638.9	638.9	639.1	0.2
B	3,260	60	280	5.5	642.1	642.1	642.6	0.5
C	3,325	60	260	5.8	642.6	642.6	643.1	0.5
D	3,440	60	280	5.5	643.9	643.9	644.0	0.1
E	4,340	60	330	4.2	649.9	649.9	650.6	0.7
F	4,540	110 ²	260	3.9	650.4	650.4	651.4	1.0
G	5,700	60	150	7.0	658.3	658.3	658.6	0.3

¹ Feet above confluence with Turkey Creek

² Width includes floodway for Ross Branch Tributary 2

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

ROSS BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
ROSS BRANCH TRIBUTARY 1								
A	2,100	80 ²	120	4.3	653.4	653.4	653.4	0.0
B	2,760	25	60	7.9	664.2	664.2	664.2	0.0

¹ Feet above confluence with Ross Branch

² Value is inaccurate, as the floodway has been adjusted in this area to match topographic-based floodplain redeineation.

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

ROSS BRANCH TRIBUTARY 1

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE'	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
ROSS BRANCH TRIBUTARY 2								
A	1,040	50	120	7.1	655.5	655.5	655.5	0.0
B	1,230	50	600	1.4	665.8	665.8	665.8	0.0
C	1,960	50	300	2.8	670.3	670.3	670.3	0.0

¹Feet above confluence with Ross Branch

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

ROSS BRANCH TRIBUTARY 2

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE	
STEELE CREEK									
A	600	502	3,590	2.9	514.0	512.9 ²	513.9	1.0	
B	2,750	136	1,605	6.6	516.1	516.1	517.1	1.0	
C	4,350	133	1,533	6.8	519.1	519.1	519.9	0.8	
D	4,750	125	1,874	5.6	520.8	520.8	521.7	0.9	
E	8,850	72	1,126	9.3	525.6	525.6	526.5	0.9	
F	10,625	85	1,381	7.6	529.5	529.5	530.4	0.9	
G	11,850	104	1,571	6.6	531.2	531.2	532.2	1.0	
H	14,600	115	1,636	6.0	534.5	531.5	535.4	0.9	
I	16,450	1,097	10,238	1.0	536.5	536.5	537.4	0.9	
J	19,050	172	1,931	5.1	537.5	537.5	538.3	0.8	
K	21,150	92	1,186	8.3	540.2	540.2	540.8	0.6	
L	22,560	253	2,955	2.6	544.4	544.4	545.4	1.0	
M	24,370	262	2,730	2.9	546.0	546.0	546.9	0.9	
N	25,360	227	2,368	3.3	547.1	547.1	547.9	0.8	
O	27,360	260	3,087	2.5	549.5	549.5	550.2	0.7	
P	29,080	264	2,587	3.0	551.2	551.2	551.9	0.7	
Q	29,320	306	3,671	2.1	551.9	551.9	552.7	0.8	
R	31,020	480	4,270	1.4	553.1	553.1	553.9	0.8	
S	32,270	113	1,245	4.9	554.0	554.0	554.8	0.8	
T	32,670	215	2,756	2.2	556.7	556.7	557.6	0.9	
U	34,970	168	1,979	3.1	558.0	558.0	558.8	0.8	
V	38,170	103	1,268	4.8	561.1	561.1	562.0	0.9	
W	41,070	202	2,214	2.7	564.0	564.0	564.9	0.9	
X	43,870	489	4,225	1.4	567.4	567.4	568.4	1.0	
Y	44,245	426	3,476	1.7	567.7	567.7	568.7	1.0	
Z	46,195	347	2,849	1.8	569.6	569.6	570.5	0.9	

¹ Feet above confluence with Sugar Creek

² Elevation computed without consideration of backwater effects from Sugar Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

STEELE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
STONEY BRANCH								
A	100	150	1,140	2.0	524.5	520.8 ²	521.3	0.5
B	1,150	150	1,020	2.2	524.5	523.4 ²	524.2	0.8
C	2,000	150	820	2.7	525.3	525.3	525.9	0.6
D	3,350	150	850	2.6	529.8	529.8	530.8	1.0
E	4,480	150	970	2.3	535.0	535.0	535.5	0.5
F	5,370	150	730	3.0	537.0	537.0	537.5	0.5
G	5,500	150	1,330	1.6	539.1	539.1	539.8	0.7
H	6,170	150	1,030	2.1	539.3	539.3	540.2	0.9
I	7,130	150	750	2.9	540.6	540.6	541.2	0.6
J	8,070	150	640	3.4	544.8	544.8	544.8	0.0
K	9,870	150	670	2.8	552.9	552.9	553.0	0.1
L	10,950	100	440	3.5	558.3	558.3	558.5	0.2
M	11,990	100	520	3.0	562.1	562.1	562.7	0.6
N	13,000	100	470	3.3	568.8	568.8	569.3	0.5

¹ Feet above confluence with Wildcat Creek

² Elevation computed without consideration of backwater effects from Wildcat Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

STONEY BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
TAYLORS CREEK								
A	17,823	187	1,918	3.1	516.8	516.8	517.8	1.0
B	18,500	310	3,106	1.9	518.2	518.2	519.1	0.9
C	19,925	560	6,079	1.0	520.2	520.2	521.1	0.9
D	20,937	504	5,031	1.2	520.5	520.5	521.4	1.0
E	22,126	215	1,805	2.8	521.1	521.1	522.0	0.9
F	24,000	290	3,116	1.6	524.3	524.3	525.0	0.7
G	25,000	459	4,169	1.2	524.8	524.8	525.6	0.8
H	25,841	623	4,987	0.9	525.3	525.3	526.1	0.8
I	27,000	132	1,262	3.5	526.3	526.3	527.1	0.9
J	28,000	130	1,195	3.7	527.2	527.2	528.0	0.9
K	28,942	141	1,373	3.3	529.3	529.3	530.0	0.7
L	29,889	407	4,171	1.0	530.3	530.3	531.2	0.9
M	31,000	228	2,369	1.5	530.5	530.5	531.4	1.0
N	32,000	211	1,538	2.2	531.0	531.0	531.9	0.9
O	33,000	265	2,130	1.6	532.0	532.0	533.0	1.0
P	33,500	381	2,434	1.4	532.3	532.3	533.3	1.0
Q	34,040	275	1,086	3.2	533.1	533.1	534.0	0.9
R	34,616	260	1,604	2.1	535.3	535.3	536.2	0.8

¹ Feet above mouth

TABLE 5
FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
AND INCORPORATED AREAS
FLOODWAY DATA
TAYLORS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
TAYLORS CREEK TRIBUTARY 1								
A	837	103	580	2.7	521.1	516.4 ²	517.4	1.0
B	1,772	55	340	4.6	521.4	521.4	521.9	0.5
C	2,611	66	343	4.5	530.3	530.3	530.4	0.0
D	3,121	85	274	5.7	538.5	538.5	538.5	0.0
E	3,718	55	310	5.0	546.5	546.5	546.7	0.2
F	4,110	60	249	6.3	550.0	550.0	550.4	0.4
G	4,940	89	540	2.9	560.0	560.0	560.7	0.7
H	5,852	43	230	5.7	564.4	564.4	565.5	1.0
I	5,950	100	305	3.7	568.9	568.9	569.4	0.5
J	6,170	100	200	5.6	569.4	569.4	570.0	0.6
K	6,900	100	403	2.8	571.7	571.7	572.4	0.7
L	7,780	100	286	3.9	575.2	575.2	575.5	0.3
M	10,930	80	217	3.6	593.2	593.2	593.7	0.5

¹ Feet above confluence with Taylors Creek

² Elevations computed without consideration of backwater effects from Taylors Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

TAYLORS CREEK TRIBUTARY 1

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
TAYLORS CREEK TRIBUTARY 2								
A	611	175	563	4.0	535.4	534.0 ²	535.1	0.7
B	2,453	311	1,684	1.3	540.0	540.0	541.0	1.0
C	3,188	135	831	2.7	540.7	540.7	541.6	0.9
D	3,810	39	196	11.4	545.7	545.7	545.7	0.0
E	4,650	100	390	4.0	552.0	552.0	552.5	0.5
F	5,550	100	350	4.4	557.0	557.0	557.2	0.2
G	6,080	100	360	3.5	559.8	559.8	560.2	0.4
H	7,000	100	330	5.5	568.0	568.0	568.7	0.7
I	8,230	80	440	2.8	577.9	577.9	578.2	0.3
J	9,230	80	140	7.2	593.4	593.4	593.4	0.0
K	9,300	80	220	4.5	594.9	594.9	594.9	0.0
L	9,380	80	310	3.3	595.2	595.2	595.4	0.2
M	9,950	75	210	4.8	599.5	599.5	600.5	1.0

¹ Feet above confluence with Taylors Creek

² Elevation computed without consideration of backwater effects from Taylors Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

TAYLORS CREEK TRIBUTARY 2

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
TOOLS FORK CREEK								
A	1,400	347	2,463	2.0	538.4	538.4	539.2	0.8
B	5,900	305	2,550	1.9	546.3	546.3	546.9	0.6
C	8,750	154	1,223	4.0	549.5	549.5	550.5	1.0
D	11,517	439	3,118	1.6	555.9	555.9	556.2	0.3
E	14,017	269	2,160	2.3	558.7	558.7	559.6	0.9
F	18,217	390	2,772	1.8	566.1	566.1	567.1	1.0
G	21,217	536	3,154	1.5	571.1	571.1	572.1	1.0
H	22,217	202	1,320	3.7	573.7	573.7	574.6	0.9
I	23,117	576	3,349	1.5	577.0	577.0	578.0	1.0
J	24,817	23	257	19.0	582.6	582.6	583.5	0.9

¹Feet above confluence with Wildcat Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

TOOLS FORK CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
WILDCAT CREEK								
A	4,000	364	3,565	2.4	532.3	532.3	533.0	0.7
B	5,261	387	4,645	1.8	534.6	534.6	535.6	1.0
C	7,036	1,003	10,369	0.8	535.5	535.5	536.5	1.0
D	9,936	589	5,204	1.6	536.6	536.6	537.5	0.9
E	11,146	346	2,388	1.7	539.2	539.2	539.8	0.6
F	13,046	370	1,965	2.1	542.1	542.1	542.9	0.8
G	15,646	307	1,945	2.1	548.5	548.5	549.3	0.8
H	28,125	331	2,817	1.3	558.2	558.2	558.8	0.6
I	29,625	125	852	2.9	559.5	559.5	560.2	0.7
J	30,625	155	639	3.9	560.4	560.4	561.2	0.8
K	31,625	60	329	7.6	562.3	562.3	562.9	0.6
L	33,125	257	1,369	1.8	572.2	572.2	572.6	0.4
M	34,312	119	591	4.2	574.1	574.1	574.9	0.8
N	34,979	73	495	5.1	576.4	576.4	577.0	0.6
O	35,411	61	330	4.8	577.4	577.4	578.1	0.7
P	36,125	72	281	5.7	579.5	579.5	580.3	0.8
Q	37,125	62	331	4.8	583.6	583.6	583.9	0.3
R	38,177	142	224	5.7	590.3	590.3	590.3	0.0
S	39,125	43	193	6.6	597.3	597.3	597.8	0.5
T	39,555	67	232	5.5	600.6	600.6	601.2	0.5
U	40,125	123	868	1.5	607.8	607.8	608.5	0.7
V	41,065	120	221	5.8	609.7	609.7	609.7	0.0
W	41,411	100	258	5.0	619.3	619.3	619.4	0.0
X	41,990	294	1,329	1.0	627.7	627.7	627.7	0.0
Y	42,625	314	2,154	0.6	637.0	637.0	637.0	0.0
Z	43,125	210	1,312	1.0	637.0	637.0	637.0	0.0

¹ Feet above Robertson Road

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

WILDCAT CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
WILDCAT CREEK (continued)								
AA	43,571	283	1,309	1.0	647.1	647.1	647.1	0.0
AB	44,125	83	222	5.8	648.0	648.0	648.1	0.1
AC	44,625	54	312	4.1	657.1	657.1	657.6	0.5
AD	45,625	138	1,340	1.0	678.4	678.4	679.3	0.9
AE	46,125	50	245	5.2	680.1	680.1	680.8	0.7

¹ Feet above Robertson Road

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

WILDCAT CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
WILDCAT CREEK TRIBUTARY 1								
A	6,940	80	250	4.9	575.6	575.6	575.6	0.0
B	8,230	80	250	5.0	581.3	581.3	581.7	0.4
C	9,330	80	200	4.0	589.9	589.9	590.0	0.1
D	9,480	60	180	4.5	592.0	592.0	592.0	0.0
E	9,960	40	85	9.5	598.1	598.1	598.1	0.0

¹ Feet above confluence with Wildcat Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

WILDCAT CREEK TRIBUTARY 1

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (NAVD)	WITHOUT FLOODWAY (NAVD)	WITH FLOODWAY (NAVD)	INCREASE
WILDCAT CREEK TRIBUTARY 2								
A	3,500	50	200	4.4	570.1	570.1	570.1	0.0
B	4,100	50	180	4.8	573.0	573.0	573.1	0.1
C	4,900	50	160	5.4	580.3	580.3	580.3	0.0
D	5,450	50	180	5.0	585.6	585.6	586.0	0.4
E	6,000	50	170	5.1	591.1	591.1	591.2	0.1

¹ Feet above confluence with Wildcat Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

FLOODWAY DATA

WILDCAT CREEK TRIBUTARY 2

Table 7: Sugar Creek Non-Encroachment Zone Data

Cross Section¹	Stream Station²	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation³ (feet NAVD 88)	Non - Encroachment Width (feet)
Sugar Creek				
017	1,725	25,267	486.1	334 / 105
024	2,449	25,267	486.9	146 / 190
030	2,978	25,267	488.0	92 / 200
034	3,355	25,267	489.2	110 / 195
035	3,489	25,267	490.6	155 / 195
041	4,061	25,267	491.3	300 / 81
045	4,508	25,267	491.8	375 / 81
050	4,971	25,267	492.3	542 / 81
056	5,567	25,267	492.6	540 / 75
063	6,257	25,267	493.0	435 / 180
070	6,953	25,267	493.6	113 / 853
075	7,504	25,267	494.0	200 / 700
080	8,046	25,267	494.1	77 / 828
085	8,450	25,267	494.3	102 / 723
089	8,949	25,267	494.5	250 / 600
094	9,382	25,267	494.8	470 / 587
099	9,877	25,267	494.9	650 / 400
105	10,529	25,267	495.1	1125 / 110
112	11,172	25,267	495.3	1400 / 49
117	11,722	25,267	495.4	1200 / 300
125	12,473	25,267	495.4	600 / 900
130	13,021	25,267	495.5	650 / 850
137	13,718	25,267	495.6	1000 / 500
144	14,393	25,024	495.6	1350 / 150
148	14,787	25,024	495.7	1375 / 125
154	15,363	25,024	495.8	1030 / 470
159	15,868	25,024	496.0	550 / 850
165	16,452	25,024	496.1	850 / 300
169	16,935	25,024	496.4	833 / 103
174	17,441	25,024	496.6	620 / 200
181	18,076	25,024	497.4	550 / 330
187	18,745	25,024	497.8	450 / 500
195	19,538	25,024	498.1	300 / 600
200	20,016	25,024	498.4	300 / 590
205	20,515	25,024	498.7	300 / 420

Table 7: Sugar Creek Non-Encroachment Zone Data

Cross Section¹	Stream Station²	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation³ (feet NAVD 88)	Non - Encroachment Width (feet)
Sugar Creek (continued)				
209	20,945	25,024	499.1	440 / 220
215	21,538	25,024	500.0	370 / 290
221	22,057	25,024	500.6	681 / 194
225	22,501	25,024	500.8	570 / 260
229	22,879	25,024	501.0	505 / 353
234	23,382	25,024	501.2	500 / 345
240	23,965	25,024	501.5	500 / 235
244	24,407	25,024	501.8	470 / 230
250	24,997	25,024	502.2	513 / 143
254	25,443	25,024	502.6	505 / 111
260	25,954	25,024	502.8	390 / 115
265	26,529	25,024	503.3	158 / 353
271	27,120	25,024	503.5	133 / 257
278	27,831	25,024	504.4	78 / 351
284	28,418	25,024	505.2	310 / 290
290	28,990	25,024	505.3	96 / 402
295	29,491	25,024	505.8	264 / 240
299	29,928	25,024	506.1	227 / 173
305	30,503	25,024	506.6	205 / 77
310	30,971	25,024	507.1	212 / 75
313	31,340	25,024	507.5	280 / 71
319	31,855	25,024	508.2	300 / 84
321	32,066	25,024	508.6	300 / 185
325	32,534	25,024	508.9	195 / 215
330	32,990	25,024	509.4	98 / 326
333	33,332	25,024	509.7	95 / 280
340	34,019	25,024	510.3	406 / 73
344	34,374	25,024	510.6	430 / 150
349	34,875	25,024	511.1	250 / 630
355	35,454	25,024	511.4	324 / 564
359	35,853	25,024	511.6	200 / 635
365	36,458	25,024	511.8	207 / 331
370	37,040	25,024	512.2	283 / 546
375	37,488	25,024	512.4	117 / 735
380	38,047	25,024	512.6	365 / 500

Table 7: Sugar Creek Non-Encroachment Zone Data

Cross Section¹	Stream Station²	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation³ (feet NAVD 88)	Non - Encroachment Width (feet)
Sugar Creek (continued)				
385	38,491	25,024	512.8	238 / 483
390	38,981	25,024	513.1	161 / 326
394	39,417	25,024	513.4	260 / 230
399	39,875	25,024	513.9	520 / 115
404	40,392	23,186	514.8	250 / 625
409	40,945	23,186	514.8	400 / 450
414	41,449	23,186	515.0	295 / 352
420	42,000	23,186	515.5	530 / 270
427	42,692	23,186	516.0	360 / 500
435	43,481	23,186	516.4	760 / 120
440	43,954	23,186	516.6	498 / 252
444	44,399	23,186	516.9	473 / 182
449	44,922	23,186	517.3	213 / 307
454	45,389	23,186	517.8	145 / 295
459	45,878	23,186	518.4	221 / 132
462	46,244	23,186	519.0	297 / 85
468	46,804	23,186	519.5	151 / 260
473	47,269	23,186	520.0	175 / 193
479	47,906	23,186	520.4	98 / 274
484	48,353	23,186	520.8	100 / 190
488	48,792	23,186	521.7	201 / 75
493	49,279	23,186	522.3	240 / 150
500	49,998	23,186	522.5	165 / 98
504	50,422	23,186	522.8	130 / 125
509	50,889	23,186	523.4	87 / 130
513	51,320	23,186	524.0	137 / 75
519	51,852	23,186	524.3	126 / 67
524	52,350	23,186	525.0	62 / 165
529	52,889	23,186	525.4	130 / 120
534	53,398	23,186	526.3	66 / 192
539	53,929	23,186	527.0	50 / 300
544	54,386	23,186	526.9	200 / 73
549	54,898	23,186	528.0	281 / 59
554	55,383	23,186	528.6	260 / 250
560	55,952	14,741	528.8	172 / 303

Table 7: Sugar Creek Non-Encroachment Zone Data

Cross Section¹	Stream Station²	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation³ (feet NAVD 88)	Non - Encroachment Width (feet)
Sugar Creek (continued)				
564	56,360	14,741	528.9	360 / 135
569	56,863	14,741	529.0	425 / 150
574	57,363	14,741	529.1	290 / 274
579	57,922	14,741	529.2	149 / 316
584	58,396	14,741	529.3	172 / 153
588	58,848	14,741	529.4	150 / 200
594	59,411	14,741	529.8	95 / 395
599	59,931	14,741	529.8	95 / 250
604	60,419	14,741	529.9	115 / 145
609	60,896	14,741	530.1	70 / 140
614	61,397	14,741	530.7	70 / 140
619	61,873	14,741	531.1	85 / 165
624	62,389	14,741	531.6	150 / 100
628	62,813	14,741	532.0	280 / 75
635	63,498	14,741	532.5	250 / 290
641	64,054	14,741	532.6	517 / 75
645	64,528	14,741	532.8	458 / 63
650	64,982	14,741	533.1	272 / 174
653	65,310	14,741	533.3	77 / 239
657	65,726	14,741	533.7	52 / 276
664	66,385	14,741	534.3	275 / 125
669	66,914	14,741	534.6	333 / 91
673	67,320	14,741	534.9	354 / 143
679	67,864	14,741	535.3	170 / 215
685	68,548	14,741	535.9	200 / 120
693	69,296	13,541	537.0	146 / 155
694	69,407	13,541	537.4	145 / 156
696	69,600	13,541	537.5	140 / 100
698	69,776	13,541	537.8	164 / 164

¹This table reflects all modeled cross sections. Some cross sections shown in this table may not appear on the map.

²Feet above mouth.

³Elevation includes backwater effects.

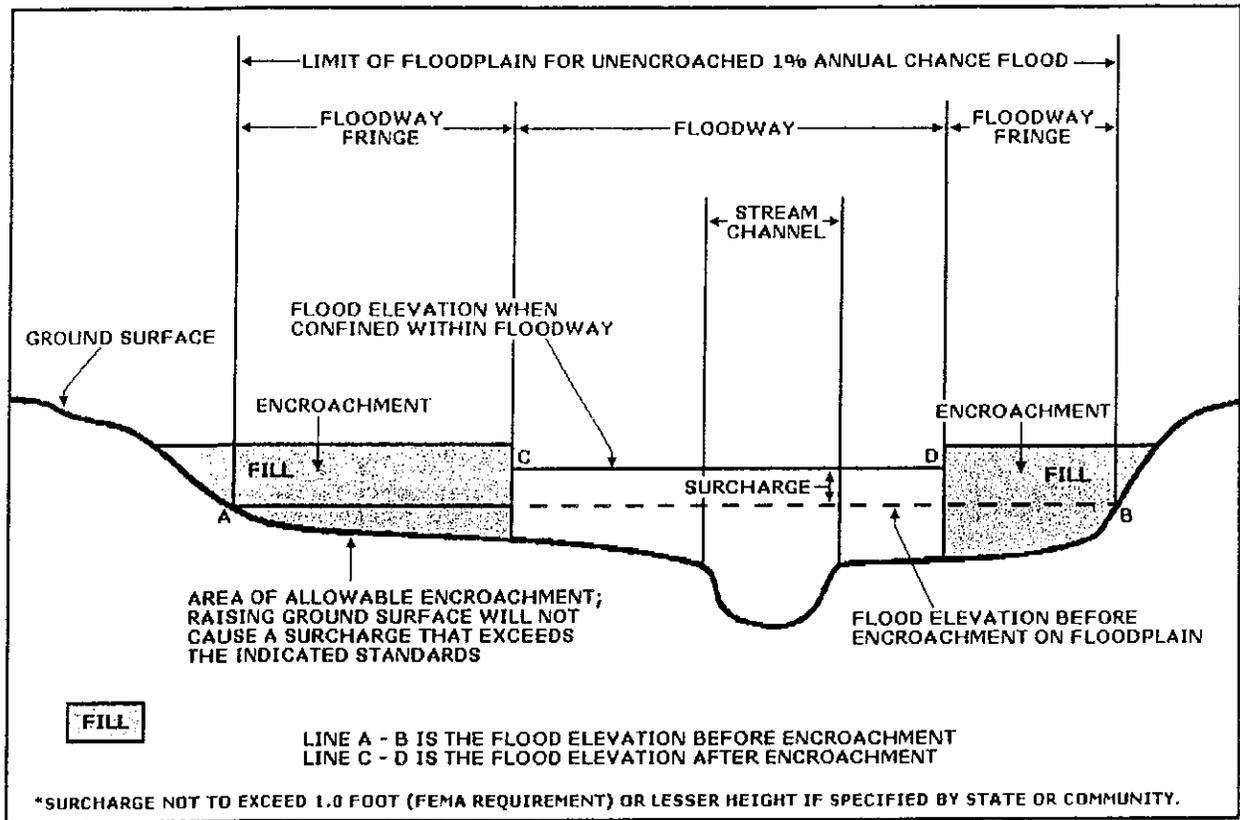


Figure 1: Floodway Schematic

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 500-year floodplain, areas within the 500-year floodplain, areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No BFEs or depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

The Flood Insurance Rate Map is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 100-year floodplains that were studied by detailed methods, shows selected whole-foot BFEs or average depths. Insurance agents use the zones and BFEs in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 100- and 500-year floodplains, floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

The countywide Flood Insurance Rate Map presents flooding information for the entire geographic area of Kershaw County. Previously, Flood Insurance Rate Maps were prepared for each incorporated

community and the unincorporated areas of the County identified as flood-prone. This countywide Flood Insurance Rate Map also includes flood-hazard information that was presented separately on Flood Boundary and Floodway Maps, where applicable. Historical data relating to the maps prepared for each community are presented in Table 8, "Community Map History."

7.0 OTHER STUDIES

FIA Flood Hazard Boundary Maps (No. H-01-09) identifying special flood hazard areas in York County (Community No. 450193) have been prepared by the U.S. Department of Housing and Urban Development, initial identification date February 17, 1978.

Flood Insurance Studies have been prepared for Mecklenburg and Cleveland Counties, North Carolina and Cherokee, Chester, Lancaster, and Union Counties, South Carolina.

Ongoing countywide Flood Insurance Studies are being prepared for the Gaston County, North Carolina.

This Flood Insurance Study supersedes or is compatible with all previous studies published on streams studied in this report and should be considered authoritative for the purposes of the NFIP.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this FIS can be obtained by contacting FEMA, Federal Insurance and Mitigation Administration, Koger Center - Rutgers Building, 3003 Chamblee Tucker Road, Atlanta, Georgia 30341.

9.0 BIBLIOGRAPHY AND REFERENCES

1. U.S. Department of Commerce, Bureau of Census, Decennial Census of Population, 2000; Current Population Reports, www.census.gov.
2. York County Planning Commission, Land Development Plan, York County, South Carolina, July 1973.
3. U.S. Department of Commerce, Weather Bureau, Rainfall Frequency Atlas of the United States, Technical Paper No. 40, David M. Hershfield, May 1961.
4. U.S. Department of Agriculture, Soil Conservation Service, Soil Survey, York County, South Carolina, Series 1961, No. 17, issued April 1965.
5. U.S. Geological Survey, Effect of Urban Development on Floods in the Piedmont Province of North Carolina, Open-file report, Arthur L. Putnam, 1972.
6. U.S. Water Resources Council, Guidelines for Determining Flood Flow Frequencies, Bulletin No. 17, March 1976.
7. U.S. Army, Corps of Engineers, Charleston District, Flood Plain Information, Stoney Branch and Tributaries, Rock Hill, South Carolina, August 1974.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Catawba Indian Nation	September 26, 2008		September 26, 2008	
Clover, Town of	May 24, 1974	April 2, 1976	May 15, 1980	
Fort Mill, Town of	May 31, 1974	April 23, 1976	June 18, 1980	
Hickory Grove, Town of	September 26, 2008		September 26, 2008	
McConnells, Town of	September 26, 2008		September 26, 2008	
Rock Hill, City of	August 2, 1974	September 17, 1976	April 1, 1981	February 3, 1993
Sharon, Town of ¹				
Smyrna, Town of ¹				
Tega Cay, City of	September 26, 2008		September 26, 2008	
York, City of	May 17, 1974	July 9, 1976	May 3, 1982	
York County (Unincorporated Areas)	February 17 1978		November 4, 1981	February 3, 1993

¹ Non-floodprone community

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY
YORK COUNTY, SC
 AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

8. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-1 Flood Hydrograph Package, Computer Program 723-X6-L2010, Davis, California, September 1981, revised January 1985.
9. U.S. Department of Commerce, National Weather Service, Technical Paper No. 40, Rainfall Frequency Atlas of the United States, Washington, D.C., January 1963.
10. U.S. Department of Commerce, National Weather Service, Technical Paper No. 49, Two to Ten Day Precipitation for Return Periods of 2 to 100 years in the Contiguous United States, Washington, D.C., January 1964.
11. U.S. Geological Survey, Roughness Characteristics of Natural Channels, Water-Supply Paper 1849, Harry H. Barnes, Jr., 1967.
12. U.S. Geological Survey, Computer Program E-431 User's Manual Computer Applications for Step-backwater and Floodway Analyses, Open-file report 76-499, James O. Shearman, 1976.
13. U.S. Geological Survey, Computer Program Documentation User's Manual, Downstream-Upstream Reservoir Routing, Marshall E. Jennings, 1977.
14. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water Surface Profiles, Computer Program 723-X6-L202A, Davis, California, March 1982.
15. U.S. Department of the Interior, Geological Survey, Open-File Report 76-499, Computer Program E-431, Users Manual, Computer Applications for Step-Backwater and Floodway Analysis, J.O. Shearman, Washington, D.C., 1976.
16. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, York County, Unincorporated Areas, South Carolina, May 1981.
17. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water Surface Profiles, Computer Program 723-X6-L202A, Davis, California, September 1989.
18. Rock Hill Planning Commission, Rock Hill, S.C., topographic maps, scale: 1" = 200', contour interval 5 feet.
19. U.S. Geological Survey, 7.5 Minute Series Topographic Maps, Scale 1:12000, Contour Interval 10 feet: Catawba, Northeast, 1968, photorevised 1988; Rock Hill East, 1968; and Fort Mill, 1968, photorevised 1980.
20. U.S. Geological Survey, 7.5 Minute Series Topographic Maps, Scale 1:24000, Contour Interval 10 feet: Rock Hill East, South Carolina, 1968.
21. U.S. Geological Survey, Quadrangle Maps, Clover, 1947 (enlarged to 1" = 500').
22. 7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 10 feet: Fort Mill, South Carolina (1968)

23. Rock Hill Planning Commission, Topographic Maps, Scale 1:2400, Contour Interval 5 feet: Rock Hill, South Carolina (March 1960).
24. U.S. Geological Survey, 7.5 Minute Series Topographic Maps, Scale 1:24000, Contour Interval 10 feet: Rock Hill East, South Carolina, 1968; Scale 1:24000, Contour Interval 3 meters: Rock Hill West, South Carolina, 1984.
25. U.S. Department of the Interior, Geological Survey, 7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 10 feet: Filbert, South Carolina (1971); Sharon, South Carolina (1972)
26. U.S. Department of the Interior, Geological Survey, 15-Minute Series Topographic Maps, Scale 1:62,500, Contour Interval 20 feet: Rock Hill, South Carolina (1949); Clover, South Carolina (1947)
27. U.S. Department of the Interior, Geological Survey, Interagency Advisory Committee on Water Data, Office of Water Data, Office of Water Data Coordination, Hydrology Subcommittee. (September 1981, revised March 1982). Bulletin No. 17B, Guidelines for Determining Flood Flow Frequency.
28. Federal Emergency Management Agency, Flood Insurance Study, Lancaster County, Unincorporated Areas, South Carolina, July 5, 1982.
29. Federal Emergency Management Agency, Flood Insurance Study, Chester County, Unincorporated Areas, South Carolina, July 1982.
30. Flood Insurance Study, Lancaster County, Unincorporated Areas, South Carolina, January 1983.
31. Federal Insurance Administration, Flood Insurance Study, Town of Clover, York County, South Carolina, November 1979.
32. Federal Insurance Administration, Flood Insurance Study, Town of Fort Mill, York County, South Carolina, December 1979.
33. Federal Emergency Management Agency, Flood Insurance Study, City of York, York County, South Carolina, November 3, 1981.
34. Federal Insurance Administration, Flood Insurance Study, Gaston County, Unincorporated Areas, South Carolina, May 1980.
35. Flood Insurance Study, Mecklenburg County, Unincorporated Areas, North Carolina, June 1981.
36. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, Town of Fort Mill, South Carolina, Scale 1:1200, May 31, 1974 (Revised April 23, 1976)
37. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, City of Rock Hill, South Carolina, Scale 1:12,000, August 2, 1974, Revised September 17, 1976.

38. Federal Emergency Management Agency, Flood Insurance Study, York County, Unincorporated Areas, South Carolina, March 18, 1991.
39. Federal Insurance Administration, Flood Insurance Study, City of Rock Hill, York County, South Carolina, April 1981.
40. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, City of York, South Carolina, Scale 1:7200, May 17, 1974 (Revised July 9, 1976).
41. Federal Emergency Management Agency, Flood Insurance Study, York County, Unincorporated Areas, South Carolina, February 3, 1993.
42. Federal Emergency Management Agency, Flood Insurance Study, City of Rock Hill, York County, South Carolina, February 3, 1993.
43. Federal Emergency Management Agency, Flood Insurance Study, Mecklenburg County, And Incorporated Areas, North Carolina, February 4, 2004.
44. York County MIS/GIS, Color Orthophotos of Eastern York County and the Municipalities of Urbanized Eastern York County flown at 200 scale, Photo Date 02/01-03/01, <http://maps.yorkcountygov.com/metadata/york200.html>.