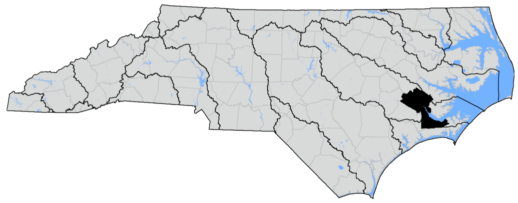
PRELIMINARY FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

A Report of Flood Hazards in

CRAVEN COUNTY, NORTH CAROLINA AND INCORPORATED AREAS



Community Name	Community Number
CITY OF HAVELOCK	370265
CITY OF NEW BERN	370074
CRAVEN COUNTY	370072
TOWN OF BRIDGETON	370436
TOWN OF COVE CITY	370601
TOWN OF DOVER	370664
TOWN OF RIVER BEND	370432
TOWN OF TRENT WOODS	370434
TOWN OF VANCEBORO	370075

NORTH CAROLINA
Cooperating Technical State
FEMA'S COOPERATING TECHNICAL PARTNER

PRELIMINARY: 6/30/2016

REVISED: 6/30/2016

Federal Emergency Management Agency

State of North Carolina

Flood Insurance Study Number

37049CV000

www.fema.gov and www.ncfloodmaps.com

FOREWORD

This countywide Flood Insurance Study (FIS) Report was produced through a unique cooperative partnership between the State of North Carolina and the Federal Emergency Management Agency (FEMA). The State of North Carolina has implemented a long-term approach to floodplain management to decrease the costs associated with flooding. This is demonstrated by the State's commitment to map floodplain areas at the state level. As a part of this effort, the State of North Carolina has joined with FEMA in a Cooperating Technical State (CTS) agreement to produce and maintain this FIS Report and the accompanying digital Flood Insurance Rate Map (FIRM) for North Carolina.

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.

The following is a list of the publication dates of this Countywide FIS Report starting with the initial Report accompanying the North Carolina Statewide FIRM:

Date	Reason
7/2/2004	Initial Countywide FIS Report Effective Date

This FIS has been produced as part of the North Carolina Floodplain Mapping Program. Craven County, North Carolina, falls under the administrative jurisdiction of Region IV of the Federal Emergency Management Agency (FEMA). Questions concerning this FIS may be directed to the North Carolina Floodplain Mapping Program at www.ncfloodmaps.com, the FEMA Map Assistance Center by calling the toll-free information line at 1-877-FEMA MAP (1-877-336-2627), or by contacting the FEMA Regional Office at the following address:

FEMA, Federal Insurance and Mitigation Administration

Koger Center - Rutgers Building

3003 Chamblee Tucker Road

Atlanta, Georgia 30341

(770) 220-5400

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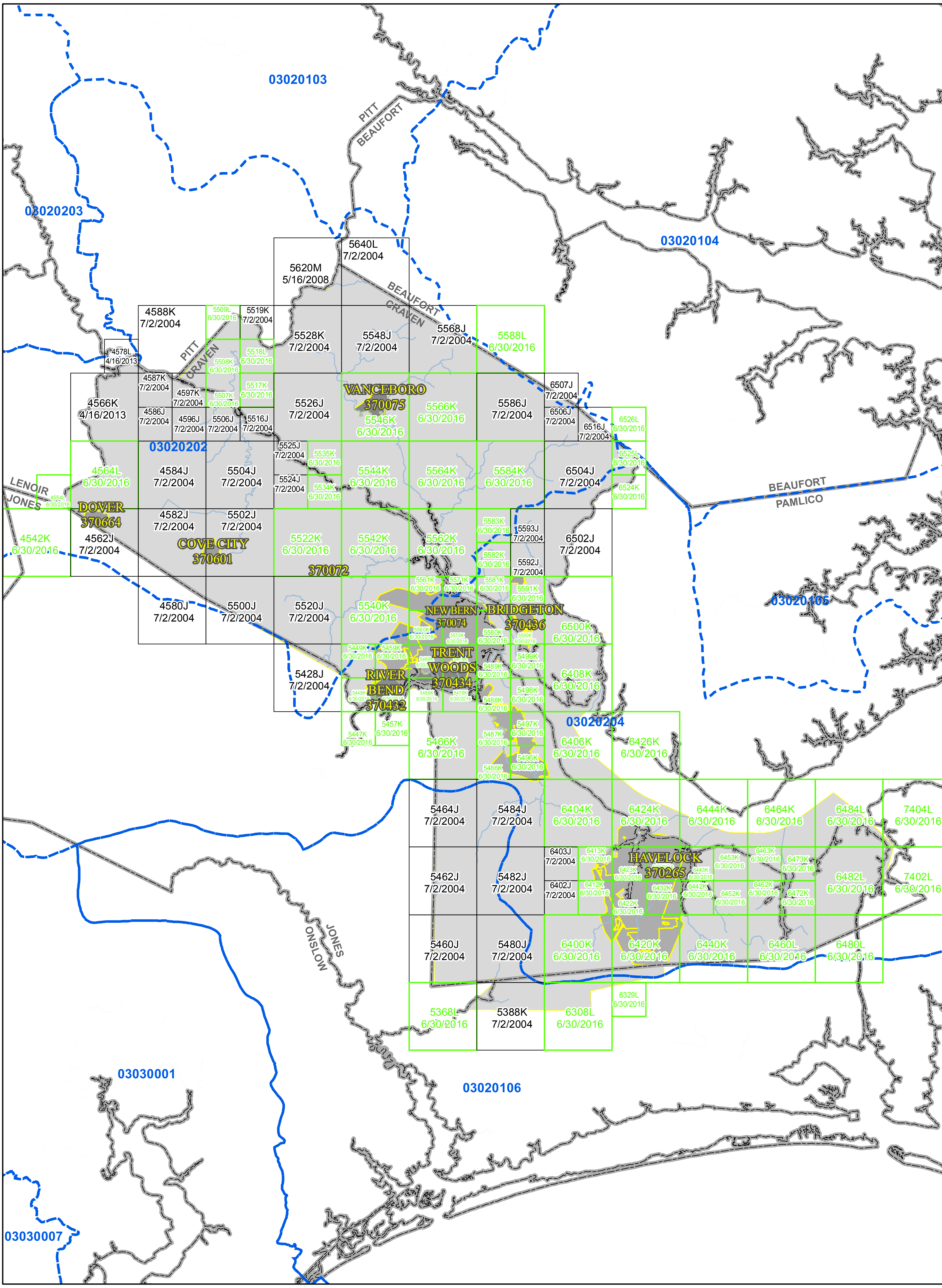

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1 in = 5 miles

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Map Projection:
Lambert Conformal Conic
North American Datum 1983

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

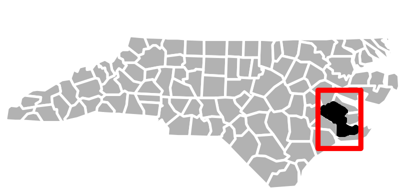
HTTP://FRIS.NC.GOV/FRIS

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

PRELIMINARY

06/30/2016

COUNTY LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

CRAVEN COUNTY, NORTH CAROLINA And Incorporated Areas

PANELS PRINTED:
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FEMA

MAP NUMBER
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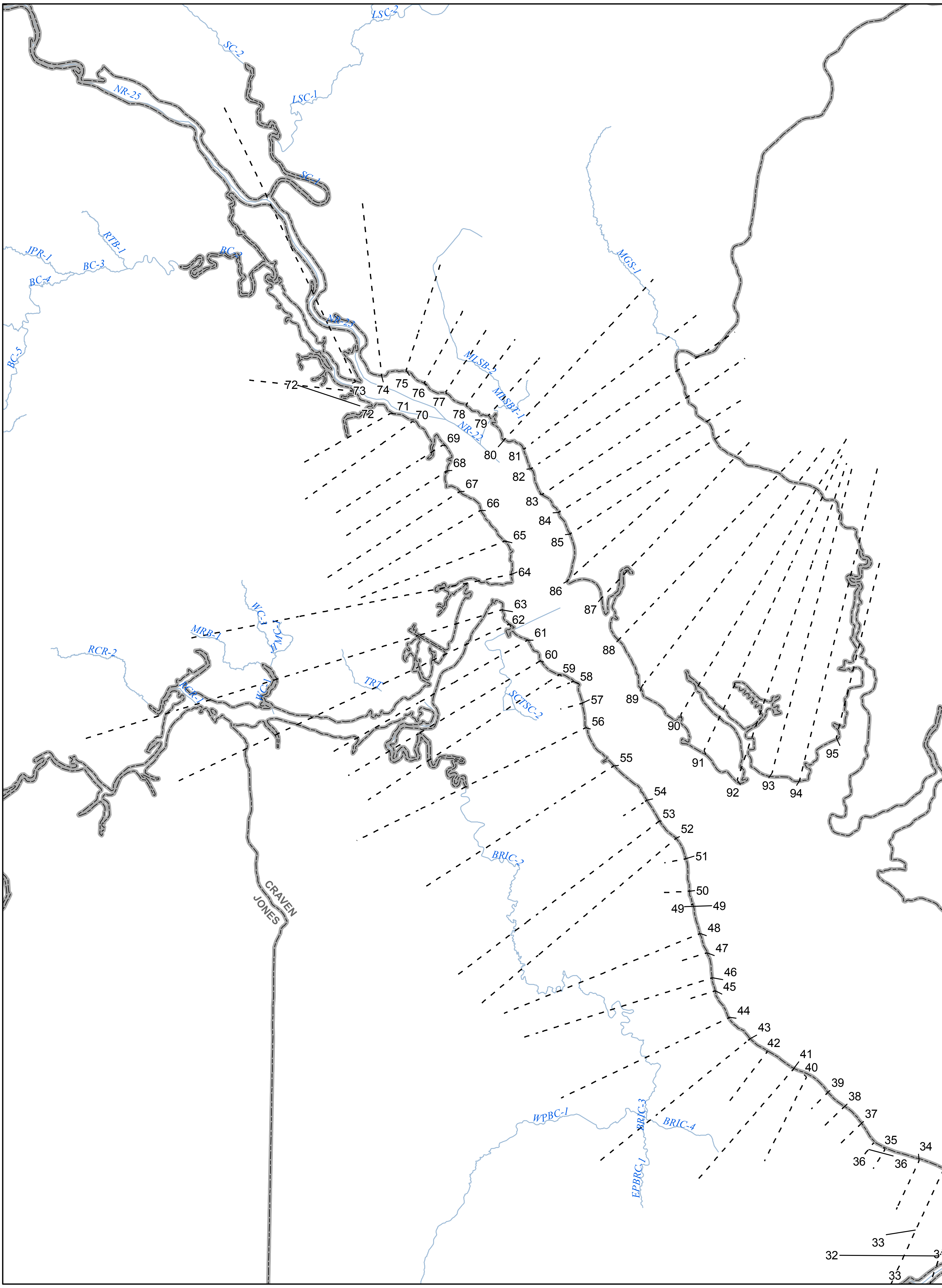

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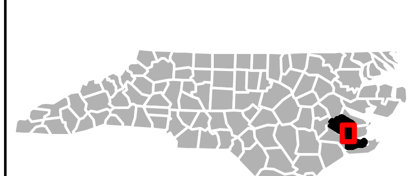
COUNTY LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM

TRANSECT LOCATOR MAP

CRAVEN COUNTY, NORTH CAROLINA

PANELS WITH TRANSECTS:

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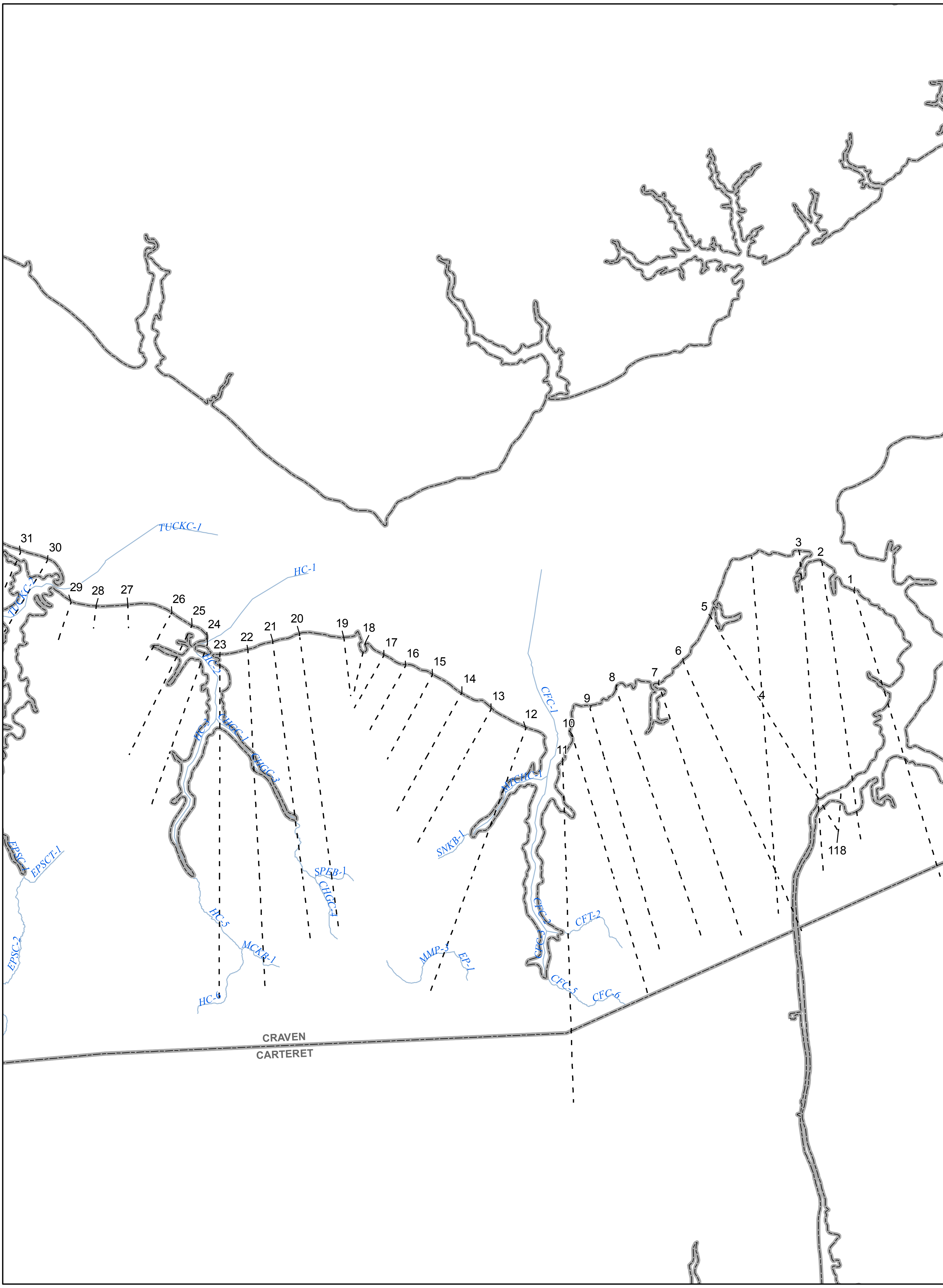
FEMA



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0 0.25 0.5 1 1.5 Miles

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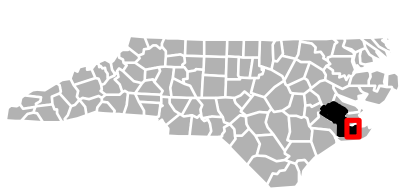
COUNTY LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM

TRANSECT LOCATOR MAP

CRAVEN COUNTY, NORTH CAROLINA

PANELS WITH TRANSECTS:

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FEMA

1.0 Introduction

1.1 The National Flood Insurance Program

In 1968, Congress created the National Flood Insurance Program (NFIP) in response to the rising cost of taxpayer-funded disaster relief for flood victims and the increasing amount of damage caused by floods. The NFIP makes federally backed flood insurance available in communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage. Federally backed flood insurance is available in more than 19,000 communities across the United States and its territories.

The NFIP is managed by the Federal Insurance and Mitigation Administration of the Federal Emergency Management Agency (FEMA). The Federal Insurance and Mitigation Administration manages the insurance component of the NFIP and oversees the flood hazard mapping and the floodplain management aspects of the program.

The NFIP, through involvement with communities, the insurance industry, and the lending industry, helps reduce flood damage by nearly $800 million a year. Further, buildings constructed in compliance with NFIP building standards suffer approximately 80% less damage annually than those not built in compliance. In addition, every $3 paid in flood insurance claims saves $1 in disaster assistance payments. The NFIP is self-supporting for the average historical loss year, which means that operating expenses and flood insurance claims are not paid by the taxpayer, but through premiums collected for flood insurance policies.

Additional information of interest to homeowners, community officials, insurance companies, lenders, and study contractors is available in Section 9.0 of this FIS Report and on the NFIP Internet homepage at http://www.fema.gov/business/nfip/.

1.2 Purpose of this Flood Insurance Study

Flood Insurance Studies (FISs) are one of the primary means by which the NFIP administers the National Flood Insurance Act of 1968, the Flood Disaster Protection Act of 1973, and the National Flood Insurance Reform Act of 1994. FISs develop flood risk data that are used to establish actuarial flood insurance rates. The information in this FIS Report will also be used by Craven County and the jurisdictions therein (hereinafter referred to collectively as Craven County) to facilitate the adoption and maintenance of floodplain management ordinances, which form the basis of communities' continued participation in the NFIP. Minimum requirements for participation in the NFIP are set forth in Title 44, Part 60, Section 3 of the Code of Federal Regulations (44 CFR 60.3). In some States and/or communities, floodplain management criteria or regulations may exist that are more restrictive than the minimum Federal requirements. In such cases, the more restrictive criteria will take precedence, and the State and/or community (or other jurisdictional agency) will be able to explain them.

This FIS investigates the existence and severity of flood hazards in, or revises and updates previous FISs for, the geographic area of Craven County, North Carolina, including the jurisdictions listed in Table 1.

Table 1 - Jurisdictions in Craven County

Community	Included in this FIS	If Not Included, Location of Flood Hazard/Flood Insurance Rate Data
CITY OF HAVELOCK	Yes	*
CITY OF NEW BERN	Yes	*
CRAVEN COUNTY	Yes	*
TOWN OF BRIDGETON	Yes	*
TOWN OF COVE CITY	Yes	*
TOWN OF DOVER	Yes	*
TOWN OF RIVER BEND	Yes	*
TOWN OF TRENT WOODS	Yes	*
TOWN OF VANCEBORO	Yes	*

1.3 FIS Components

A Flood Insurance Study (FIS) is an analysis of flood hazards, typically presented as a set of Flood Insurance Rate Map (FIRM) panels and the FIS Report, which includes a set of Flood Profiles and/or Water-surface elevation rasters.

Flood Insurance Study Report

The FIS Report provides a context for the information shown on the FIRM, as well as a summary of the data upon which the analyses are based. It also includes an index of sources of additional information on the NFIP.

1.4 Considerations for Using this Flood Insurance Study Report

The NFIP encourages State and local governments to implement sound floodplain management programs. To assist in this endeavor, each FIS Report provides floodplain data, which may include a combination of the following: 10-, 4-, 2-, 1-, and 0.2-percent annual chance flood elevations (the 1% annual chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1% annual chance and 0.2% annual chance floodplains; and 1% annual chance floodway. This information is presented on the FIRM and/or in many components of the FIS Report, including Flood Profiles, Floodway Data tables, Summary of Non-Coastal Stillwater Elevations tables, and Coastal Transect Parameters tables (not all components may be provided for a specific FIS).

It is, therefore, the responsibility of the user to consult with community officials by contacting the community repository to obtain the most current FIS Report components. Communities participating in the NFIP have established repositories of flood hazard data for floodplain management and flood insurance purposes. Community map repository addresses are provided in Table 27, "Map Repositories," within this FIS Report.

New FIS Reports are frequently developed for multiple communities, such as entire counties. A countywide FIS Report incorporates previous FIS Reports for individual communities and the unincorporated area of the county (if not jurisdictional) into a single document and supersedes those documents for the purposes of the NFIP.

The Initial Countywide FIS Report for Craven became Effective on 7/2/2004. Refer to Table XX for information about subsequent revisions to FIRMs.

Selected FIRM panels for the community may contain information (such as floodways and cross sections) that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels. In addition, former flood hazard zone designations have been changed as follows:

Old Zone	New Zone
A1 through A30	AE
V1 through V30	VE
B	X (shaded)
C	X (unshaded)

FEMA does not impose floodplain management requirements or special insurance ratings based on Limit of Moderate Wave Action (LiMWA) delineations at this time. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. If the LiMWA is shown on the FIRM, it is being provided by FEMA as information only. For communities that do adopt Zone VE building standards in the area defined by the LiMWA, additional Community Rating System (CRS) credits are available. Refer to Section 2.5.4 for additional information about the LiMWA.

The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Visit the FEMA Web site at http://www.fema.gov or contact your appropriate FEMA Regional Office for more information about this program.

Previous FIS Reports and FIRMs may have included levees that were accredited as reducing the risk associated with the 1% annual chance flood based on the information available and the mapping standards of the NFIP at that time. For FEMA to continue to accredit the identified levees, the levees must meet the criteria of the Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10), titled

“Mapping of Areas Protected by Levee Systems.

Since the status of levees is subject to change at any time, the user should contact the appropriate agency for the latest information regarding levees presented in Table 9 of this FIS Report. For levees owned or operated by the U.S. Army Corps of Engineers (USACE), information may be obtained from the USACE national levee database. For all other levees, the user is encouraged to contact the appropriate local community.

FEMA has developed a Guide to Flood Maps (FEMA 258) and online tutorials to assist users in accessing the information contained on the FIRM. These include how to read panels and step-by-step instructions to obtain specific information. To obtain this guide and other assistance in using the FIRM, visit the FEMA Web site at http://www.fema.gov.

2.0 Floodplain Management Applications

Flood events of a magnitude expected to occur with a 10%, 2%, 1%, or 0.2% annual chance have been selected as having special significance for developing sound floodplain management programs. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10%, 2%, 1%, and 0.2% chance, respectively, of being equaled in any given year. Therefore, FIS Reports typically determine water-surface elevations for floods with these probabilities. The FIRM delineates 1% and 0.2% annual chance floodplains and 1% annual chance floodway boundaries, and depicts 1% annual chance flood elevations, rounded to the nearest foot, to assist in developing floodplain management measures.

2.1 Floodplains

To provide a national standard without regional discrimination, the 1% annual chance flood has been adopted by FEMA as the base flood for floodplain management purposes. A 1% annual chance flood, or base flood, is defined as that having a 1% chance of being equaled or exceeded in any given year. The 1% annual chance floodplains shown on the FIRM identify areas that are expected to be inundated by the 1% annual chance flood. This 1% annual chance floodplain is also called a Special Flood Hazard Area (SFHA), where the NFIP’s floodplain management regulations must be enforced by the community as a condition of participation in the NFIP. The 0.2% annual chance floodplain is employed to indicate additional areas of flood risk associated with exceptionally severe floods.

2.2 Floodways

Encroachment on floodplains such as that caused by placement of 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, floodways are provided as a tool to assist local communities in this aspect of floodplain management. Under this concept, the 1% annual chance riverine 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 1% annual chance flood can be carried without substantial increases in flood heights. Figure 1, “Floodway Schematic,” illustrates this principle. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this FIS are presented to local agencies as a minimum standard that can be adopted directly or that can be used as a basis for additional encroachment studies.

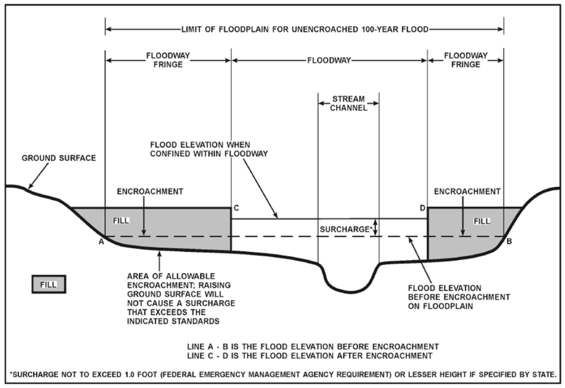

Figure 1- Floodway Schematic

2.3 Base Flood Elevations

The hydraulic characteristics of flooding sources were analyzed to provide estimates of the elevations of floods of the selected recurrence intervals. The Base Flood Elevation (BFE) is the elevation of the 1% annual chance flood. These BFEs are most commonly rounded to the whole foot, as shown on the FIRM, but in certain circumstances or locations they may be rounded to 0.1 foot. Cross section lines shown on the FIRM may also be labeled with the BFE rounded to 0.1 foot. Whole-foot BFEs derived from engineering analyses that apply to coastal areas, areas of ponding, or other static areas with little elevation change may also be shown at selected intervals on the FIRM. Cross sections with BFEs shown on the FIRM correspond to the cross sections shown in the Floodway Data table and Flood Profiles in this FIS Report. BFEs are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM.

Coastal flood elevations are provided in the Summary of Coastal Stillwater Elevations table in this report. If the elevation on the FIRM is higher than the elevation shown in this table, a wave height, wave runup and/or wave setup component likely exists, in which case, the higher elevation should be used for construction and/or floodplain management purposes.

2.4 Watershed Characteristics

Because a FIS is a probability analysis that may not account for some of the factors listed below, communities are strongly encouraged to consider adopting more restrictive or higher floodplain management criteria or ordinances than the minimum Federal requirements. Communities may also increase the validity of their flood hazard data by investing in continuous maintenance of river gages (see the Data Validity and Reliability paragraph below). If the U.S. Geological Survey (USGS) or other agencies do not maintain gages on the flooding sources of interest, partnerships with the USGS may be pursued, or local gages may be installed. For more information, see Section 9.0 of this report.

This flood hazard study represents an analysis of certain watershed characteristics, some of which are summarized as follows:

Drainage Area
In general, streams that drain larger areas have greater flood hazards. FISs, in North Carolina, do not typically analyze flood hazards in places with rural drainage areas of less than one square mile and within urban drainage areas of less than ½ square mile.

Soil Permeability and Infiltration
Differences in the types of soil and the amount of vegetation in a watershed have a significant effect on the amount of water that the soil can absorb; soils with a high sand content absorb much more water than soils with a high clay content. The presence of vegetation increases infiltration; the presence of pavement decreases infiltration and also speeds runoff to receiving waters. As soil permeability and infiltration decrease, the volume and rate of overland flow increases.

Soil Moisture Conditions
In addition to soil permeability and infiltration, the level of the water table helps determine the saturation point, beyond which no water is absorbed. As rainfall duration increases, the height of the water table increases.

Channel and Floodplain Geometry

The geometric contour of a streambed, termed channel geometry, and the geometric contour of a floodplain determine the volume of water that a channel can hold and partially determine the rate at which water flows through it.

Channel and Floodplain Roughness

The roughness of a surface affects the characteristics of runoff whether the water is on the surface of the watershed or in the channel.

FIS Reports include analyses of how these factors will combine to produce overland flow patterns during floods that have a certain probability of occurring in any given year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at shorter intervals or even within the same year. The risk of experiencing a rare flood increases when longer periods are considered. For example, the risk of having a flood which equals or exceeds the 1% annual chance flood (1% chance of annual exceedence) in any 50-year period is approximately 40% (4 in 10), but for any 90-year period, the risk increases to approximately 60% (6 in 10).

It is important to note that the 1% annual chance flood is used as the national standard to allow a consistent approach to floodplain management, flood hazard assessment, and flood hazard mapping. In any given community, a number of factors may result in flooding characteristics that do not conform to predicted conditions. Therefore, the determination that an area is not shown on the FIRM as being within a Special Flood Hazard Area is no guarantee that it will not flood during a 1% annual chance flood. Examples of these factors include Data Validity and Reliability; Developmental and Topographic Changes Over Time; Erosion, Deposition, and Debris Flow; and Meandering and Lateral Migration.

Data Validity and Reliability

Certain types of analysis methods yield more justifiable characterizations of flood hazards. For example, a gage analysis, to determine peak discharges, is based on actual measurements of watershed conditions over time and, therefore, is typically considered the most accurate method of hydrologic analysis. However, it is not feasible to install enough gages to gather data on every stream. In addition, for many of the gage sites that do exist, there are interruptions in the period of record. The usefulness of gage data for the purpose of predicting flooding behavior decreases with interruptions in the period of record; predicted flooding conditions over a 100-year period based on 20 years of measurements spread over a 35-year period are less valid than those based on 30 years of continuous measurements. A regression analysis is typically considered the best method in the absence of gage data, as it uses gage data from watersheds with similar characteristics to estimate flood frequency and magnitude in an ungaged watershed. Regression equations reflect average conditions for a region; therefore, the results will not exactly match the results of a gage analysis at a particular location. The standard errors of the North Carolina rural regression equations range from 44 to 51 percent for estimates of the 1% annual chance flood. That means the difference between the results of the regression equation and the gage analysis for approximately two-thirds of the locations that gage data exists are within 44 to 51 percent of the gage analysis results. A rainfall-runoff hydrologic analysis may be used for gaged or ungaged watersheds, and can estimate the effects of storage areas and flood control structures and measures. This method is most valid when calibrated against historical data.

Developmental and Topographic Changes Over Time

A FIRM is based on the best topographic and planimetric information available to FEMA and the State of North Carolina at the time the study is produced. In time, however, development and/or natural phenomena can alter the physical characteristics of a watershed and its drainage channels, resulting in changes in the flood hazards in those areas. For example, constructing a housing subdivision reduces the amount of soil that is available to absorb water; this in turn causes an increase in the volume of surface water that flows into the channel.

Erosion, Deposition, and Debris Flow

The flood hazards shown on a FIRM are based on the assumption of unobstructed flow. The FIRM does not reflect an analysis of areas that are subject to erosion caused by the increased water-surface elevations and velocities that occur during flooding. In addition to the risks of landslides or a weakening of the ground underneath roads or structures, any sediment that is removed from one location will be deposited in another; accumulated deposits may have a pronounced effect on flood hazards in those areas. Similarly, debris such as fallen trees or branches, litter, or other items may obstruct stream channels or hydraulic structures, increasing water-surface elevations, velocities, and floodplain width.

Meandering and Lateral Migration

FISs are based on the assumption that channel geometry will remain stable during normal drainage and during flood events. This assumption is valid for most streams, which flow over bedrock or between bedrock outcroppings that form non-alluvial channels. However, alluvial streams change the channel geometry with time, significantly so during flood events. Alluvial streams are subject to erosion and deposition, which may result in braided or meandering channels. Streams of this type may be characterized by lateral migration, or channel shifting, in which the stream may change course entirely during a flood. Whenever clear evidence is available, a FIRM will identify the alluvial nature of a studied flooding source and designate wider floodways to allow for potential migration. However, these floodways are based on qualitative assessments and not on quantitative geomorphic and engineering analyses.

2.5 Coastal Flood Hazard Areas

For most areas along rivers, streams, and small lakes, BFEs and floodplain boundaries are based on the amount of water expected to enter the area during a 1% annual chance flood and the geometry of the floodplain. Floods in these areas are typically caused by storm events. However, for areas on or near ocean coasts, large rivers, or large bodies of water, BFE and floodplain boundaries may need to be based on additional components, including storm surges and waves. Communities on or near ocean coasts face flood hazards caused by offshore seismic events as well as storm events.

Coastal flooding sources that are included in this Flood Risk Project are shown in Table XX.

2.5.1 Water Elevations and the Effects of Waves

Specific terminology is used in coastal analyses to indicate which components have been included in evaluating flood hazards.

The stillwater elevation (SWEL or still water level) is the surface of the water resulting from astronomical tides, storm surge, and freshwater inputs, but excluding wave setup contribution or the effects of waves.

- *Astronomical tides* are periodic rises and falls in large bodies of water caused by the rotation of the earth and by the gravitational forces exerted by the earth, moon and sun.
- *Storm surge* is the additional water depth that occurs during large storm events. These events can bring air pressure changes and strong winds that force water up against the shore.
- *Freshwater inputs* include rainfall that falls directly on the body of water, runoff from surfaces and overland flow, and inputs from rivers.

The 1% annual chance stillwater elevation is the stillwater elevation that has been calculated for a storm surge from a 1% annual chance storm. The 1% annual chance storm surge can be determined from analyses of tidal gage records, statistical study of regional historical storms, or other modeling approaches. Stillwater elevations for storms of other frequencies can be developed using similar approaches.

The total stillwater elevation (also referred to as the mean water level) is the stillwater elevation plus wave setup contribution but excluding the effects of waves.

- *Wave setup* is the increase in stillwater elevation at the shoreline caused by the reduction of waves in shallow water. It occurs as breaking wave momentum is transferred to the water column.

Like the stillwater elevation, the total stillwater elevation is based on a storm of a particular frequency, such as the 1% annual chance storm. Wave setup is typically estimated using standard engineering practices or calculated using models, since tidal gages are often sited in areas sheltered from wave action and do not capture this information.

Coastal analyses may examine the effects of overland waves by analyzing storm-induced erosion, overland wave propagation, wave runup, and/or wave overtopping.

- *Storm-induced erosion* is the modification of existing topography by erosion caused by a specific storm event, as opposed to general erosion that occurs at a more constant rate.
- *Overland wave propagation* describes the combined effects of variation in ground elevation, vegetation, and physical features on wave characteristics as waves move onshore.

- *Wave runup* is the uprush of water from wave action on a shore barrier. It is a function of the roughness and geometry of the shoreline at the point where the stillwater elevation intersects the land.
- *Wave overtopping* refers to wave runup that occurs when waves pass over the crest of a barrier.

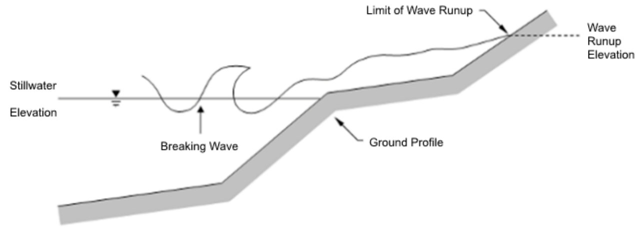

Figure 5: Wave Runup Transect Schematic

2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

For coastal communities along the Atlantic and Pacific Oceans, the Gulf of Mexico, the Great Lakes, and the Caribbean Sea, flood hazards must take into account how storm surges, waves, and extreme tides interact with factors such as topography and vegetation. Storm surge and waves must also be considered in assessing flood risk for certain communities on rivers or large inland bodies of water.

Beyond areas that are affected by waves and tides, coastal communities can also have riverine floodplains with designated floodways, as described in previous sections.

Floodplain Boundaries

In many coastal areas, storm surge is the principle component of flooding. The extent of the 1% annual chance floodplain in these areas is derived from the total stillwater elevation (stillwater elevation including storm surge plus wave setup) for the 1% annual chance storm. The methods that were used for calculation of total stillwater elevations for coastal areas are described in Section 5.3 of this FIS Report. Location of total stillwater elevations for coastal areas are shown in Figure 8, “1% Annual Chance Total Stillwater Levels for Coastal Areas.

In some areas, the 1% annual chance floodplain is determined based on the limit of wave runup or wave overtopping for the 1% annual chance storm surge. The methods that were used for calculation of wave hazards are described in Section 5.3 of this FIS Report.

Table 18 and 18P presents the types of coastal analyses that were used in mapping the 1% annual chance floodplain in coastal areas.

Coastal BFEs

CWhere they apply, coastal BFEs are calculated along transects extending from offshore to the limit of coastal flooding onshore. Results of these analyses are accurate until local topography, vegetation, or development type and density within the community undergoes major changes.

Parameters that were included in calculating coastal BFEs for each transect included in this FIS Report are presented in Table 20, “Coastal Transect Parameters.” The locations of transects are shown in Figure 9, “Transect Location Map.” More detailed information about the methods used in coastal analyses and the results of intermediate steps in the coastal analyses are presented in Section 5.3 of this FIS Report. Additional information on specific mapping methods is provided in Section 6.4 of this FIS Report.

2.5.3 Coastal High Hazard Areas

Certain areas along the open coast and other areas may have higher risk of experiencing structural damage caused by wave action and/or high-velocity water during the 1% annual chance flood. These areas will be identified on the FIRM as Coastal High Hazard Areas.

- *Coastal High Hazard Area (CHHA)* is a SFHA extending from offshore to the inland limit of the primary frontal dune (PFD) or any other area subject to damages caused by wave action and/or high-velocity water during the 1% annual chance flood.
- *Primary Frontal Dune (PFD)* is a continuous or nearly continuous mound or ridge of sand with relatively steep slopes

immediately landward and adjacent to the beach. The PFD is subject to erosion and overtopping from high tides and waves during major coastal storms.

CHHAs are designated as “V” zones (for “velocity wave zones”) and are subject to more stringent regulatory requirements and a different flood insurance rate structure. The areas of greatest risk are shown as VE on the FIRM. Zone VE is further subdivided into elevation zones and shown with BFEs on the FIRM.

The landward limit of the PFD occurs at a point where there is a distinct change from a relatively steep slope to a relatively mild slope; this point represents the landward extension of Zone VE. Areas of lower risk in the CHHA are designated with Zone V on the FIRM. More detailed information about the identification and designation of Zone VE is presented in Section 6.4 of this FIS Report.

Areas that are not within the CHHA but are SFHAs may still be impacted by coastal flooding and damaging waves; these areas are shown as “A” zones on the FIRM.

Figure 6, “Coastal Transect Schematic,” illustrates the relationship between the base flood elevation, the 1% annual chance stillwater elevation, and the ground profile as well as the location of the Zone VE and Zone AE areas in an area without a PFD subject to overland wave propagation. This figure also illustrates energy dissipation and regeneration of a wave as it moves inland.

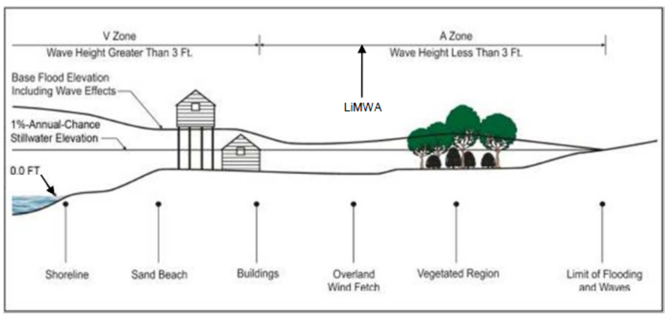

Figure 6: Coastal Transect Schematic

Methods used in coastal analyses in this Flood Risk Project are presented in Section 5.3 and mapping methods are provided in Section 6.4 of this FIS Report.

Coastal floodplains are shown on the FIRM using the symbology described in Figure 3, “Map Legend for FIRM.” In many cases, the BFE on the FIRM is higher than the stillwater elevations shown in Table 17 due to the presence of wave effects. The higher elevation should be used for construction and/or floodplain management purposes.

2.5.4 Limit of Moderate Wave Action

Laboratory tests and field investigations have shown that wave heights as little as 1.5 feet can cause damage to and failure of typical Zone AE building construction. Wood-frame, light gage steel, or masonry walls on shallow footings or slabs are subject to damage when exposed to waves less than 3 feet in height. Other flood hazards associated with coastal waves (floating debris, high velocity flow, erosion, and scour) can also damage Zone AE construction.

Therefore, a LiMWA boundary may be shown on the FIRM as an informational layer to assist coastal communities in safe rebuilding practices. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The location of the LiMWA relative to Zone VE and Zone AE is shown in Figure 6.

The effects of wave hazards in Zone AE between Zone VE (or the shoreline where Zone VE is not identified) and the limit of the LiMWA boundary are similar to, but less severe than, those in Zone VE where 3-foot or greater breaking waves are projected to occur during the 1% annual chance flooding event. Communities are therefore encouraged to adopt and enforce more stringent floodplain management requirements than the minimum NFIP requirements in the LiMWA. The NFIP Community Rating System provides credits for these actions.

Where wave runup elevations dominate over wave heights, there is no evidence to date of significant damage to residential structures by runup depths less than 3 feet. Examples of these areas include areas with steeply sloped beaches, bluffs, or flood protection structures that lie parallel to the shore. In these areas, the FIRM shows the LiMWA immediately landward of the VE/AE boundary. Similarly, in areas where the zone VE designation is based on the presence of a primary frontal dune or wave overtopping, the LiMWA is delineated immediately landward of the Zone VE/AE boundary.

3.0 Insurance Applications

3.1 National Flood Insurance Program Insurance Zones

For flood insurance applications, the FIRM designates flood insurance rate zones and, in 1% annual chance 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. Table 2, "Flood Zone Designations," includes a description of each type of flood hazard zone.

Table 2 - Flood Designations

Zone	Description
A	Zone A is the flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined in the FIS Report by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no Base Flood Elevations or depths are shown within this zone.
AE	Zone AE is the flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined in the FIS Report by detailed methods. In most instances, whole-foot Base Flood Elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.
AH	Zone AH is the flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot Base Flood Elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.
AO	Zone AO is the flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the detailed hydraulic analyses are shown within this zone.
AR	Zone AR is the flood insurance rate zone that corresponds to areas that were formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
A99	Zone A99 is the flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No Base Flood Elevations or depths are shown within this zone.
V	Zone V is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no Base Flood Elevations are shown within this zone.
VE	Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Whole-foot Base Flood Elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.
X	Zone X is the flood insurance rate zone that corresponds to areas outside the 0.2% annual chance floodplain, areas within the 0.2% annual chance floodplain, and to areas of 1% annual chance flooding where average depths are less than 1 foot, areas of 1% annual chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1% annual chance flood by levees. No Base Flood Elevations or depths are shown within this zone.
X (Future)	Zone X (Future Base Flood) is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined based on future-conditions hydrology. No BFEs or base flood depths are shown within this zone.
D	Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

3.2 Coastal Barrier Resources System

3.2 Coastal Barrier Resources System

The Coastal Barrier Resources Act (CBRA) of 1982 was established by Congress to create areas along the Atlantic and Gulf coasts and the Great Lakes, where restrictions for Federal financial assistance including flood insurance are prohibited. In 1990, Congress passed the Coastal Barrier Improvement Act (CBIA), which increased the extent of areas established by the CBRA and added “Otherwise Protected Areas” (OPA) to the system. These areas are collectively referred to as the John. H Chafee Coastal Barrier Resources System (CBRS). The CBRS boundaries that have been identified in the project area are in Table 4: Coastal Barrier Resource System Information.

Table 4: “Coastal Barrier Resources System Information” is not applicable in Craven County.

4.0 Area Studied

Craven County is found in the Coastal Plain region of North Carolina. It is surrounded by Lenoir, Pitt, and Beaufort Counties to the north, Pamlico County to the east, Carteret County to the south, and Jones County to the west.

4.1 Basin Description

Table 3, “Basin Description” contains a description of the characteristics of the HUC-8 sub-basins within which each community falls. The table includes the main flooding sources within each basin, a brief description of the basin, and its area.

Table 3 - Basin Description

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description	HUC Area (square miles)
Lower Neuse	03020204	Neuse River	The Lower Neuse River Basin reaches up into Lenoir County, North Carolina and then drains east into the Pamlico Sound. The basin drains significant portions of Cartaret, Craven, Jones, and Pamlico Counties.	1,583
Middle Neuse	03020202	Neuse River	The Middle Neuse River Basin headwaters are in Wayne and Pitt Counties. The basin also drains significant portions of Beaufort, Greene, Jones, and Lenoir Counties and ends near New Bern, North Carolina in Craven County.	1,065
Pamlico	03020104	Pamlico River	The Pamlico River Basin covers the reach of Pamlico River in Beaufort County between Tar River and the Pamlico Sound. The basin also drains significant portions of Hyde, Pamlico, Tyrell, and Washington Counties.	1,306
White Oak River	03020301	White Oak River	The White Oak River Basin drains southern portions of Jones and Craven Counties. The basin also includes coastal regions of Cartert and Onslow Counties.	932

4.2 Principal Flood Problems

Table 4, “Principal Flood Problems” contains a list of principal flooding problems in Craven County.

Table 4 - Principal Flood Problems

Flooding Source	Problem
All Sources	The dominant sources of flooding in Craven County are storm surge and riverine flooding. Storm surge from the Atlantic Ocean propagates into Pamlico Sound, which further propagates into the Neuse River, Hancock Creek, Jack Smith Creek, Lawson Creek, Paml
All Sources	The dominant sources of flooding in Craven County are storm surge and riverine flooding. Storm surge from the Atlantic Ocean propagates into Pamlico Sound, which further propagates into the Neuse River, Hancock Creek, Jack Smith Creek, Lawson Creek, Pamlico River, downstream portions of Rocky Run/Samuels Creek, Slocum Creek, Southwest Prong Slocum Creek, and the Trent River; riverine from heavy rainfall occurs on Clubfoot Creek, East Prong Slocum Creek and Tributary, Jimmies Creek, Maple Cypress, Mauls Swamp, Mills Branch and Tribtuary, Morris Branch, Mosley Creek and Tributary, Samuels Creek/Rocky Run, Scotts Creek, Snake Branch, Southwest Prong Slocum Creek, Swift Creek, Trent River Tributary, Tucker Creek, Village Creek, and Wilson Creek. Not all storms that pass close to the study area produce extremely high surge. Similarly, storms that produce flooding conditions in one area may not necessarily produce flooding conditions in other parts of the study area. North Carolina experiences hurricanes, tropical storms, and severe extra-tropical cyclones usually referred to as northeasters. Unlike a hurricane, which may pass over a coastal location in a fraction of a day, a northeaster may blow from the same direction over long distances for several days (Baker, 1979). The contribution from northeasters to the overall storm surge elevation in th eCraven County area was found to be insignificant compared to hurricanes; therefore only the effects of hurricane and tropical storm induced surge elevations were considered. In other areas of North Carolina, particularly the Outer Banks area of the northern part of the state, northeasters were found to provide a significant contribution to the overall storm surge. The primary flooding problem in the Town of Vanceboro is the overflow of Swift Creek and Mauls Swamp that results from heavy rains.

4.3 Historic Flood Elevations

Hurricane Floyd
(9/16/1999)
Hurricane Floyd made landfall near Wilmington with category two winds of 105 to 110 mph. Rainfall totals from Floyd were as high as 15 to 20 inches over portions of eastern North Carolina; with a record of 23.45 inches of rain falling in the month of September at Wilmington, NC. This breaks the previous record of 21.12 inches set in July 1886. These rains combined with saturated ground from previous rain events, including Hurricane Dennis, to produce an inland flood disaster. There were 74 deaths in the United States, including 52 in North Carolina, due to drowning from flood waters. This makes Floyd the deadliest U.S. hurricane since Agnes in 1972. Data from the USGS indicate that eleven of their stream gage monitoring sites in North Carolina (Ahoskie, Rocky Mount, Hilliardston, White Oak, Enfield, Tarboro, Lucama, Hookerton, Trenton, Chinquapin, and Freeland) exceeded 0.2% annual chance flood levels due to Floyd. Total losses in North Carolina approach $5 billion with an estimated $3.5 billion in damages to North Carolina homes, businesses, roads, and infrastructure. Floyd passed relatively close to the entire U.S. east coast, justifying hurricane warnings from Florida to Massachusetts and requiring an estimated two million people to evacuate. The last hurricane to require warnings for as large a stretch of coastline was Hurricane Donna in 1960.

Hurricane Bonnie
(8/26/1998)
The landfall location of Bonnie was in southern North Carolina near Cape Fear very close to landfall of both Hurricanes Bertha and Fran in 1996. Even though a powerful storm, damage from Bonnie was much less than Fran, which was also Category 3. Winds gusted up to 100 knots and storm tides of 5 to 8 feet above normal were reported mainly in eastern beaches of Brunswick County, while a storm surge of 6 feet was reported at Pasquotank and Camden Counties in the Albemarle Sound.

Hurricane Fran
(9/5/1996)
The landfall location of Fran near the city of Wilmington and its progression into the Raleigh-Durham area caused an estimated $1.275 billion in damage in North Carolina alone. Fran hit with gusts up to 105 mph and a storm surge of approximately 16 feet. Over $1 billion in damage was reported in North Topsail Beach and Surf City and 23 people were killed.

Hurricane Bertha
(7/12/1996)
1996 was a damaging year in the hurricane history of North Carolina. Tropical Storm Arthur, Hurricane Bertha, and Hurricane Fran all made direct landfall on the North Carolina coastline. It was the most active tropical cyclone season in the state since 1955, when Hurricanes Connie, Diane, and Ione all hit the coast. Bertha entered North Carolina in North Topsail Beach with 105 mph gust and a storm surge of approximately 5 feet.

Hurricane Gloria
(9/26/1985)
The landfall location of Gloria was Cape Hatteras, with 90 knot winds and a storm surge of approximately 6-8 feet.

Hurricane Diana
(9/13/1984)
The landfall location of Diana was 38 miles south of Wilmington with 90 mph winds at its closest approach to Wilmington. Diana had 115 mph sustained winds before landfall. Storm surge was approximately 5-6 feet.

Hurricane Donna
(8/29/1960)
Hurricane Donna crossed the North Carolina coast between Wilmington and Morehead City of September 11, 1960. The center of the storm passed a few miles east of Wrightsville Beach, although Wilmington and Wrightsville Beach were each in the eye for about an hour. The lowest barometric pressure recorded during this storm was 962 mb at Wilmington. High tides, 6 to 8 feet above normal, together with high winds, caused severe damage at many points. Winds of hurricane force, up to 97 mph, were reported from Wilmington. During the night of September 11, the storm center moved northward, parallel, and slightly east of a line drawn between Wilmington and Norfolk. Wind gusts were in excess of 97 mph and tides were 4 to 8 feet above normal. High tides of 10.3 and 8.3 feet

NGVD were reported at Atlantic Beach and Wrightsville Beach, respectively. Coastal communities from Wilmington to Nags Head suffered heavy structural damage and considerable beach erosion. Eight deaths and approximately 100 injuries were attributed to the storm. Damages were estimated at millions of dollars.

Hurricane Helene
(9/21/1958)
Hurricane Helene was one of the most powerful storms of recent history. Fortunately for the people of North Carolina, the storm center was well out at sea as it moved north on September 26 and 27. Nevertheless, high winds were recorded at Wilmington, with the highest winds measured at 85 mph and peak gusts recorded at 135 mph. The lowest reported central pressure of the storm was 932 mb; this measurement was recorded south-southeast of Cape Fear early on the morning of September 27. There was some beach erosion due to seas and tides, but this erosion was minimized by the fact that the storm occurred at the time of low astronomical tides. High tides were estimated at 3 to 5 feet above normal; a high tide of 5.1 feet NGVD was reported at Wrightsville Beach. Tides were higher on the southern edge of Pamlico Sound, when the wind shift as the storm center passed brought the tides 7 to 8 feet above normal.

Hurricane Ione
(9/10/1955)
Hurricane Ione moved up from the south and crossed the North Carolina coast near Salter Path, 10 miles west of Morehead City, at about 5 a.m. on September 19. It then slowly curved to the northeast and went out to sea near the Virginia border early on September 20. When Ione entered North Carolina, winds gusted to over 100 mph. Wind speeds of 75 mph with gusts to 107 mph were recorded at Cherry Point. The minimum barometric pressure recorded over North Carolina during this storm was 960 mb. Heavy rains also accompanied Ione. At the same time, prolonged easterly winds drove tidal water onto beaches and into sounds and estuaries to heights of 3 to 10 feet above normal. The result was the largest inundation of eastern North Carolina ever known to have occurred. At New Bern, the depth of the flood was the greatest ever recorded, about 10.5 feet above mean low water; forty city blocks were flooded, several hundred homes were washed away, and thousands more were flooded with up to 4 feet of water. A high tide of 6.9 feet NGVD was reported at Atlantic Beach, North Carolina, and an estimated 5.3 feet NGVD at Wrightsville Beach.

Hurricane Diane
(8/7/1955)
Five days after Hurricane Connie, and before the damage from that storm could be estimated, Hurricane Diane struck the coast near Carolina Beach about 6 a.m. on August 17. The highest wind speed reported during this storm was 74 mph at Wilmington Airport. Storm tides ranged from 5 to 9 feet above mean low water on the beaches (6.8 feet NGVD at Wrightsville Beach), and in some areas of sounds and rivers emptying into sounds, estimated water levels were 5 to 9 feet above normal. Water was 3 feet above flood level in the business district of Belhaven and “waist deep” in parts of Washington and New Bern. Diane caused severe beach erosion along the North Carolina coast. The total damage caused in North Carolina by both Connie and Diane was estimated to be in excess of $90 million. No deaths or injuries in North Carolina were attributed to either of the storms.

Hurricane Connie
(8/3/1955)
Hurricane Connie entered North Carolina close to Cape Lookout at about 8:30 a.m. on August 12. The prolonged pounding of high waves against the coast caused tremendous beach erosion, probably worse than that caused by Hazel in 1954. Storm tides along the coast from Southport to Nags Head were reported to be about 7 feet NGVD (6.9 feet NGVD at Wrightsville Beach and 7.5 feet NGVD at Kure Beach). Water in sounds and near the mouths of rivers was 5 to 8 feet above normal. At Wilmington, winds were reported at 72 mph, gusting to 83 mph. At Fort Macon, winds of 75 mph, gusts of 100 mph, and barometric pressure of 962 mb were reported. The storm also brought torrential rains with the maximum rainfall, around 12 inches in 48 hours, occurring near Morehead City. Total damage throughout the state was estimated at $50 million.

Hurricane Hazel
(10/5/1954)
Hurricane Hazel was the most destructive storm in the history of North Carolina. The storm crossed the coast just north of Myrtle Beach, South Carolina, as hurricane winds hit the Atlantic coast between Georgetown, South Carolina, and Cape Lookout, North Carolina. Storm tides (i.e., hurricane surge) devastated the immediate ocean front of this stretch of coast. Every fishing pier along 170 miles of coast, from Myrtle Beach to Cedar Island, North Carolina, was destroyed. The waterfront between the South Carolina/North

Carolina state boundary and Cape Fear was destroyed. Beach homes, which had been built in a continuous line five miles long behind and along grass-covered dunes (some of which were 20 feet high), simply disappeared – dunes, houses, and all. From Cape Fear to Cape Lookout, the degree of devastation was not as great, but oceanfront property was damaged an average of 50 percent along this entire stretch. To the north of Cape Lookout, the damage was relatively light. Storm surges of 16.6 feet above NGVD were observed at Holden Beach Bridge and Calabash, North Carolina. The highest tide of record was observed during Hurricane Hazel, when ocean tide levels reached approximately 10 feet NGVD at Wrightsville Beach and 11 feet NGVD at Carolina Beach. The lowest recorded barometric pressure of the storm was 938 millibars (mb), reported at Little River Inlet on the North Carolina/South Carolina border. Maximum wind speeds were 83 miles per hour (mph), with gusts recorded at 98 mph at Wilmington, North Carolina, 106 mph at Myrtle Beach, South Carolina, and an estimated 150 mph at Cape Fear. The storm continued inland through North Carolina, causing widespread damage due to high winds and record rainfalls. Nineteen people were killed and 200 injured during this storm.

Table 5, "Historic Flood Elevations", lists selected flooding sources in Craven County with records of past stages. The table shows the historic peak, a location description, approximate stream station, the date of the historic peak, and approximate recurrence interval of the flood elevation. The approximate recurrence interval for a flood is often estimated based on an analysis of rainfall amounts from a storm and /or stream gage data.

Table 5 - Historic Flood Elevations

Flooding Source/Tropical Storm	Location Description	Approx. Stream Station	Historic Peak (Feet NAVD 88)	Date	Approximate Recurrence Interval (in years)
East Prong Slocum Creek / Heavy Rain	Mark is 120 feet East of culvert crossing Wood Haven Drive; 40 feet West of sewer R/W	9653	7.5	8/8/8888	*
East Prong Slocum Creek / Unknown	Base of fence at gate in backyard	14492	11.1	8/8/8888	*
Maple Cypress / Hurricane Floyd	Water rose 4.5 feet above the top of Maple Cypress Road	3478	21.1	9/16/1999	*
Maple Cypress / Unknown	Water came about 25 feet past channel banks into field	17371	25.4	8/8/8888	*
Neuse River / Hurricane Floyd	Upstream face of Weyerhaeuser Road	57075	10.6	9/1/1999	100
Neuse River / Hurricane Floyd	Downstream face of West Craven Middle School Road	65300	11.7	9/1/1999	100
Neuse River / Hurricane Floyd	400 feet southwest of intersectioin of River Road and Cowpens Landing Road	76975	14.6	9/1/1999	100
Neuse River / Hurricane Floyd	Approximately 1.0 mile upstream of intersection of River Road and State Camp Road	94750	17.7	9/1/1999	100
Neuse River / Hurricane Floyd	Backwater up Core Creek (approximately 2.9 miles downstream of NC 55)	127000	18.7	9/1/1999	100
Neuse River / Hurricane Floyd	Backwater up Village Creek (downstream face of Biddle Road)	135000	22.2	9/1/1999	100
Neuse River / Hurricane Floyd	Upstream face of U.S. Highway 70/Queen St.	258355	37.6	9/1/1999	100
Neuse River / Hurricane Floyd	Downstream face of Main Street	591830	54.9	9/1/1999	50
Neuse River / Hurricane Floyd	Downstream face of NC 111	636585	61.7	9/1/1999	50
Neuse River / Hurricane Floyd	Upstream face of SR 1915	694195	71.1	9/1/1999	50
Neuse River / Hurricane Floyd	160 feet Southeast of Bryan Boulevard	710650	72.8	9/1/1999	50
Scotts Creek / Hurricane Fran	10 feet south of house	2183	6.5	8/8/8888	*
Scotts Creek / Hurricane Fran	Water rose up to trees in front yard	10236	14.5	8/8/8888	*
Trent River / Hurricane Floyd	Trent River	94770	16.4	10/1/1999	100
Trent River / Hurricane Floyd	Trent River	198194	28.3	10/18/1999	100
Wilson Creek / Hurricane Floyd	Concrete landing of deck	*	6.3	9/17/2008	500

* Data Not Available

4.4 Flood Protection Measures

Flood protection measures may be structural (such as levees, dams, and reservoirs) or non-structural (such as land-use management ordinances, policies, or practices).

Table 6, "Non-Levee Flood Protection Measures" is not applicable in Craven County.

Table 7, "Levees" is not applicable in Craven County.

4.5 Scope of Study

For this map maintenance revision, a scoping meeting was held in Craven County to present the results of initial research to the county and communities within the county and to discuss their floodplain mapping needs. The county and communities were asked to provide input on proposed study priorities and analysis methods. These meetings resulted in the identification of flooding sources having a floodplain mapping need. Map Maintenance Plans were developed based on the results of the scoping meetings and were both mailed to each jurisdiction within Craven County and posted to the State's website at www.ncfloodmaps.com.

Draft basin plans were developed based on the results of the initial scoping meetings. Final scoping meetings were held by the State and FEMA to provide counties and communities an overview of the draft basin plans, including the proposed scope and schedule for the project, and to provide an opportunity for additional county and community input. After the final scoping meeting was held, the Final Basin Plans were produced.

This FIS covers the geographic area of Craven County, North Carolina, and all jurisdictions therein. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction. Limits of detailed study are indicated on the Flood Profiles and/or Water-surface elevation rasters and/or the FIRM.

Table 8P, "Scope of Revisions: Revised or New Detailed Study -Preliminary", lists flooding sources that were newly studied by detailed methods or were previously studied by detailed methods and had a change in backwater elevation due to flooding effects from a newly studied flooding source.

Table 8P - Scope of Revisions: Revised or New Detailed Study - Preliminary

Source	Riverine Sources		Affected Communties
	From	To	
Deep Gully	The confluence with Trent River	Approximately 1.7 miles upstream of the confluence with Trent River	Craven County
East Prong Slocum Creek	Approximately 0.5 mile downstream of confluence of East Prong Slocum Creek Tributary	Approximately 100 feet downstream of Railroad Street	City Of Havelock
East Prong Slocum Creek Tributary	The confluence with East Prong Slocum Creek	Approximately 0.6 mile upstream of Cunningham Boulevard	City Of Havelock
Jimmies Creek	The confluence with Wilson Creek	Approximately 140 feet upstream of Trent Road	City Of New Bern Town Of Trent Woods
Little Swift Creek[1]	The confluence with Swift Creek	The confluence of Beaverdam Swamp	Craven County
Maple Cypress	The confluence with Neuse River	Approximately 620 feet upstream of Harris Road	Craven County
Mills Branch Tributary	The confluence with Mills Branch	Approximately 100 feet upstream of Old Vanceboro Road	Craven County
Morris Branch	The confluence with Wilson Creek	Approximately 1,170 feet upstream of Greenleaf Cemetery Road	City Of New Bern Town Of Trent Woods
Neuse River[1]	Approximately 2.17 miles downstream of the confluence of Swift Creek	Approximately 6.2 miles upstream of Weyerhaeuser Road	Craven County
Reedy Branch	The confluence with Trent River	Approximately 0.4 mile upstream of Crump Farm Road	Craven County
Samuels Creek/Rocky Run	The confluence with Trent River	Approximately 0.7 mile upstream of Deerfield Drive	City Of New Bern Craven County Town Of River Bend
Scotts Creek	The confluence with Neuse River	Approximately 1,830 feet upstream of Airport Road	Craven County
Swift Creek[1]	The confluence with Neuse River	Approximately 0.8 mile downstream of Streets Ferry Road	Craven County Town Of Vanceboro
Trent River	The confluence with Neuse River	Approximately 1,015 feet upstream of the confluence of Raccoon Creek	Craven County Town Of River Bend
Trent River Tributary	The confluence with Trent River	Approximately 330 feet upstream of Canterbury Road	Town Of Trent Woods
Wilson Creek	Approximately 300 feet downstream of the confluence of Morris Branch	Approximately 1,100 feet upstream of Yarmouth Road	City Of New Bern

[1]**Revised to reflect backwater effects from new detailed study**

Table 9P, "Scope of Revisions: Redelineated - Preliminary", contains a list of flooding sources that were studied by detailed methods for previous FISs, but were only partially revised in the current study. There effective analyses remain valid; however, their floodplain delineations have been revised on the current FIRM.

Table 9P - Scope of Revisions: Redelineated - Preliminary

Source	Riverine Sources		Affected Communties
	From	To	
Mills Branch[1]	The confluence with Neuse River	Approximately 0.3 mile upstream of Ridge Road	Craven County
Snake Branch[1]	The confluence with Mitchell Creek	Approximately 1,660 feet upstream of the confluence with Mitchell Creek	Craven County
Tucker Creek[1]	The confluence with Slocum Creek	Approximately 3.2 miles upstream of the confluence with Slocum Creek	City Of Havelock Craven County

[1]Revised to reflect backwater effects from new detailed study

Table 10P, "Scope of Revisions: Limited Detailed - Preliminary", lists flooding sources that were newly studied by limited detailed methods or were previously studied by limited detailed methods and had a change in backwater elevation due to flooding effects from a newly studied flooding source.

Table 10P - Scope of Revisions: Limited Detailed - Preliminary

Source	Riverine Sources		Affected Communties
	From	To	
Bachelor Creek[1]	Washington Post Road	Approximately 910 feet upstream of NC Highway 55	Craven County
Beaverdam Swamp[1]	The confluence with Little Swift Creek	Approximately 0.4 mile upstream of Hills Neck Road	Craven County
Brice Creek[1]	Old Airport Road	Approximately 1 mile upstream of Old Airport Road	City Of New Bern Craven County
Cahoogue Creek[1]	Approximately 0.5 mile downstream of NC Highway 306	Approximately 30 feet downstream of Ferry Road	Craven County
Fisher Swamp[1]	The confluence with Beaverdam Swamp	Approximately 780 feet upstream of Hills Neck Road	Craven County
Jumping Run[1]	The confluence with Bachelor Creek	Approximately 1.3 miles upstream of the confluence with Bachelor Creek	Craven County
Little Swift Creek[1]	Approximately 350 feet upstream of U.S. Highway 17	Approximately 1.5 miles upstream of Great Swamp Road	Craven County
Round Tree Branch[1]	The confluence with Bachelor Creek	Approximately 1.1 miles upstream of the confluence with Bachelor Creek	Craven County
Southwest Prong Slocum Creek[1]	Miller Boulevard	Approximately 0.4 mile upstream of Greenfield Heights Boulevard	City Of Havelock Craven County
Tracey Swamp	The confluence with Moseley Creek (into Neuse River)	Approximately 370 feet upstream of Burkett Road	Craven County
Upper Broad Creek[1]	Approximately 2.5 miles downstream of the confluence of Sasses Branch	Approximately 1,050 feet downstream of the confluence of Deep Run	Craven County
Upper Broad Creek	The confluence with Durham Creek	Approximately 3.3 miles upstream of the confluence with Durham Creek	Craven County

[1]Revised to reflect backwater effects from new detailed study

Table 8, "Flooding Sources Studied by Detailed Methods", lists all flooding sources within the county that were studied by detailed methods for this FIS and previous FISs.

Table 8 - Flooding Sources Studied by Detailed Methods: Revised or Newly Studied

Source	Riverine Sources		Affected Communties
	From	To	
Deep Gully	The confluence with Trent River	Approximately 1.7 miles upstream of the confluence with Trent River	Craven County
East Prong Slocum Creek	Approximately 0.5 mile downstream of confluence of East Prong Slocum Creek Tributary	Approximately 100 feet downstream of Railroad Street	City Of Havelock
East Prong Slocum Creek Tributary	The confluence with East Prong Slocum Creek	Approximately 0.6 mile upstream of Cunningham Boulevard	City Of Havelock
Jimmies Creek	The confluence with Wilson Creek	Approximately 140 feet upstream of Trent Road	City Of New Bern Town Of Trent Woods
Little Swift Creek	The confluence with Swift Creek	The confluence of Beaverdam Swamp	Craven County
Maple Cypress	The confluence with Neuse River	Approximately 620 feet upstream of Harris Road	Craven County
Mills Branch Tributary	The confluence with Mills Branch	Approximately 100 feet upstream of Old Vanceboro Road	Craven County

Table 8 - Flooding Sources Studied by Detailed Methods: Revised or Newly Studied

Source	Riverine Sources		Affected Communties
	From	To	
Morris Branch	The confluence with Wilson Creek	Approximately 1,170 feet upstream of Greenleaf Cemetery Road	City Of New Bern Town Of Trent Woods
Mosley Creek	The confluence with Neuse River	The confluence of Tracey Swamp	Craven County
Mosley Creek Tributary	The confluence with Mosley Creek (into Neuse River)	Approximately 150 feet downstream of State Highway 55	Craven County
Neuse River	Approximately 2.17 miles downstream of the confluence of Swift Creek	Craven/Lenoir/Pitt County boundary	Craven County
Neuse River	Craven/Lenoir/Pitt County boundary	Wayne/Lenoir County boundary	Craven County
Reedy Branch	The confluence with Trent River	Approximately 0.4 mile upstream of Crump Farm Road	Craven County
Samuels Creek/Rocky Run	The confluence with Trent River	Approximately 0.7 mile upstream of Deerfield Drive	City Of New Bern Craven County Town Of River Bend
Scotts Creek	The confluence with Neuse River	Approximately 1,830 feet upstream of Airport Road	Craven County
Swift Creek	The confluence with Neuse River	Approximately 1.5 miles upstream of the confluence of Mauls Swamp	Craven County Town Of Vanceboro
Trent River	The confluence with Neuse River	Approximately 1,015 feet upstream of the confluence of Raccoon Creek	Craven County Town Of River Bend
Trent River Tributary	The confluence with Trent River	Approximately 330 feet upstream of Canterbury Road	Town Of Trent Woods
Wilson Creek	Approximately 300 feet downstream of the confluence of Morris Branch	Approximately 1,100 feet upstream of Yarmouth Road	City Of New Bern

Table 9, “Flooding Sources Studied by Detailed Methods: Redelineated”, lists all flooding sources that were studied by detailed methods for the pre- statewide FIS and redelineated for previous FISs. These flooding sources were not part of this revision and their effective analyses remain valid.

Table 9 - Flooding Sources Studied by Detailed Methods: Redelineated

Source	Riverine Sources		Affected Communties
	From	To	
Mauls Swamp	Confluence with Swift Creek	Mill Pond Road	Craven County Town Of Vanceboro
Mills Branch	The confluence with Neuse River	Approximately 0.1 mile upstream of U.S. Highway 17	Craven County
Mosley Creek	Confluence with Neuse River	Confluence of Tracey Swamp	Craven County
Snake Branch	The confluence with Mitchell Creek	Temples Point Road	Craven County
Tucker Creek	The confluence with Slocum Creek	Approximately 0.6 mile upstream of U.S. Highway 70	City Of Havelock Craven County
Village Creek	Confluence with Neuse River	NC Highway 55	Craven County

Table 10, “Flooding Sources Studied by Detailed Methods: Limited Detailed”, lists all flooding sources within the county that were studied by limited detailed methods for either this FIS or previous FISs.

Table 10 - Flooding Sources Studied by Detailed Methods: Limited Detailed

Source	Riverine Sources		Affected Communties
	From	To	
Bachelor Creek	Washington Post Road	Approximately 1.6 miles upstream of Craven/Jones County boundary	Craven County
Beaverdam Branch	Confluence with Bachelor Creek	0.4 mile upstream of Hyman Road	Craven County
Beaverdam Swamp	The confluence with Little Swift Creek	Approximately 1.81 miles upstream of the confluence of Fisher Swamp	Craven County
Black Swamp Creek	At the confluence with White Oak River	Approximately 0.90 mile upstream of Catfish Lake Road	Craven County
Brice Creek	Old Airport Road	The confluence of East Prong Brice Creek	City Of New Bern Craven County
Bushy Fork	Confluence with Little Swift Creek	0.35 mile upstream of Aurora Road	Craven County
Cahoogue Creek	Approximately 0.5 mile downstream of NC Highway 306	Approximately 0.34 mile upstream of NC Highway 101	Craven County
Clayroot Swamp	Confluence with Swift Creek	Approximately 1,300 feet upstream of V.O.A. Site B Road	Craven County
Clubfoot Creek	NC Highway 101	Craven/Carteret County boundary	Craven County

Table 10 - Flooding Sources Studied by Detailed Methods: Limited Detailed

Source	Riverine Sources		Affected Communties
	From	To	
Clubfoot Creek Tributary	Approximately 0.75 mile upstream of the confluence with Clubfoot Creek	Approximately 0.1 mile upstream of George Road	Craven County
Core Creek	Confluence with Neuse River	0.8 mile upstream of Trenton Road	Craven County
Creeping Swamp	Confluence with Clayroot Swamp	Approximately 0.9 mile upstream of Cayton Road	Craven County
Deep Branch	Confluence with Bachelor Creek	0.5 mile downstream of Clarks Road	Craven County
East Prong Brice Creek	Confluence with Brice Creek	1.9 miles upstream of the confluence with Brice Creek	Craven County
East Prong Mortons Mill Pond	The confluence with Mortons Mill Pond	Approximately 0.3 mile upstream of NC Highway 101	Craven County
East Prong Slocum Creek	0.40 mile upstream of Gray Fox Road	3.00 miles upstream of confluence of East Prong Slocum Creek Tributary	City Of Havelock Craven County
Fisher Swamp	Confluence with Beaverdam Swamp	3.33 miles upstream of Hills Neck Road	Craven County
Fisher Swamp	The confluence with Beaverdam Swamp	Approximately 3.33 miles upstream of Hills Neck Road	Craven County
Flat Branch	Confluence with Core Creek	Approximately 100 feet downstream of Barwick Road	Craven County
Great Branch	Confluence with Brice Creek	1.0 mile upstream of Tebo Road	Craven County
Great Lake	The confluence with White Oak River	Approximately 750 feet upstream of confluence of Wolf Swamp	Craven County
Hancock Creek	NC Highway 101	Approximately 1.5 miles upstream of Mococks Branch	Craven County
Hollis Branch	Confluence with Bachelor Creek	Approximately 800 feet upstream of Craven/Jones County boundary	Craven County
Hunters Creek	The confluence with White Oak River	Approximately 750 feet upstream of confluence of Wolf Swamp	Craven County
Jumping Run	The confluence with Bachelor Creek	Approximately 1.8 miles upstream of the confluence with Bachelor Creek	Craven County
Little Swift Creek	Approximately 350 feet upstream of U.S. Highway 17	Approximately 0.1 mile upstream of Beaver Dam Road	Craven County
Mauls Swamp	Mill Pond Road	1.1 miles upstream of the confluence of Mauls Swamp Tributary 2	Craven County Town Of Vanceboro
Mauls Swamp Tributary 1	Confluence with Mauls Swamp	0.74 mile upstream of the confluence with Mauls Swamp	Craven County
Mauls Swamp Tributary 2	Confluence with Mauls Swamp	0.9 mile upstream of the confluence with Mauls Swamp	Craven County
Mill Branch	Confluence with Core Creek	4.5 miles upstream of the confluence with Core Creek	Craven County
Mococks Branch	The confluence with Hancock Branch	Approximately 0.6 mile upstream of the confluence with Hancock Branch	Craven County
Morgan Swamp	Confluence with Upper Broad Creek	0.95 mile upstream of Morgan Swamp Road	Craven County
Mosley Creek Tributary	Approximately 150 feet downstream of State Highway 55	Approximately 1.1 miles upstream of State Highway 55	Craven County
Palmetto Swamp	Confluence with Swift Creek	1.46 miles upstream of Palmetto Swamp Tributary 4	Craven County
Palmetto Swamp Tributary 1	Confluence with Palmetto Swamp	0.9 mile upstream of the confluence with Palmetto Swamp	Craven County
Palmetto Swamp Tributary 2	Confluence with Palmetto Swamp	150 feet upstream of Clark Road	Craven County
Palmetto Swamp Tributary 3	Confluence with Palmetto Swamp	0.6 mile upstream of the confluence with Palmetto Swamp	Craven County
Palmetto Swamp Tributary 4	Confluence with Palmetto Swamp	800 feet upstream of Gray Road	Craven County
Pine Tree Swamp	Confluence with Little Swift Creek	Cayton Road	Craven County
Pollard Swamp	Confluence with Creeping Swamp	Beaufort/Craven County Boundary	Craven County
Rollover Creek	Confluence with Bachelor Creek	0.7 mile upstream of Rollover Creek Road	Craven County
Round Tree Branch	The confluence with Bachelor Creek	Approximately 1.2 miles upstream of the confluence with Bachelor Creek	Craven County
South Canal	Confluence with Hunters Creek	Approximately 0.9 miles upstream of the confluence with Hunters Creek	Craven County
Southwest Prong Slocum Creek	Miller Boulevard	Approximately 0.3 mile upstream of Miller Boulevard	City Of Havelock Craven County
Spe Branch	Confluence with Cahoogue Creek	0.7 mile upstream of the confluence with Cahoogue Creek	Craven County
Swift Creek	1.1 miles upstream of Streets Ferry Road	Approximately 0.3 mile downstream of the confluence of Fork Swamp	Craven County Town Of Vanceboro
Tracey Swamp	The confluence with Moseley Creek (into Neuse River)	Approximately 370 feet upstream of Burkett Road	Craven County
Upper Broad Creek	Approximately 2.5 miles downstream of the confluence of Sasses Branch	Approximately 2.9 miles upstream of the confluence of Possum Swamp	Craven County
Upper Broad Creek	At the confluence with Durham Creek	Approximately 3.3 miles upstream of the confluence with Durham Creek	Craven County

Table 10 - Flooding Sources Studied by Detailed Methods: Limited Detailed

Source	Riverine Sources		Affected Communties
	From	To	
Upper Broad Creek	The confluence with Durham Creek	Approximately 3.3 miles upstream of the confluence with Durham Creek	Craven County
Village Creek	NC Highway 55	Approximately 400 feet upstream of NC 55	Craven County
West Prong Brice Creek	Confluence with Brice Creek	6.9 miles upstream of the confluence with Brice Creek	Craven County
West Prong Mortons Mill Pond	The confluence with Mortons Mill Pond	Approximately 1.3 miles upstream of NC Highway 101	Craven County

Table 11, “Stream Name Changes” is not applicable in Craven County.

Table 12, “Letters of Map Revision” is not applicable in Craven County.

5.0 Engineering Methods

For the flooding sources 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 at least once on the average during any 10-, 25-, 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-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2% annual 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 exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 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.

5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. For details on the county’s hydrologic analyses, the hydrologic report is available by request.

A summary of the drainage area-peak discharge relationships for the flooding sources studied by detailed methods is shown in Table 13, “Summary of Discharges”.

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)			
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Bachelor Creek					
Approximately 0.3 mile downstream of Washington Post Road	54.87	*	*	6180	*
Approximately 0.3 mile upstream of Washington Post Road	49.80	*	*	5850	*
Approximately 0.2 mile upstream of the confluence with Round Tree Branch	47.38	*	*	5690	*
Approximately 0.1 mile downstream of the confluence with Jumping Run	38.93	*	*	5090	*
Approximately 0.7 mile downstream of N.C. Highway 55	38.39	*	*	5050	*
At the confluence with Beaverdam Branch	31.59	*	*	4520	*
Approximately 0.3 mile upstream of Old U.S. Highway 70	30.90	*	*	4470	*
Approximately 325 feet upstream of U.S. Highway 70	26.79	*	*	3820	*
Approximately 0.7 mile upstream of U.S. Highway 70	24.90	*	*	3540	*

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)			
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
At confluence with Rollover Creek	12.96	*	*	2000	*
Approximately 0.6 mile downstream of Tuscarora Rhems Road	10.38	*	*	1760	*
Approximately 0.2 mile upstream of Tuscarora Rhems Road	6.76	*	*	1380	*
At the confluence with Hollis Branch	3.37	*	*	931	*
Beaverdam Branch					
At the confluence with Bachelor Creek	5.67	*	*	1250	*
Approximately 0.3 mile upstream of Hyman Road	4.65	*	*	1120	*
Beaverdam Swamp					
At the confluence with Little Swift Creek	31.38	*	*	3290	*
Approximately 0.4 mile upstream of the confluence with Little Swift Creek	31.24	*	*	3280	*
Approximately 0.6 mile upstream of the confluence with Little Swift Creek	30.81	*	*	3260	*
At the confluence of Fisher Swamp	6.18	*	*	1310	*
Approximately 0.6 mile upstream of confluence with Fisher Swamp	5.90	*	*	1280	*
Approximately 0.6 mile downstream of Hudnell Road	5.51	*	*	1230	*
Approximately 0.2 mile downstream of Hudnell Road	4.41	*	*	1080	*
Black Swamp Creek					
Approximately 1.7 miles upstream of Catfish Lake Road	4.91	*	*	1720	*
Approximately 1.8 miles upstream of Catfish Lake Road	3.08	*	*	1320	*
Brice Creek					
Approximately 0.6 mile downstream of Old Airport Road	40.88	*	*	316	*
Approximately 1.7 miles downstream of Old Airport Road	40.38	*	*	463	*
Approximately 0.5 mile upstream of Riverdale Road	39.40	*	*	427	*
Approximately 0.4 mile upstream of Riverdale Road	37.24	*	*	193	*
At the confluence with West Prong Brice Creek	37.03	*	*	467	*
At the confluence with East Prong Brice Creek	14.44	*	*	57	*
Bushy Fork					
At the confluence with Little Swift Creek	6.21	*	*	1320	*
Approximately 70 feet downstream of Bushy Fork Bridge	5.95	*	*	1280	*
Approximately 0.2 mile upstream of Bushy Fork Bridge	4.34	*	*	1070	*
Cahoogue Creek					
Approximately 0.5 mile upstream of N.C. Highway 306	2.30	*	*	356	*
At the confluence with Spe Branch	0.90	*	*	360	*
Approximately 0.3 mile upstream of N.C. Highway 101	0.27	*	*	224	*
Clayroot Swamp					
At the confluence with Swift Creek	80.20	*	*	5596	*
Approximately 0.3 mile upstream of Country Home Road	78.20	*	*	5517	*
Approximately 0.4 mile downstream of Clay Root Road	45.60	*	*	4065	*
Clubfoot Creek					
Approximately 0.2 mile downstream of the confluence with Mitchell Creek	23.40	*	*	3276	*
Approximately 1.1 miles downstream of Adams Creek Road	12.10	*	*	2297	*
Approximately 625 feet upstream of Adams Creek Road	1.71	*	*	294	497
Approximately 275 feet downstream of Adams Creek Road	1.70	*	*	634	*
Approximately 560 feet upstream of Adams Creek Road	1.30	*	*	535	*

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)			
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Approximately 2,000 feet upstream of Hodge Road	1.27	*	*	220	377
Clubfoot Creek Tributary					
Approximately 0.4 mile downstream of Adams Creek Road	1.20	*	*	506	*
Approximately 140 feet upstream of George Road	0.25	*	*	213	*
Contentnea Creek					
At the confluence with Neuse River	1007.20	12800	19800	23200	32300
Core Creek					
At the confluence with Flat Branch	64.02	*	*	7000	*
Approximately 1.6 miles upstream with confluence of Flat Branch	63.09	*	*	6939	*
Approximately 0.7 mile downstream of N.C. Highway 55	60.33	*	*	6770	*
Approximately 1.0 mile upstream of N.C. Highway 55	56.37	*	*	6510	*
Approximately 1.4 miles upstream of N.C. Highway 55	53.60	*	*	6330	*
Approximately 2.2 miles upstream of N.C. Highway 55	52.95	*	*	6280	*
Approximately 1.8 miles downstream of confluence with Mill Branch	50.23	*	*	6099	*
Approximately 1.2 miles downstream of confluence with Mill Branch	43.40	*	*	5610	*
At confluence with Mill Branch	36.50	*	*	5090	*
At Dover Road	35.26	*	*	4990	*
Approximately 1.0 mile upstream of Dover Road	30.38	*	*	4590	*
Approximately 0.8 mile downstream of Sunset Boulevard	26.94	*	*	4290	*
Approximately 0.4 mile downstream of Sunset Boulevard	25.37	*	*	4140	*
Approximately 0.3 mile downstream of Trenton Road	20.28	*	*	3650	*
Approximately 0.6 mile upstream of Trenton Road	19.55	*	*	3580	*
Creeping Swamp					
At the confluence with Clayroot Swamp	32.30	*	*	3590	*
Approximately 0.3 mile downstream of N.C. Highway 43	30.20	*	*	3490	*
Approximately 0.8 mile upstream of N.C. Highway 43	27.90	*	*	3430	*
Approximately 1.3 miles upstream of N.C. Highway 43	24.80	*	*	3040	*
Approximately 1.4 miles downstream of Craven/Pitt/Beaufort County Boundary	20.20	*	*	2630	*
Approximately 1.2 miles downstream of Craven/Pitt/Beaufort County Boundary	15.40	*	*	2180	*
Deep Branch					
At the confluence with Bachelor Creek	3.13	*	*	892	*
Deep Gully					
Just upstream of confluence with Trent River	3.47	400	750	950	1510
Approximately 180 feet upstream of Railroad	2.74	350	660	830	1330
Approximately 950 feet upstream of U.S. Highway 17	2.22	310	580	740	1190
East Prong Brice Creek					
At the confluence with Brice Creek	10.93	*	*	345	*
Approximately 0.5 mile upstream of the confluence with Brice Creek	10.35	*	*	461	*
Approximately 1.4 miles upstream of the confluence with Brice Creek	7.43	*	*	1460	*
East Prong Mortons Mill Pond					
At the confluence with Mortons Mill Pond	2.90	*	*	853	*
East Prong Slocum Creek					
Just upstream of condluence with Slocum Creek	10.93	1779	2885	3310	4542

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)			
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Approximately 2,985 feet upstream of confluence with Slocum Creek	10.74	1761	2859	3281	4503
Just downstream of confluence with Sandy Branch	9.99	1562	2592	2994	4169
Just upstream of confluence with East Prong Slocum Creek Tributary	8.06	1011	1825	2160	3182
Approximately 230 feet downstream of Railroad	7.56	905	1667	1985	2965
Approximately 2,170 feet downstream of Gray Fox Road	5.05	509	937	1170	1850
Approximately 120 feet downstream of Railroad	4.22	456	844	1057	1679
Approximately 1,800 feet upstream of Railroad	2.93	364	684	860	1380
Approximately 0.72 miles upstream of Railroad	2.73	349	657	826	1329
Approximately 1.2 miles upstream of Gray Fox Road	2.70	*	*	826	*
Approximately 0.98 miles upstream of Railroad	0.81	165	324	415	689
Approximately 1.4 miles upstream of Gray Fox Road	0.80	*	*	415	*
East Prong Slocum Creek Tributary					
Just upstream of confluence with East Prong Slocum Creek	1.72	920	1506	1701	2248
Approximately 800 feet downstream of Cunningham Boulevard	1.68	914	1495	1688	2229
Approximately 750 feet downstream of Cunningham Boulevard	0.69	710	1150	1282	1645
Approximately 2,285 feet upstream of Cunningham Boulevard	0.54	632	1032	1150	1477
Fisher Swamp					
At the confluence with Beaverdam Swamp	24.23	*	*	2840	*
Approximately 550 feet upstream of Hills Neck Road	24.07	*	*	2830	*
Approximately 0.7 mile upstream of Hills Neck Road	23.71	*	*	2810	*
Approximately 1.2 miles upstream of Hills Neck Road	23.48	*	*	2790	*
Approximately 2.0 miles upstream of Hills Neck Road	22.18	*	*	2700	*
Approximately 2.5 miles upstream of Hills Neck Road	21.76	*	*	2680	*
Flat Branch					
At confluence with Core Creek	9.14	*	*	2330	*
Approximately 0.5 mile downstream of N.C. Highway 55	8.17	*	*	2190	*
Approximately 1.1 miles upstream of N.C. Highway 55	7.53	*	*	2090	*
Approximately 0.6 mile upstream of N.C. Highway 55	6.48	*	*	1920	*
Approximately 1.7 miles upstream of N.C. Highway 55	5.29	*	*	1700	*
Great Branch					
At the confluence with Brice Creek	3.48	*	*	313	*
Approximately 0.5 mile upstream of the confluence with Brice Creek	2.99	*	*	436	*
Hancock Creek					
At N.C. Highway 101	5.50	*	*	1230	*
Approximately 325 feet downstream of the confluence with Mococks Branch	3.10	*	*	412	*
Approximately 575 feet upstream of the confluence with Mococks Branch	2.31	*	*	451	*
Approximately 1.2 miles upstream of the confluence with Mococks Branch	1.37	*	*	559	*
Hollis Branch					
At the confluence with Bachelor Creek	2.54	*	*	793	*
Approximately 0.4 mile upstream of the confluence with Bachelor Creek	1.66	*	*	624	*
Hunters Creek					
Approximately 2.1 miles upstream of the confluence with Wolf Swamp	7.59	*	*	2210	*
Approximately 0.6 mile downstream of Carteret-Craven County boundary	7.10	*	*	2130	*
Approximately 4.0 miles upstream of the confluence with Wolf Swamp	6.26	*	*	1980	*

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)			
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Island Creek					
Approximately 95 feet upstream of confluence with Trent River	14.84	990	1750	2150	3310
Jimmies Creek					
Just upstream of confluence with Wilson Creek	0.63	539	923	1047	1396
Approximately 1,575 feet downstream of Trent Road	0.11	121	256	305	457
Jumping Run					
At the confluence with Bachelor Creek	7.84	*	*	1500	*
Approximately 1.0 mile upstream of the confluence with Bachelor Creek	6.83	*	*	1390	*
Little Swift Creek					
At the confluence with Swift Creek	69.32	*	*	5150	*
Approximately 2.3 miles upstream of the confluence with Swift Creek	67.32	*	*	5069	*
At the confluence with Beaverdam Swamp	31.53	*	*	3300	*
Approximately 0.3 mile downstream of Great Swamp Road	27.96	*	*	3080	*
Approximately 0.7 mile upstream of Great Swamp Road	27.35	*	*	3040	*
Approximately 1.1 miles upstream of Great Swamp Road	26.11	*	*	2970	*
Approximately 2.0 miles upstream of Great Swamp Road	24.44	*	*	2860	*
Approximately 0.5 mile downstream of the confluence with Pine Tree Swamp	22.91	*	*	2750	*
At the confluence with Pine Tree Swamp	17.22	*	*	2340	*
Approximately 0.4 mile downstream of High Bridge Road	15.77	*	*	2230	*
Approximately 0.4 mile upstream of High Bridge Road	14.71	*	*	2140	*
At the confluence with Bushy Fork	4.83	*	*	1140	*
Approximately 365 feet upstream of Beaver Dam Road	4.68	*	*	1121	*
Maple Cypress					
At confluence with Neuse River	7.84	667	1209	1501	2345
Approximately 1,575 feet upstream of confluence with Neuse River	6.97	621	1130	1405	2202
Approximately 3,000 feet upstream of confluence with Neuse River	6.87	615	1120	1393	2184
Approximately 685 feet downstream of River Road	6.76	609	1110	1381	2166
Approximately 525 feet upstream of River Road	6.40	589	1075	1339	2103
Approximately 1,100 feet upstream of River Road	1.95	283	540	682	1107
Approximately 1,600 feet downstream of Ward Road	1.51	243	466	592	966
Approximately 140 feet upstream of Ward Road	1.10	199	387	493	813
Approximately 650 feet downstream of N.C. Highway 118	0.83	168	330	422	701
Just downstream of Harris Road	0.68	148	294	377	629
Approximately 3,050 feet upstream of Harris Road	0.60	138	274	352	589
Mauls Swamp					
At the confluence with Swift Creek	219.60	*	*	10976	*
Approximately 0.5 mile downstream of the confluence with Mill Pond Road	11.67	*	*	1880	*
Approximately 150 feet upstream of U.S. Highway 17	9.51	*	*	1670	*
Approximately 0.8 mile upstream of U.S. Highway 17	8.55	*	*	1580	*
At the confluence with Mauls Swamp Tributary 1	4.37	*	*	1080	*
Approximately 0.8 mile upstream of the confluence with Mauls Swamp Tributary 1	3.58	*	*	963	*
At the confluence with Mauls Swamp Tributary 2	2.02	*	*	696	*
Approximately 0.3 mile upstream of the confluence with Mauls Swamp Tributary 2	0.99	*	*	465	*
Approximately 0.9 miles upstream of the confluence with Mauls Swamp Tributary 2	0.64	*	*	363	*

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)			
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Mauls Swamp Tributary 1					
At the confluence with Mauls Swamp	2.48	*	*	782	*
Approximately 0.4 mile upstream of the confluence with Mauls Swamp	2.08	*	*	709	*
Approximately 0.7 mile upstream of the confluence with Mauls Swamp	1.28	*	*	539	*
Mauls Swamp Tributary 2					
At the confluence with Mauls Swamp	0.66	*	*	369	*
Approximately 0.6 mile upstream of the confluence with Mauls Swamp	0.48	*	*	308	*
Mill Branch					
Approximately 0.3 mile upstream of confluence with Core Creek	5.45	*	*	1730	*
Approximately 0.4 mile upstream of Wintergreen Road	4.54	*	*	1560	*
Approximately 1.3 miles upstream of Wintergreen Road	3.54	*	*	1360	*
Approximately 1.87 miles upstream of Wintergreen Road	2.76	*	*	1179	*
Approximately 3.0 miles upstream of Wintergreen Road	1.44	*	*	817	*
Mills Branch					
Approximately 0.4 mile upstream of the confluence with Neuse River	10.50	*	*	2120	*
Mills Branch Tributary					
Approximately 270 feet upstream of the confluence with Mills Branch	1.72	262	502	635	1034
Approximately 165 feet downstream of Old Vanceboro Road	1.45	237	456	579	946
Approximately 0.58 miles upstream of Old Vanceboro Road	0.80	164	322	412	684
Approximately 0.9 miles upstream of Old Vanceboro Road	0.64	143	284	364	608
Mococks Branch					
Approximately 465 feet upstream of the confluence with Hancock Creek	2.30	*	*	748	*
Approximately 0.4 mile upstream of the confluence with Hancock Creek	1.80	*	*	643	*
Morgan Swamp					
At the confluence with Upper Broad Creek	13.92	*	*	2080	*
Approximately 525 feet upstream of Stapleford Road	10.12	*	*	1730	*
Approximately 0.7 mile upstream of Stapleford Road	9.57	*	*	1680	*
Approximately 0.4 mile downstream of Saints Delight Church Road	8.71	*	*	1590	*
Approximately 0.6 mile upstream of Saints Delight Church Road	8.03	*	*	1520	*
Approximately 0.2 mile downstream of Morgan Swamp Road	7.27	*	*	1440	*
Approximately 225 feet upstream of Morgan Swamp Road	4.80	*	*	1140	*
Approximately 0.3 mile upstream of Morgan Swamp Road	4.35	*	*	1080	*
Approximately 0.5 mile upstream of Morgan Swamp Road	3.25	*	*	911	*
Approximately 0.8 mile upstream of Morgan Swamp Road	2.57	*	*	798	*
Morris Branch					
Approximately 615 feet upstream of confluence with Wilson Creek	2.17	456	894	1071	1625
Approximately 0.6 miles downstream of River Road	1.72	417	819	980	1481
Approximately 15 feet downstream of River Road	1.30	294	613	745	1169
Moseley Creek (into Neuse River)					
At the confluence with Neuse River	52.10	*	*	5045	*
At the confluence with Neuse River	48.90	2060	3490	4230	6290
Approximately 0.4 mile upstream of the confluence with Neuse River	48.10	2040	3460	4190	6230
Approximately 1,610 feet downstream of William Pearce Road	44.80	1950	3320	4030	6000

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)			
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Approximately 0.4 mile upstream of William Pearce Road	44.00	1930	3280	3990	5940
Approximately 1.5 miles upstream of William Pearce Road	43.10	1900	3240	3940	5880
Approximately 1.5 miles downstream of NC Highway 55	35.70	1700	2910	3540	5310
Approximately 1.1 miles downstream of NC Highway 55	34.90	1670	2870	3500	5250
Approximately 0.5 mile downstream of NC Highway 55	34.50	1660	2850	3470	5210
Just upstream of NC Highway 55	31.80	1580	2720	3320	4990
Approximately 1,680 feet upstream of NC Highway 55	31.70	1570	2710	3310	4980
Approximately 1.5 miles upstream of NC Highway 55	29.60	1510	2610	3180	4800
Approximately 2.1 miles upstream of NC Highway 55	27.00	1430	2480	3030	4570
Approximately 2.1 miles downstream of Dover Fort Barnwell Road	26.90	1420	2470	3020	4560
Approximately 1.8 miles downstream of Dover Fort Barnwell Road	25.90	1390	2420	2960	4470
Approximately 1.6 miles downstream of Dover Fort Barnwell Road	25.10	1360	2370	2900	4390
Approximately 0.9 mile downstream of Dover Fort Barnwell Road at the Lenoir/ Craven County Line	9.70	760	1370	1690	2630
Mosley Creek Tributary					
At the confluence with Mosley Creek	8.00	725	1420	1835	3130
Approximately 0.3 mile upstream of N.C. Highway 55	3.14	*	*	1110	*
Neuse River					
Approximately 2.7 miles downstream of the confluence with Swift Creek	4468.60	*	*	52900	*
Approximately 1.0 mile downstream of the confluence with Swift Creek	4407.50	*	*	52500	*
Approximately 0.2 mile upstream of the confluence with Swift Creek	4066.21	*	*	50100	*
Approximately 5.7 miles upstream of N.C. Highway 43	4045.56	*	*	50000	*
At the confluence with Core Creek	3955.63	*	*	49300	*
Approximately 1.0 mile upstream of the confluence with Core Creek	3951.38	*	*	49300	*
At the confluence with Village Creek	3943.00	*	*	49300	*
Approximately 0.6 mile downstream of Craven/Pitt County Boundary	3911.80	*	*	49000	*
Palmetto Swamp					
At the confluence with Swift Creek	24.91	*	*	4370	*
Approximately 0.3 mile downstream of N.C. Highway 43	24.38	*	*	4390	*
Approximately 0.2 mile upstream of N.C. Highway 43	23.82	*	*	4410	*
At the confluence with Palmetto Swamp Tributary 1	20.76	*	*	3700	*
At the confluence with Palmetto Swamp Tributary 2	18.56	*	*	3220	*
Approximately 0.6 mile upstream of the confluence with Palmetto Swamp Tributary 2	18.30	*	*	3161	*
Approximately 0.4 mile downstream of the confluence with Palmetto Swamp Tributary 3	17.54	*	*	3000	*
At the confluence with Palmetto Swamp Tributary 3	16.26	*	*	2740	*
Approximately 0.1 mile upstream of Old Washington Road	15.71	*	*	2630	*
Approximately 0.3 miles downstream of the confluence with Palmetto Swamp Tributary 4	14.14	*	*	2320	*
At confluence with Palmetto Swamp Tributary 4	12.04	*	*	1920	*
Approximately 0.6 mile upstream of the confluence with Palmetto Swamp Tributary 4	5.25	*	*	1200	*
Approximately 1.1 miles upstream of the confluence with Palmetto Swamp Tributary 4	4.61	*	*	1110	*
Approximately 1.5 miles upstream of the confluence with Palmetto Swamp Tributary 4	4.31	*	*	1069	*
Palmetto Swamp Tributary 1					
At the confluence with Palmetto Swamp	2.98	*	*	868	*

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)			
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Approximately 0.9 mile upstream of the confluence with Palmetto Swamp	2.67	*	*	815	*
Palmetto Swamp Tributary 2					
At the confluence with Palmetto Swamp	1.84	*	*	661	*
Palmetto Swamp Tributary 3					
At the confluence with Palmetto Swamp	1.06	*	*	484	*
Approximately 0.4 mile upstream of the confluence with Palmetto Swamp	0.46	*	*	303	*
Palmetto Swamp Tributary 4					
At the confluence with Palmetto Swamp	1.98	*	*	688	*
Approximately 0.3 mile upstream of the confluence with Palmetto Swamp	1.84	*	*	660	*
Approximately 0.6 mile upstream of the confluence with Palmetto Swamp	0.81	*	*	416	*
Approximately 0.1 mile upstream of Gray Road	0.65	*	*	368	*
Pine Tree Swamp					
At the confluence with Little Swift Creek	4.28	*	*	1070	*
Approximately 0.4 mile upstream of Aurora Road	3.97	*	*	1020	*
Approximately 0.9 mile upstream of Aurora Road	3.54	*	*	958	*
At Cayton Road	3.10	*	*	887	*
Pollard Swamp					
At the confluence with Creeping Swamp	4.31	*	*	1070	*
Approximately 0.1 mile upstream of Pollard Swamp Road	3.02	*	*	875	*
Approximately 0.5 mile upstream of Pollard Swamp Road	2.75	*	*	829	*
Approximately 0.3 mile downstream of Craven/Beaufort County Boundary	2.44	*	*	775	*
Reedy Branch					
Approximately 1,500 feet upstream of confluence with Trent River	5.04	510	940	1170	1850
Approximately 1,670 feet upstream of Crump Farm Road	3.31	390	730	920	1470
Approximately 650 feet downstream of Murphy Road	2.69	350	650	820	1320
Approximately 2,560 feet upstream of Murphy Road	1.89	280	530	670	1090
Approximately 2,150 feet upstream of Island Creek Road	1.27	220	420	540	880
Rollover Creek					
At the confluence with Bachelor Creek	11.42	*	*	1860	*
Approximately 0.4 mile downstream of Tuscarora Rhems Road	9.78	*	*	1700	*
Approximately 0.5 mile downstream of Rollover Creek Road	8.11	*	*	1530	*
Approximately 0.4 mile upstream of Rollover Creek Road	5.97	*	*	1290	*
Round Tree Branch					
At the confluence with Bachelor Creek	1.83	*	*	658	*
Approximately 0.8 mile upstream of the confluence with Bachelor Creek	1.68	*	*	627	*
Samuels Creek/Rocky Run					
Approximately 1.2 miles downstream of U.S. Highway 17	4.77	491	907	1133	1794
Approximately 500 feet upstream of U.S. Highway 17	4.41	468	866	1083	1719
Approximately 1,015 feet downstream of Deerfield Drive	1.02	191	372	474	782
Approximately 1,550 feet upstream of Deerfield Drive	0.89	175	343	438	725
Scotts Creek					
At confluence with Neuse River	1.33	432	770	900	1160
Approximately 900 feet downstream of Williams Road	0.85	85	128	152	270

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)			
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Approximately 1,440 feet upstream of Williams Road	0.56	48	71	84	128
Just upstream of confluence with Scotts Creek West Channel	0.37	48	71	84	128
Scotts Creek West Channel					
Just upstream of confluence with Scotts Creek	0.18	160	329	391	580
Slocum Creek					
Downstream of the confluence with East Prong Slocum Creek and Southwest Prong Slocum Creek	25.50	*	*	3170	*
Snake Branch					
At Temples Point Road	0.60	*	*	465	*
South Canal					
Confluence with Hunters Creek	5.15	*	*	1770	*
Approximately 0.4 mile upstream of the confluence with Hunters Creek	5.08	*	*	1770	*
Southwest Prong Slocum Creek					
Approximately 750 feet downstream of Greenfield Heights Boulevard	22.88	*	*	360	*
Approximately 0.5 mile upstream of Greenfield Heights Boulevard	22.25	*	*	395	*
Approximately 0.5 mile upstream of Greenfield Heights Boulevard	21.51	*	*	465	*
Approximately 1.3 miles upstream of Greenfield Heights Boulevard	20.50	*	*	1950	*
Approximately 1.4 miles upstream of Greenfield Heights Boulevard	12.47	*	*	226	*
Upstream of the confluence with Slocum Creek	11.60	*	*	2240	*
At railroad	9.50	*	*	2020	*
At Miller Boulevard	9.10	*	*	1965	*
Approximately 2.0 miles upstream of Greenfield Heights Boulevard	7.99	*	*	1520	*
Swift Creek					
At the confluence with Neuse River	339.76	*	*	13900	*
At the confluence with Little Swift Creek	267.70	*	*	12200	*
Approximately 1.6 miles upstream of Weyerhaeuser Road	260.88	*	*	12000	*
Approximately 2.0 miles upstream of Weyerhaeuser Road	251.18	*	*	11700	*
Approximately 3.3 miles upstream of Weyerhaeuser Road	246.32	*	*	11600	*
Approximately 0.1 mile downstream of Streets Ferry Road	227.22	*	*	11100	*
Approximately 1.3 miles upstream of Streets Ferry Road	222.58	*	*	11000	*
At N.C. Highway 118	214.77	*	*	9780	*
At the confluence with Palmetto Swamp	187.54	*	*	9050	*
Approximately 0.2 mile downstream of Butler Ford Road	184.89	*	*	8981	*
Approximately 1.5 miles upstream of Butler Ford Road	180.43	*	*	8500	*
Approximately 2.1 miles upstream of Butler Ford Road	179.20	*	*	8120	*
Approximately 2.6 miles upstream of Butler Ford Road	178.00	*	*	8799	*
Approximately 1.5 miles downstream of Beaver Dam Road	97.80	*	*	6264	*
Approximately 0.7 mile downstream of Beaver Dam Road	94.50	*	*	6143	*
Approximately 0.1 mile downstream of Pughtown Road	91.40	*	*	6028	*
Tracey Swamp					
Approximately 365 feet downstream of Seth West Road	14.90	*	*	2160	*
Approximately 0.4 mile upstream of Seth West Road	13.60	*	*	2050	*
Approximately 1.0 mile upstream of Seth West Road	12.80	*	*	1980	*
Approximately 1.7 miles upstream of Seth West Road	8.30	*	*	1550	*

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)			
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Approximately 2.0 miles upstream of Seth West Road	7.60	*	*	1480	*
Approximately 1.2 miles downstream of U.S. Highway 70	7.20	*	*	1430	*
At Craven/Jones/Lenoir County Boundary	6.50	*	*	1350	*
Trent River					
At U.S. Highway 70	497.40	*	*	14700	*
Approximately 2,375 feet downstream of confluence with Wilson Creek	449.91	8050	12600	14900	20800
Just upstream of confluence with Reed Branch	441.26	7960	12500	14700	20600
Approximately 0.7 miles upstream of confluence with Samuels Creek/Rocky Run	431.72	7850	12300	14500	20300
Approximately 0.82 miles downstream of confluence with Island Creek	430.17	7830	12300	14500	20300
Approximately 400 feet upstream of confluence with Island Creek	414.86	7660	12000	14200	19900
Approximately 160 feet upstream of confluence with Deep Gully	408.42	7590	11900	14100	19800
Trent River Tributary					
Just upstream of confluence with Trent River	0.72	227	480	582	909
Approximately 1,015 feet upstream of Wedgewood Drive	0.50	204	430	520	803
Approximately 1,555 feet upstream of Wedgewood Drive	0.20	125	274	332	518
Tucker Creek					
Approximately 0.7 mile upstream of the confluence with Slocum Creek	9.10	*	*	1961	*
At U.S. Highway 70	4.50	*	*	1345	*
Upper Broad Creek					
Approximately 3.6 miles downstream of N.C. Highway 55	49.47	*	*	4260	*
Approximately 3.2 miles downstream of N.C. Highway 55	46.92	*	*	4130	*
Approximately 2.3 miles downstream of N.C. Highway 55	42.38	*	*	3900	*
At the confluence with Sasses Branch	40.50	*	*	3800	*
At N.C. Highway 55	37.96	*	*	3670	*
At the confluence with Morgan Swamp	21.67	*	*	2670	*
At the confluence with Deep Run 2	20.03	*	*	2550	*
Approximately 0.9 mile upstream of the confluence with Deep Run 2	19.31	*	*	2500	*
Approximately 0.4 mile downstream of Old Cross Road	18.44	*	*	2440	*
At confluence with Possum Swamp	8.57	*	*	1580	*
Approximately 0.5 mile upstream of the confluence with Possum Swamp	8.05	*	*	1520	*
Approximately 1.4 miles upstream of the confluence with Possum Swamp	4.96	*	*	1160	*
Approximately 2.5 miles upstream of the confluence with Possum Swamp	1.41	*	*	569	*
Village Creek					
At the confluence with Neuse River	3.51	*	*	953	*
At Biddle Road	3.00	*	*	1080	*
At N.C. Highway 55	0.63	*	*	362	*
West Prong Brice Creek					
At the confluence with Brice Creek	21.59	*	*	437	*
Approximately 1.4 miles upstream of the confluence with Brice Creek	18.62	*	*	136	*
Approximately 1.6 miles upstream of the confluence with Brice Creek	18.51	*	*	467	*
Approximately 2.1 miles upstream of the confluence with Brice Creek	17.51	*	*	468	*
Approximately 2.2 miles upstream of the confluence with Brice Creek	16.51	*	*	413	*
Approximately 2.6 miles upstream of the confluence with Brice Creek	15.71	*	*	388	*
Approximately 3.8 miles upstream of the confluence with Brice Creek	10.55	*	*	328	*

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)			
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Approximately 4.4 miles upstream of the confluence with Brice Creek	7.34	*	*	389	*
Approximately 0.9 mile downstream of Catfish Lake Road	4.76	*	*	430	*
Approximately 0.4 mile upstream of Catfish Lake Road	1.35	*	*	556	*
West Prong Mortons Mill Pond					
Approximately 0.4 mile downstream of the confluence with Mortons Mill Pond	6.30	*	*	1322	*
At the confluence with Mortons Mill Pond	2.80	*	*	834	*
Approximately 0.8 mile upstream of N.C. Highway 101	0.60	*	*	365	*
Wilson Creek					
Approximately 915 feet upstream of confluence with Trent River	7.07	938	1705	2020	2983
Approximately 110 feet upstream of Trent Woods Drive	6.96	934	1697	2010	2967
Approximately 1,685 feet upstream of Trent Woods Drive	6.85	929	1689	2000	2950
Approximately 305 feet upstream of confluence with Morris Branch	4.55	722	1347	1602	2387
Approximately 65 feet upstream of confluence with Jimmies Creek	3.88	708	1311	1553	2291
Approximately 2,560 feet downstream of Trent Road	3.85	706	1307	1548	2284
Approximately 340 feet upstream of M L King Boulevard	3.27	533	1040	1250	1910
Approximately 2,240 feet upstream of Yarmouth Road	0.65	230	481	581	899

Table 14, “Summary of Stillwater Elevations” is not applicable in Craven County.

Table 15, “Gage Information”, lists the stream gages located in Craven County, including the drainage area of the flooding source at the gage and the period of record available at the time of the publication of this FIS Report.

Table 15 - Gage Information

Gage Number	Flooding Source	Site Name	Drainage Area (square miles)	Period of Record	
				From	To
02092120	Bachelor Creek	BACHELOR CREEK NEAR NEW BERN, N.C.	33.60	1953	1971
02091970	Creeping Swamp	CREEPING SWAMP NEAR VANCEBORO, NC	27.00	1971	1985
02092020	Palmetto Swamp	PALMETTO SWAMP NEAR VANCEBORO, NC	24.00	1953	1975

5.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the flood elevations for the selected recurrence intervals. Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles and/or Water-surface elevation rasters. For stream segments for which BFEs were computed, selected cross-section locations are also shown on the FIRM. Flood Profiles and/or Water-surface elevation rasters were developed showing computed water-surface elevations for 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 and/or Water-surface elevation rasters 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 the FIS in conjunction with the data shown on the FIRM.

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

For details on the county’s hydraulic analyses, the hydraulic report is available by request.

For the streams studied by detailed methods, water surface elevations of floods of the selected recurrence intervals were computed through use of the Army Corps of Engineers' HEC RAS step backwater computer program . The hydraulic analyses were based on unobstructed flow. The flood elevations shown on the Profiles and/or Water-surface elevation rasters are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail. The computer models were calibrated using historic high water data collected during field investigations.

The cross section geometries were obtained from a combination of digital elevation data obtained by Light Detection and Ranging (LIDAR) and field surveys. All bridges, dams, and culverts were field surveyed to obtain elevation data and structural geometry. Natural floodplain cross sections were surveyed approximately every 4000 feet along the detail study reaches to obtain the channel geometry between bridges and culverts. Overbank cross section data for the backwater analyses were obtained from recently flown LIDAR data.

Channel roughness factors (Manning's "n") used in the hydraulic computations were made in the field by an engineer where stream access was possible, with orthophotos used to supplement areas that could not be accessed. The channel and overbank "n" values for all of the streams studied by detailed methods are shown in Table 16, "Roughness Coefficients".

Table 16 - Roughness Coefficients

Stream	Channel "n"	Overbank "n"
Bachelor Creek	0.045	0.130
Beaverdam Branch	0.045	0.130
Beaverdam Swamp	0.045 to 0.050	0.150 to 0.160
Black Swamp Creek	0.045 to 0.050	0.135 to 0.150
Brice Creek	0.024 to 0.045	0.150
Bushy Fork	0.042 to 0.050	0.130 to 0.150
Cahoogue Creek	0.045	0.150
Clayroot Swamp	0.042 to 0.045	0.120 to 0.140
Clubfoot Creek	0.045	0.150
Clubfoot Creek Tributary	0.050	0.150
Core Creek	0.045 to 0.050	0.130
Creeping Swamp	0.047	0.130 to 0.150
Deep Branch	0.045	0.130
Deep Gully	0.050	0.045 to 0.090
East Prong Brice Creek	0.045	0.150
East Prong Mortons Mill Pond	0.045	0.150
East Prong Slocum Creek	0.030 to 0.110	0.080 to 0.200
East Prong Slocum Creek Tributary	0.045	0.060
Fisher Swamp	0.042 to 0.050	0.130 to 0.150
Flat Branch	0.045	0.150
Great Branch	0.024 to 0.045	0.150
Hancock Creek	0.045 to 0.050	0.150
Hollis Branch	0.045	0.130
Hunters Creek	0.043 to 0.045	0.120 to 0.150
Jimmies Creek	0.042 to 0.050	0.030 to 0.150
Jumping Run	0.045	0.130
Little Swift Creek	0.043 to 0.045	0.120 to 0.200
Maple Cypress	0.014 to 0.070	0.080 to 0.200
Mauls Swamp	0.014 to 0.070	0.120 to 0.200
Mauls Swamp Tributary 1	0.040 to 0.050	0.100 to 0.150
Mauls Swamp Tributary 2	0.045 to 0.050	0.150
Mill Branch	0.040 to 0.050	0.100 to 0.150
Mills Branch Tributary	0.050 to 0.060	0.060 to 0.150
Mococks Branch	0.045	0.130
Morgan Swamp	0.045 to 0.050	0.130 to 0.150
Morris Branch	0.040 to 0.045	0.035 to 0.150
Mosley Creek	0.050	0.035 to 0.090
Mosley Creek Tributary	0.014 to 0.070	0.120 to 0.200
Neuse River	0.035 to 0.060	0.055 to 0.250
Palmetto Swamp	0.045 to 0.050	0.120 to 0.150
Palmetto Swamp Tributary 1	0.043	0.140
Palmetto Swamp Tributary 2	0.045 to 0.050	0.150
Palmetto Swamp Tributary 3	0.045	0.150
Palmetto Swamp Tributary 4	0.041 to 0.050	0.120 to 0.150
Pine Tree Swamp	0.041 to 0.042	0.110 to 0.150
Pollard Swamp	0.041 to 0.050	0.120 to 0.150

Table 16 - Roughness Coefficients

Stream	Channel "n"	Overbank "n"
Reedy Branch	0.032 to 0.050	0.045 to 0.090
Rollover Creek	0.045	0.130
Round Tree Branch	0.045	0.130
Samuels Creek/Rocky Run	0.045 to 0.050	0.035 to 0.150
Scotts Creek	0.040 to 0.045	0.035 to 0.150
South Canal	0.050	0.150
Southwest Prong Slocum Creek	0.030 to 0.060	0.150 to 0.200
Spe Branch	0.045	0.150
Swift Creek	0.025 to 0.060	0.035 to 0.220
Tracey Swamp	0.014 to 0.070	0.100 to 10.000
Trent River	0.045 to 0.063	0.032 to 0.200
Trent River Tributary	0.035 to 0.050	0.035 to 0.150
Upper Broad Creek	0.040 to 0.045	0.130 to 0.150
Village Creek	0.014 to 0.070	0.120 to 0.200
West Prong Brice Creek	0.045	0.150
West Prong Mortons Mill Pond	0.050	0.150
Wilson Creek	0.035 to 0.050	0.080 to 0.150

For flooding sources studied by limited detailed methods in the county, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this report and the FIRM panels. This method entails developing a HEC-RAS hydraulic model, resulting in the calculation of BFEs and the delineation of the 1% annual chance floodplain (designated as Zone AE). Cross sections for the flooding sources studied by limited detailed methods were obtained using digital elevation data obtained with LIDAR technology developed as part of the North Carolina Statewide Floodplain Mapping Program. The hydraulic model is prepared using this digital elevation data, without surveying bathymetric or structural data. Where bridge or culvert data are readily available, such as from the North Carolina Department of Transportation, these data have been reflected in the hydraulic model. If these structural data are not readily available, field measurements of these structures were made to approximate their geometry in the hydraulic models. In addition, this method does not include field surveys that determine specifics on channel and floodplain characteristics. A limited detailed study is a “buildable” product that can be upgraded to a fully detailed study at a later date by verifying stream channel characteristics, bridge and culvert opening geometry, and by analyzing multiple recurrence intervals.

The results of the HEC-RAS computations are tabulated for all cross sections (Table 17, “Limited Detailed Flood Hazard Data”). Flood Profiles have not been developed for streams studied by limited detailed methods. Water-surface elevation rasters were developed for steams studied by limited detailed methods. In addition, floodways for streams studied by limited detailed methods are not delineated on the FIRM. However, the 1% annual chance water-surface elevations, flood discharges, and non-encroachment widths from the limited detailed studies for every modeled cross section are given in Table 17. The non-encroachment widths given at modeled cross sections can be used by communities to enforce floodplain management ordinances that meet the requirement defined in 44 CFR 60.3(c)(10).

Between cross sections for streams studied by limited detailed methods, 1% annual chance water-surface elevations can be calculated by mathematical interpolation using the distance along the stream centerline. Non-encroachment widths and, therefore, the location of a non-encroachment area boundary between cross sections should be determined based on either 1) mathematical interpolation, or 2) the non-encroachment width at the upstream or downstream cross section, whichever is larger. If the width determined by this second method is wider than the Special Flood Hazard Area (SFHA) or the 1% annual chance floodplain delineated on the FIRM for this location along the stream, the non-encroachment area shall be considered to be coincident with the SFHA. A full detailed study incorporating field survey data in the HEC-RAS hydraulic model may be submitted for a Letter of Map Revision (LOMR) request to map a regulatory floodway along a section of a stream in lieu of applying the non-encroachment widths listed in Table 17.

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
Bachelor Creek				
646	64,563	5,050	9.1	23 / 654
653	65,335	5,050	9.2	35 / 213

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
664	66,386	5,050	9.7	155 / 463
674	67,354	4,520	9.9	482 / 24
681	68,128	4,520	10.1	115 / 703
687	68,651	4,520	10.1	302 / 410
692	69,165	4,520	10.2	395 / 185
697	69,692	4,520	10.4	574 / 171
703	70,346	4,520	10.5	332 / 565
712	71,159	4,520	10.7	203 / 580
717	71,671	4,520	10.8	370 / 196
724	72,434	4,470	11.0	66 / 697
729	72,934	4,470	11.2	379 / 228
733	73,335	4,470	11.3	598 / 361
744	74,422	4,470	12.3	739 / 57
751	75,102	4,470	12.4	1,057 / 20
757	75,693	4,470	12.5	569 / 283
765	76,469	4,470	12.7	290 / 446
769	76,942	4,470	12.8	197 / 493
778	77,815	4,470	13.6	242 / 659
783	78,299	4,470	13.7	175 / 501
798	79,836	3,820	15.0	541 / 183
807	80,745	3,820	15.1	271 / 293
813	81,301	3,820	15.2	610 / 270
820	82,000	3,820	15.4	589 / 77
829	82,894	3,540	15.5	484 / 234
834	83,438	3,540	15.6	300 / 101
841	84,084	3,540	15.9	415 / 115
847	84,668	3,540	16.0	287 / 287
852	85,168	3,540	16.2	134 / 144
858	85,821	3,540	16.5	401 / 88
864	86,404	3,540	16.7	409 / 289
870	86,970	3,540	16.8	417 / 221
875	87,538	3,540	17.0	26 / 1,019
887	88,675	2,000	17.3	356 / 45
892	89,225	2,000	17.5	437 / 43
901	90,077	2,000	17.9	141 / 203
906	90,645	2,000	18.2	329 / 22
911	91,106	2,000	18.4	245 / 174
916	91,643	2,000	18.7	205 / 235
922	92,202	2,000	19.1	250 / 208
928	92,774	2,000	19.4	336 / 147
933	93,304	2,000	19.7	90 / 337
939	93,859	2,000	20.0	100 / 422
945	94,489	1,760	20.4	201 / 463
951	95,134	1,760	20.7	419 / 25
957	95,685	1,760	21.1	101 / 278

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
963	96,287	1,760	21.4	121 / 374
969	96,930	1,760	21.8	107 / 483
975	97,496	1,760	22.3	397 / 59
987	98,729	1,760	24.6	238 / 120
994	99,378	1,380	24.9	237 / 69
1002	100,208	1,380	25.1	366 / 95
1008	100,809	1,380	25.3	15 / 314
1014	101,388	1,380	25.5	48 / 173
1020	102,004	1,380	25.9	185 / 137
1029	102,926	931	26.5	96 / 153
1038	103,806	931	27.2	6 / 146
1042	104,249	931	27.7	83 / 129
1049	104,869	931	28.2	120 / 82
1053	105,271	931	28.4	67 / 235
1057	105,687	931	28.6	5 / 190
1063	106,255	931	29.0	75 / 133
1069	106,889	931	29.4	73 / 194
Beaverdam Branch				
006	574	1,250	9.8[1]	52 / 198
011	1,069	1,250	9.8[1]	329 / 224
018	1,843	1,250	9.8[1]	96 / 136
022	2,202	1,250	9.8[1]	55 / 152
027	2,678	1,250	9.8[1]	113 / 17
039	3,870	1,250	10.7	196 / 14
044	4,436	1,250	11.0	28 / 211
049	4,942	1,118	11.4	54 / 111
055	5,522	1,118	11.9	103 / 31
Beaverdam Swamp				
022	2,229	3,291	10.0[1]	156 / 253
025	2,523	3,283	10.0[1]	110 / 265
033	3,257	3,257	10.0[1]	375 / 250
040	4,043	3,257	10.0[1]	235 / 220
047	4,723	3,257	10.0[1]	135 / 300
056	5,551	1,312	10.0[1]	285 / 200
068	6,758	1,312	10.0[1]	143 / 177
074	7,373	1,312	10.0[1]	130 / 200
078	7,828	1,312	10.0[1]	80 / 220
084	8,439	1,312	10.2	100 / 140
090	9,018	1,278	10.5	180 / 100
095	9,545	1,278	10.7	125 / 85
099	9,939	1,278	10.9	18 / 283
105	10,500	1,278	11.2	80 / 173
112	11,226	1,278	11.9	134 / 93
119	11,911	1,278	12.8	100 / 115
128	12,764	1,230	13.8	100 / 170

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
134	13,449	1,230	14.6	23 / 176
143	14,319	1,230	15.3	195 / 30
148	14,794	1,084	15.6	50 / 120
164	16,352	1,084	16.6	85 / 95
Black Swamp Creek				
406	40,647	3,360	30.2	714 / 127
411	41,104	3,360	30.5	532 / 17
418	41,801	3,360	30.9	96 / 566
426	42,599	3,360	31.3	300 / 435
435	43,496	2,250	32.0	302 / 205
452	45,212	1,720	34.0	489 / 224
460	46,023	1,320	34.5	476 / 4
466	46,571	1,320	34.9	379 / 167
471	47,087	1,320	35.3	259 / 78
482	48,215	1,320	36.4	1,119 / 78
491	49,089	1,320	36.9	1,548 / 4
Brice Creek				
644	64,381	3,796	9.1	446 / 441
649	64,884	3,796	9.1	341 / 404
656	65,608	3,796	9.2	110 / 436
659	65,932	3,796	9.3	198 / 391
664	66,419	3,796	9.4	285 / 334
671	67,108	3,796	9.5	554 / 305
675	67,505	3,744	9.5	385 / 216
680	67,958	3,744	9.6	167 / 74
685	68,511	3,744	10.0	208 / 156
690	68,954	3,744	10.2	92 / 138
692	69,230	3,744	10.4	62 / 141
701	70,072	3,744	11.0	36 / 254
717	71,707	3,744	11.6	372 / 251
725	72,536	3,744	11.8	36 / 323
729	72,883	3,744	11.9	36 / 458
751	75,136	3,744	12.6	36 / 267
760	75,959	3,744	12.9	255 / 185
772	77,178	3,744	13.1	280 / 138
780	77,987	3,744	13.2	118 / 769
796	79,573	3,626	13.3	439 / 439
801	80,104	3,626	13.4	35 / 393
813	81,336	3,626	14.2	283 / 452
817	81,744	3,626	14.2	362 / 325
823	82,347	3,626	14.3	315 / 491
827	82,744	3,626	14.3	129 / 474
831	83,145	3,614	14.4	363 / 435
839	83,945	3,614	14.4	395 / 340
844	84,424	3,614	14.5	168 / 235

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
849	84,883	3,614	14.6	352 / 213
853	85,305	3,614	14.6	262 / 431
859	85,929	3,614	14.7	207 / 453
866	86,582	3,614	14.8	419 / 419
874	87,401	3,614	14.8	338 / 391
881	88,077	3,614	14.9	93 / 645
886	88,557	3,614	15.0	326 / 305
893	89,313	2,121	15.1	581 / 333
Bushy Fork				
005	537	1,315	23.2[1]	20 / 65
010	1,000	1,315	23.5	25 / 53
015	1,493	1,315	24.6	32 / 68
020	2,000	1,315	25.3	110 / 21
025	2,500	1,315	26.0	50 / 125
036	3,607	1,284	27.6	100 / 17
042	4,215	1,075	27.9	42 / 100
Cahoogue Creek				
185	18,537	441	9.7	67 / 121
189	18,903	441	9.8	53 / 87
195	19,511	441	9.9	125 / 40
200	19,997	441	10.0	72 / 14
203	20,315	441	10.4	30 / 35
206	20,592	441	11.0	63 / 14
208	20,824	441	11.5	47 / 23
215	21,546	441	14.6	22 / 14
223	22,328	441	18.4	46 / 19
230	23,039	441	18.7	14 / 133
238	23,792	224	18.9	16 / 14
Clayroot Swamp				
010	1,032	5,596	19.4[1]	60 / 595
019	1,857	5,596	19.4[1]	285 / 388
032	3,189	5,596	19.4[1]	445 / 177
042	4,239	5,596	19.4[1]	50 / 879
066	6,605	5,596	20.3	290 / 450
073	7,259	5,517	20.4	175 / 670
080	7,953	5,517	20.5	840 / 305
Clubfoot Creek				
424	42,390	535	7.2	32 / 67
426	42,617	535	7.6	60 / 14
427	42,654	535	8.0	-9,999 / -9,999
427	42,690	535	8.0	60 / 14
429	42,897	535	8.5	79 / 16
434	43,424	535	8.9	39 / 60
440	44,004	535	9.6	49 / 33
446	44,602	535	10.5	12 / 105
Clubfoot Creek Tributary				

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
069	6,870	506	7.9	12 / 26
073	7,264	506	9.6	71 / 39
079	7,908	506	11.2	42 / 21
088	8,755	213	12.9	68 / 26
Core Creek				
043	4,295	7,000	18.5[1]	703 / 156
055	5,500	7,000	18.5[1]	702 / 796
063	6,339	7,000	18.5[1]	748 / 226
075	7,546	7,000	18.5[1]	340 / 586
083	8,334	7,000	18.5[1]	43 / 625
094	9,447	7,000	18.5[1]	622 / 756
101	10,061	7,000	18.5[1]	245 / 737
126	12,561	6,940	18.5[1]	759 / 86
136	13,647	6,940	18.5[1]	137 / 462
141	14,139	6,940	18.5[1]	43 / 172
146	14,643	6,940	18.5[1]	104 / 103
152	15,151	6,940	18.5[1]	294 / 43
157	15,672	6,940	18.5[1]	603 / 43
172	17,240	6,940	18.5[1]	43 / 707
181	18,059	6,940	18.5[1]	694 / 183
189	18,854	6,940	18.5[1]	619 / 128
196	19,573	6,940	18.5[1]	510 / 43
204	20,386	6,940	18.5[1]	134 / 423
213	21,317	6,940	18.5[1]	43 / 647
227	22,725	6,940	18.5[1]	485 / 51
234	23,411	6,940	18.5[1]	57 / 855
241	24,144	6,940	18.5[1]	105 / 343
247	24,719	6,940	18.5[1]	123 / 722
262	26,213	6,940	18.5[1]	759 / 134
271	27,092	6,760	18.5[1]	566 / 273
280	27,986	6,760	18.5[1]	596 / 155
292	29,213	6,760	18.5[1]	136 / 44
301	30,078	6,760	18.7	112 / 87
307	30,690	6,760	19.1	43 / 419
315	31,550	6,760	19.5	43 / 416
320	31,959	6,760	19.6	43 / 444
323	32,332	6,760	19.7	156 / 186
330	32,993	6,760	19.8	177 / 85
338	33,826	6,760	20.1	329 / 88
344	34,364	6,760	20.3	418 / 92
350	35,049	6,760	20.4	223 / 417
357	35,687	6,760	20.6	229 / 327
362	36,211	6,760	20.7	128 / 415
367	36,679	6,760	20.9	110 / 158
376	37,550	6,760	21.3	238 / 511

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
381	38,136	6,500	21.4	472 / 83
387	38,655	6,500	21.4	183 / 276
392	39,207	6,500	21.7	357 / 327
398	39,751	6,500	21.8	336 / 127
403	40,348	6,330	21.9	42 / 357
409	40,858	6,330	22.1	217 / 728
418	41,805	6,330	22.2	190 / 42
424	42,418	6,330	22.5	42 / 56
431	43,111	6,330	23.2	347 / 42
437	43,669	6,330	23.4	187 / 42
441	44,117	6,330	23.6	160 / 102
451	45,130	6,290	24.0	41 / 413
462	46,186	6,290	24.2	450 / 41
470	47,000	6,290	24.4	41 / 100
475	47,536	6,290	24.8	76 / 113
481	48,124	6,290	25.1	181 / 127
487	48,652	6,290	25.3	118 / 68
491	49,106	6,290	25.6	275 / 297
499	49,902	6,290	25.6	119 / 42
505	50,547	6,290	26.0	180 / 740
510	51,000	6,290	26.1	587 / 675
517	51,724	6,110	26.1	206 / 298
522	52,173	6,110	26.1	171 / 41
527	52,654	6,110	26.4	455 / 41
532	53,193	6,110	26.5	305 / 77
537	53,691	6,110	26.6	170 / 76
543	54,300	6,110	26.8	128 / 210
549	54,934	6,110	27.0	333 / 276
557	55,718	5,610	27.1	334 / 40
565	56,532	5,610	27.2	310 / 354
572	57,188	5,610	27.4	106 / 160
580	57,979	5,610	27.7	285 / 40
587	58,721	5,610	27.8	697 / 226
594	59,425	5,610	27.8	198 / 39
601	60,138	5,610	28.3	624 / 71
606	60,607	5,610	28.4	667 / 122
612	61,241	5,610	28.5	297 / 343
619	61,935	5,100	28.6	380 / 205
627	62,738	5,100	28.9	651 / 133
638	63,824	5,100	29.2	292 / 32
648	64,844	5,100	29.5	649 / 456
656	65,581	5,100	29.5	82 / 139
661	66,076	5,100	29.8	338 / 81
666	66,643	5,100	30.0	178 / 236
673	67,300	5,100	30.1	467 / 568

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
693	69,323	5,000	30.5	714 / 355
702	70,206	5,000	30.6	342 / 627
710	71,000	5,000	30.7	657 / 458
718	71,799	5,000	30.8	243 / 609
726	72,645	5,000	30.9	272 / 609
736	73,621	5,000	31.0	341 / 446
749	74,859	4,590	31.2	46 / 821
757	75,712	4,290	31.4	28 / 677
766	76,648	4,290	31.6	376 / 439
774	77,439	4,150	31.8	631 / 27
783	78,281	4,150	32.0	415 / 218
800	79,977	4,150	33.2	479 / 148
809	80,919	4,150	33.5	392 / 284
819	81,851	4,150	33.9	145 / 426
829	82,922	3,650	34.4	67 / 294
840	84,026	3,650	36.3	321 / 381
850	85,000	3,650	36.5	202 / 375
861	86,069	3,650	36.8	571 / 184
869	86,936	3,580	37.1	49 / 426
877	87,680	3,580	37.4	89 / 194
Creeping Swamp				
027	2,655	3,590	20.8	42 / 514
035	3,525	3,590	21.6	600 / 150
044	4,410	3,590	22.1	99 / 310
050	5,008	3,590	22.8	134 / 181
055	5,479	3,590	23.3	225 / 95
063	6,269	3,590	24.2	554 / 168
076	7,588	3,490	26.0	800 / 100
084	8,418	3,490	26.1	600 / 300
092	9,248	3,490	26.2	125 / 600
103	10,293	3,430	26.4	600 / 250
113	11,254	3,430	26.7	400 / 400
124	12,362	3,430	27.0	400 / 400
140	13,962	3,040	27.4	327 / 403
154	15,361	3,040	27.9	230 / 852
162	16,218	3,040	28.1	87 / 1,018
172	17,156	3,040	28.3	372 / 662
182	18,234	3,040	28.7	404 / 440
194	19,448	3,040	29.2	591 / 384
217	21,667	2,630	29.9	476 / 749
228	22,766	2,630	30.3	647 / 234
237	23,730	2,630	30.9	369 / 411
249	24,855	2,630	31.6	99 / 658
263	26,293	2,630	32.6	335 / 370
Deep Branch				

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
027	2,721	892	13.7[1]	93 / 242
033	3,345	892	13.7[1]	40 / 200
040	3,992	892	13.7[1]	11 / 148
044	4,407	892	13.7[1]	32 / 176
East Prong Brice Creek				
012	1,249	1,812	15.1[1]	419 / 87
018	1,796	1,812	15.1[1]	172 / 193
022	2,175	1,812	15.1[1]	100 / 191
028	2,794	1,812	15.1[1]	138 / 403
034	3,369	1,812	15.1[1]	96 / 556
043	4,257	1,757	15.4	263 / 267
049	4,935	1,757	16.1	415 / 97
061	6,081	1,757	17.0	106 / 746
067	6,714	1,757	17.3	558 / 101
073	7,349	1,757	17.7	101 / 301
080	8,045	1,757	18.2	123 / 364
088	8,752	1,757	18.5	377 / 240
093	9,305	1,757	18.7	315 / 208
099	9,909	1,456	18.9	388 / 162
East Prong Mortons Mill Pond				
022	2,162	853	9.5	364 / 34
027	2,715	853	9.9	148 / 39
East Prong Slocum Creek				
176	17,605	1,057	15.2	212 / 214
181	18,056	1,057	15.3	310 / 108
189	18,928	860	15.6	429 / 18
195	19,508	860	16.0	260 / 18
198	19,840	860	16.3	181 / 79
203	20,314	860	16.6	110 / 141
207	20,700	860	16.9	108 / 161
211	21,103	826	17.1	127 / 99
219	21,908	826	17.5	214 / 45
224	22,444	415	17.6	157 / 136
229	22,915	415	17.7	15 / 185
239	23,882	415	18.4	15 / 94
247	24,686	415	19.3	15 / 133
Fisher Swamp				
007	733	2,843	10.0[1]	227 / 29
015	1,549	2,843	10.0[1]	315 / 185
027	2,741	2,833	10.0[1]	139 / 88
034	3,404	2,833	10.4	31 / 192
039	3,899	2,833	10.8	138 / 123
048	4,844	2,833	11.3	205 / 131
053	5,328	2,833	11.5	31 / 256
059	5,899	2,833	11.9	123 / 206
065	6,531	2,808	12.3	32 / 219

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
072	7,164	2,808	12.8	29 / 246
077	7,670	2,808	13.3	81 / 254
083	8,349	2,808	13.8	238 / 29
090	9,000	2,793	14.4	28 / 213
098	9,780	2,793	15.2	93 / 235
103	10,317	2,793	15.5	46 / 229
112	11,174	2,793	16.2	83 / 114
118	11,794	2,793	16.8	28 / 254
128	12,804	2,793	17.6	148 / 28
134	13,418	2,793	18.4	154 / 157
141	14,079	2,704	18.8	220 / 185
149	14,921	2,704	19.4	113 / 136
156	15,563	2,704	20.0	140 / 77
164	16,367	2,704	20.8	264 / 28
171	17,120	2,676	21.3	210 / 292
181	18,116	2,676	21.9	207 / 67
Flat Branch				
020	2,000	2,329	18.5[1]	240 / 164
027	2,736	2,329	18.5[1]	366 / 191
036	3,618	2,329	18.5[1]	34 / 99
044	4,425	2,329	18.5[1]	9 / 120
050	5,043	2,329	18.5[1]	248 / 128
057	5,739	2,329	18.5[1]	310 / 193
078	7,837	2,187	18.5[1]	190 / 120
085	8,471	2,187	18.5[1]	480 / 100
090	9,048	2,187	18.5[1]	260 / 150
102	10,205	2,187	19.3	268 / 40
110	11,000	2,187	19.8	8 / 404
116	11,640	2,187	20.2	8 / 322
122	12,211	2,187	20.8	8 / 304
129	12,934	2,087	21.6	12 / 246
137	13,686	2,087	22.5	67 / 173
143	14,288	2,087	23.3	132 / 66
150	15,000	2,087	24.0	173 / 182
157	15,730	2,087	24.6	349 / 55
165	16,500	1,917	25.6	199 / 94
172	17,158	1,917	26.7	142 / 94
179	17,886	1,917	27.9	60 / 232
186	18,565	1,917	28.7	67 / 279
193	19,344	1,704	29.8	139 / 66
201	20,064	1,704	30.8	83 / 187
Great Branch				
003	344	948	15.1[1]	200 / 175
010	1,001	948	15.1[1]	194 / 100
016	1,615	948	15.1[1]	46 / 100

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
020	2,012	948	15.1[1]	50 / 100
024	2,361	948	15.1[1]	6 / 238
027	2,720	948	15.1[1]	27 / 158
034	3,427	869	15.6	144 / 22
041	4,100	869	16.3	199 / 4
048	4,839	869	17.0	42 / 143
056	5,627	869	17.7	63 / 164
064	6,403	869	19.0	15 / 131
064	6,438	869	19.0	15 / 131
073	7,271	869	19.3	4 / 190
Hancock Creek				
442	44,174	888	8.0	56 / 189
446	44,563	888	8.3	128 / 124
450	45,036	751	8.7	52 / 152
455	45,485	751	9.3	106 / 61
464	46,358	751	10.7	59 / 142
469	46,912	751	11.6	126 / 25
476	47,582	751	13.3	89 / 111
485	48,543	751	14.1	60 / 101
496	49,598	751	16.1	103 / 21
502	50,207	751	18.1	28 / 78
508	50,840	559	19.3	52 / 238
514	51,420	559	20.5	12 / 168
Hollis Branch				
005	500	793	26.5	64 / 17
011	1,057	793	28.1	42 / 15
015	1,500	793	29.4	90 / 69
021	2,066	793	30.5	104 / 14
025	2,500	793	31.2	72 / 43
030	3,019	624	31.7	530 / 13
034	3,417	624	31.9	12 / 39
042	4,244	624	34.1	12 / 278
051	5,116	624	35.3	19 / 265
062	6,203	624	35.6	588 / 12
Hunters Creek				
472	47,173	3,500	23.7	416 / 152
478	47,846	3,500	24.5	424 / 64
484	48,385	3,500	25.3	303 / 173
490	48,993	3,440	26.2	233 / 307
499	49,893	3,440	27.1	199 / 193
506	50,563	3,440	27.6	116 / 389
510	51,026	3,440	27.9	196 / 271
517	51,660	3,440	28.4	100 / 273
523	52,327	3,110	29.2	126 / 297
529	52,905	3,110	29.7	131 / 258
534	53,369	3,110	30.1	84 / 343

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
540	53,982	3,110	30.6	149 / 325
545	54,466	3,110	30.9	225 / 303
551	55,084	3,110	31.4	79 / 229
556	55,644	3,110	32.1	238 / 234
562	56,155	3,110	32.5	259 / 294
567	56,701	3,110	33.1	274 / 121
573	57,311	2,210	34.0	174 / 219
577	57,680	2,210	34.2	161 / 723
582	58,201	2,210	34.5	230 / 135
587	58,693	2,210	34.7	187 / 1,633
594	59,413	2,210	35.0	250 / 350
603	60,288	2,210	35.6	634 / 507
611	61,117	2,130	36.6	350 / 200
620	62,004	2,130	37.3	750 / 550
627	62,750	2,130	38.2	200 / 350
635	63,477	2,130	38.8	592 / 593
643	64,254	2,130	39.0	824 / 411
652	65,225	2,130	39.4	224 / 877
661	66,054	2,130	39.8	825 / 75
668	66,787	2,130	40.0	308 / 1,264
690	69,015	1,980	40.1	1,968 / 2,272
Jumping Run				
073	7,299	1,389	9.1	195 / 77
079	7,894	1,389	9.7	18 / 248
086	8,579	1,389	10.5	133 / 154
090	9,046	1,389	11.0	105 / 128
096	9,626	1,389	11.7	176 / 18
102	10,228	1,389	12.7	106 / 51
110	11,031	1,389	13.8	142 / 89
115	11,546	1,389	14.5	19 / 155
Little Swift Creek				
212	21,248	4,892	10.0[1]	100 / 150
226	22,621	3,300	10.0[1]	260 / 850
237	23,747	3,300	10.0[1]	500 / 120
250	25,000	3,083	10.0[1]	155 / 600
266	26,570	3,083	10.0[1]	548 / 321
273	27,301	3,083	10.0[1]	285 / 566
280	28,044	3,083	10.0[1]	225 / 645
289	28,860	3,083	10.0[1]	348 / 475
295	29,507	3,045	10.0[1]	244 / 223
301	30,103	3,045	10.0[1]	310 / 410
308	30,845	3,045	10.0[1]	259 / 410
317	31,710	2,966	10.0[1]	253 / 267
323	32,295	2,966	10.0[1]	427 / 382
331	33,056	2,966	10.0[1]	275 / 258

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
338	33,830	2,966	10.0[1]	312 / 286
347	34,683	2,966	10.1	342 / 210
352	35,182	2,966	10.2	290 / 411
358	35,835	2,966	10.3	385 / 218
365	36,504	2,857	10.4	379 / 281
374	37,388	2,857	10.6	312 / 180
381	38,088	2,857	10.8	249 / 399
388	38,769	2,857	10.9	299 / 350
396	39,550	2,857	11.1	29 / 440
404	40,399	2,857	11.5	125 / 221
411	41,080	2,857	12.0	300 / 245
415	41,549	2,857	12.1	196 / 488
421	42,145	2,857	12.3	257 / 160
429	42,858	2,754	12.8	105 / 250
436	43,584	2,754	13.1	85 / 200
444	44,389	2,754	13.5	113 / 42
449	44,912	2,754	13.9	60 / 200
457	45,705	2,754	14.4	310 / 101
470	47,000	2,344	16.6	150 / 120
478	47,767	2,344	16.9	75 / 100
486	48,642	2,344	17.2	100 / 185
493	49,344	2,344	17.4	200 / 215
499	49,948	2,344	17.8	350 / 60
507	50,684	2,344	18.0	300 / 95
514	51,372	2,230	18.3	24 / 272
519	51,906	2,230	18.6	60 / 250
526	52,644	2,230	18.9	60 / 345
542	54,210	2,230	20.2	158 / 188
550	55,000	2,230	20.7	200 / 120
559	55,903	2,143	21.2	109 / 152
568	56,813	2,143	21.8	384 / 23
578	57,824	2,143	22.4	218 / 218
590	59,000	2,143	23.0	220 / 90
600	59,978	1,141	23.5	115 / 60
607	60,704	1,141	23.8	45 / 55
620	62,032	1,121	24.6	60 / 100
Mauls Swamp				
076	7,584	1,574	15.3	300 / 250
080	7,985	1,574	15.4	200 / 100
087	8,728	1,574	15.4	140 / 125
096	9,581	1,574	15.5	130 / 350
101	10,097	1,574	15.6	100 / 180
113	11,280	1,336	16.4	130 / 92
120	11,965	1,336	16.6	119 / 198
126	12,557	1,336	16.7	155 / 307

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
131	13,147	1,336	16.7	220 / 98
138	13,767	1,336	16.8	123 / 210
146	14,563	1,336	16.9	188 / 196
150	15,045	1,217	17.0	108 / 294
156	15,594	1,217	17.0	217 / 275
162	16,195	1,217	17.2	254 / 117
169	16,905	1,217	17.5	117 / 219
177	17,743	1,217	18.1	107 / 187
186	18,588	1,217	18.8	270 / 17
193	19,298	1,217	19.3	70 / 203
199	19,851	1,217	19.8	136 / 113
205	20,485	1,217	20.5	256 / 17
209	20,941	1,217	20.9	275 / 40
215	21,528	1,217	21.2	240 / 40
221	22,063	1,217	21.6	176 / 182
226	22,572	1,217	21.8	346 / 20
233	23,329	1,217	22.2	170 / 226
249	24,868	984	22.9	267 / 132
254	25,399	984	23.2	15 / 321
260	26,028	984	23.6	65 / 310
274	27,423	984	24.6	245 / 109
282	28,219	984	25.4	15 / 269
293	29,280	859	26.2	169 / 96
302	30,195	859	26.8	55 / 200
308	30,840	859	27.3	77 / 207
326	32,618	696	28.5	260 / 125
339	33,887	465	29.5	234 / 58
355	35,538	465	31.4	243 / 52
375	37,535	363	33.6	229 / 14
Mauls Swamp Tributary 1				
006	572	782	22.9	47 / 54
011	1,066	782	23.6	22 / 72
021	2,138	782	27.0	60 / 37
029	2,921	709	28.0	115 / 13
036	3,558	709	28.8	150 / 17
044	4,423	539	29.7	40 / 92
Mauls Swamp Tributary 2				
004	357	308	28.6	70 / 14
017	1,664	308	31.8	71 / 14
023	2,338	308	32.7	90 / 25
029	2,873	308	33.5	140 / 50
036	3,582	308	34.0	205 / 100
043	4,314	308	34.4	115 / 145
050	5,000	308	34.7	90 / 155
Mill Branch				
009	912	1,732	28.6[1]	131 / 37

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
017	1,700	1,732	28.6[1]	64 / 123
027	2,699	1,732	28.6[1]	133 / 39
039	3,898	1,732	30.2	91 / 68
045	4,500	1,732	31.3	43 / 93
051	5,053	1,732	32.5	90 / 52
057	5,657	1,732	34.0	56 / 92
070	6,954	1,732	38.4	90 / 120
076	7,577	1,732	39.5	30 / 192
082	8,194	1,732	40.2	22 / 57
090	9,037	1,562	43.0	6 / 102
097	9,741	1,562	44.7	49 / 115
106	10,557	1,562	46.4	40 / 120
113	11,268	1,562	48.8	25 / 120
120	12,000	1,562	52.0	40 / 24
127	12,687	1,562	53.0	532 / 54
139	13,909	1,360	53.3	397 / 398
150	15,000	1,360	53.5	149 / 14
163	16,265	1,360	54.2	13 / 593
175	17,530	1,180	54.4	584 / 304
193	19,306	1,180	54.5	4 / 602
205	20,500	1,180	54.7	586 / 4
217	21,655	1,180	54.8	4 / 198
232	23,229	817	55.4	177 / 392
248	24,823	817	55.8	451 / 521
Mococks Branch				
009	859	748	8.4	20 / 23
019	1,931	748	10.6	24 / 179
023	2,315	748	11.1	16 / 130
032	3,181	643	12.3	61 / 98
037	3,689	643	13.5	60 / 22
Morgan Swamp				
008	824	2,078	9.9[1]	59 / 443
014	1,386	2,078	9.9[1]	200 / 340
018	1,833	2,078	9.9[1]	356 / 256
024	2,351	2,078	9.9	209 / 329
039	3,911	1,735	11.2	43 / 810
051	5,136	1,735	11.5	274 / 70
058	5,785	1,735	11.8	401 / 240
065	6,500	1,735	12.0	86 / 314
070	7,000	1,735	12.4	196 / 270
075	7,500	1,735	12.7	221 / 281
080	8,000	1,681	13.0	283 / 106
085	8,500	1,681	13.3	300 / 76
090	9,000	1,593	13.6	268 / 123
094	9,414	1,593	13.8	182 / 330

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
099	9,903	1,593	14.1	72 / 280
106	10,618	1,593	14.6	70 / 275
120	12,000	1,593	16.9	20 / 336
125	12,500	1,593	17.1	182 / 230
130	13,000	1,593	17.3	349 / 165
135	13,500	1,593	17.4	217 / 211
139	13,905	1,593	17.5	57 / 375
145	14,500	1,593	17.7	290 / 162
152	15,161	1,593	17.8	323 / 90
156	15,599	1,593	18.0	191 / 210
160	16,000	1,522	18.1	79 / 363
165	16,500	1,522	18.2	292 / 104
170	17,000	1,522	18.3	251 / 189
176	17,560	1,522	18.5	449 / 21
180	18,036	1,522	18.6	366 / 45
186	18,600	1,522	18.8	262 / 185
190	19,000	1,522	18.9	164 / 306
196	19,633	1,438	19.2	93 / 347
201	20,082	1,438	19.3	199 / 253
213	21,326	1,137	19.8	388 / 198
222	22,204	1,137	20.1	122 / 280
231	23,104	1,076	20.4	10 / 390
235	23,500	1,076	20.5	47 / 376
240	24,000	1,076	20.6	15 / 414
246	24,551	911	20.8	111 / 274
250	25,000	911	21.0	82 / 408
255	25,500	798	21.2	130 / 244
261	26,135	798	21.6	68 / 291
265	26,500	798	21.9	90 / 245
270	27,000	798	22.3	110 / 227
Mosley Creek Tributary				
052	5,157	1,070	29.5	38 / 102
053	5,311	1,070	29.7	15 / 21
054	5,415	1,070	31.2	32 / 31
056	5,627	1,070	31.5	65 / 35
060	6,046	1,070	31.8	78 / 42
065	6,545	1,070	32.4	109 / 51
072	7,187	680	32.8	120 / 40
076	7,599	680	32.9	76 / 34
081	8,111	680	33.4	116 / 19
085	8,502	680	33.8	40 / 80
091	9,051	680	34.6	110 / 40
095	9,460	680	35.1	30 / 120
101	10,095	680	35.7	136 / 24
107	10,727	680	36.2	65 / 75

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
Palmetto Swamp				
010	1,048	4,370	16.6[1]	112 / 118
015	1,500	4,370	16.6[1]	303 / 127
020	2,000	4,370	16.6[1]	375 / 75
025	2,500	4,370	16.6[1]	311 / 299
030	3,000	4,370	16.6[1]	384 / 285
036	3,589	4,370	16.6[1]	38 / 331
041	4,133	4,370	16.6[1]	136 / 399
045	4,500	4,370	16.6[1]	119 / 626
050	5,000	4,370	16.6[1]	157 / 708
056	5,622	4,390	16.6[1]	35 / 600
061	6,059	4,390	16.6[1]	60 / 390
065	6,547	4,390	16.6[1]	65 / 400
069	6,946	4,390	16.6[1]	25 / 200
076	7,587	4,390	16.9	125 / 125
085	8,528	4,410	17.9	94 / 148
092	9,166	4,410	18.6	79 / 289
099	9,855	3,700	19.1	75 / 135
106	10,630	3,700	19.8	205 / 185
113	11,262	3,220	20.0	14 / 399
126	12,595	3,220	20.5	518 / 163
131	13,138	3,220	20.6	412 / 220
137	13,691	3,220	20.8	274 / 322
144	14,360	3,220	21.0	423 / 43
148	14,764	3,220	21.2	515 / 48
154	15,425	3,160	21.4	260 / 75
163	16,304	3,160	21.9	281 / 142
167	16,669	3,160	22.0	292 / 69
170	17,016	3,160	22.2	435 / 60
175	17,532	3,160	22.4	239 / 232
181	18,121	3,160	22.7	173 / 264
190	18,957	3,000	23.2	385 / 188
208	20,794	2,740	24.2	440 / 195
221	22,112	2,740	25.0	390 / 260
229	22,896	2,740	25.4	152 / 488
235	23,452	2,740	27.2	460 / 690
252	25,194	2,630	27.6	125 / 923
263	26,313	2,630	27.7	560 / 220
271	27,083	2,630	28.0	120 / 345
278	27,790	2,630	28.4	417 / 300
291	29,112	2,630	28.8	166 / 490
298	29,768	2,320	29.0	718 / 77
305	30,471	2,320	29.1	523 / 254
315	31,500	1,913	29.4	327 / 571
320	32,038	1,913	29.4	350 / 400

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
329	32,908	1,913	29.6	265 / 300
336	33,609	1,913	29.9	318 / 155
341	34,074	1,913	30.1	138 / 229
348	34,849	1,196	30.4	205 / 375
355	35,488	1,196	30.5	128 / 245
360	36,000	1,196	30.7	7 / 453
365	36,535	1,196	31.0	205 / 266
371	37,132	1,196	31.4	36 / 342
382	38,212	1,112	32.0	203 / 321
391	39,094	1,069	32.3	163 / 412
Palmetto Swamp Tributary 1				
007	724	868	18.7[1]	80 / 50
015	1,531	868	18.7[1]	52 / 50
023	2,269	868	20.7	40 / 65
029	2,916	868	22.6	85 / 15
037	3,660	868	24.3	60 / 40
043	4,330	868	25.7	30 / 120
049	4,912	815	26.5	20 / 190
Palmetto Swamp Tributary 2				
007	679	661	20.2[1]	150 / 50
014	1,437	661	20.3	55 / 41
019	1,944	661	21.8	24 / 92
026	2,568	661	26.1	127 / 87
Palmetto Swamp Tributary 3				
007	676	484	23.8[1]	105 / 180
011	1,116	484	23.8[1]	160 / 74
018	1,755	484	23.8[1]	165 / 100
022	2,212	484	24.0	15 / 100
028	2,812	484	26.9	65 / 50
032	3,156	303	28.0	40 / 40
Palmetto Swamp Tributary 4				
008	769	688	29.3[1]	180 / 45
014	1,391	688	29.3[1]	155 / 94
019	1,943	660	29.3[1]	300 / 45
025	2,541	660	30.1	15 / 185
034	3,368	416	32.8	110 / 18
041	4,115	416	34.6	33 / 38
048	4,795	416	36.4	92 / 20
060	6,043	368	38.8	75 / 15
Pine Tree Swamp				
003	334	1,066	14.3	33 / 152
007	744	1,066	14.6	110 / 15
020	2,021	1,066	17.1	107 / 18
026	2,624	1,066	17.6	99 / 6
030	3,025	1,066	18.0	150 / 18
035	3,500	1,021	18.4	159 / 54

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
041	4,068	1,021	18.9	55 / 58
047	4,700	1,021	19.6	23 / 109
054	5,392	1,021	20.3	119 / 6
060	6,000	1,021	21.3	60 / 10
067	6,728	958	22.2	58 / 64
075	7,490	958	23.2	5 / 103
081	8,131	958	24.1	135 / 55
086	8,644	887	24.5	176 / 16
Pollard Swamp				
010	1,017	1,070	29.8	491 / 83
020	2,000	1,070	30.5	359 / 23
027	2,732	1,070	31.4	193 / 81
036	3,579	1,070	32.1	459 / 16
044	4,385	1,070	32.6	301 / 97
059	5,936	875	34.3	340 / 14
066	6,602	875	34.8	310 / 32
072	7,170	875	35.4	74 / 139
077	7,740	829	36.2	171 / 129
083	8,274	829	36.8	164 / 118
093	9,313	829	37.8	14 / 348
101	10,144	829	38.6	81 / 112
110	11,000	775	39.4	191 / 146
118	11,806	775	40.0	209 / 85
124	12,368	775	40.6	300 / 50
Rollover Creek				
010	954	1,857	17.7	166 / 286
015	1,540	1,857	18.1	300 / 101
020	2,000	1,857	18.4	154 / 159
027	2,680	1,857	19.1	171 / 174
031	3,099	1,857	19.4	156 / 322
037	3,712	1,857	19.6	246 / 385
042	4,154	1,857	19.9	282 / 140
049	4,868	1,857	20.6	47 / 361
052	5,249	1,701	21.1	54 / 242
060	5,987	1,701	22.4	233 / 23
065	6,486	1,701	23.3	162 / 92
074	7,449	1,701	25.1	226 / 213
082	8,172	1,701	25.5	339 / 142
087	8,745	1,701	26.0	280 / 14
094	9,387	1,701	26.8	332 / 14
100	10,000	1,701	27.3	155 / 146
106	10,602	1,701	27.9	170 / 130
112	11,184	1,701	28.4	135 / 134
117	11,662	1,701	28.9	91 / 128
124	12,410	1,701	29.5	178 / 185

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
131	13,079	1,701	30.0	109 / 212
138	13,754	1,701	30.5	60 / 341
142	14,209	1,701	30.7	170 / 268
146	14,638	1,701	31.0	191 / 89
153	15,332	1,530	31.7	61 / 274
158	15,763	1,530	32.1	14 / 317
163	16,293	1,530	32.4	93 / 290
169	16,870	1,530	32.8	129 / 205
176	17,565	1,530	33.5	81 / 127
185	18,532	1,530	35.3	159 / 267
191	19,092	1,530	35.4	297 / 101
197	19,684	1,530	35.6	345 / 36
202	20,195	1,530	36.0	307 / 14
207	20,714	1,287	36.4	27 / 199
213	21,327	1,287	36.8	34 / 165
220	21,956	1,287	37.3	160 / 32
Round Tree Branch				
061	6,085	627	9.0[1]	48 / 89
066	6,642	627	9.6	80 / 31
071	7,146	627	10.4	93 / 13
076	7,561	627	10.9	164 / 13
South Canal				
006	595	1,770	33.3[1]	324 / 113
013	1,266	1,770	33.8	321 / 92
019	1,888	1,760	34.9	332 / 162
026	2,617	1,760	35.8	96 / 676
040	4,006	1,760	37.4	963 / 527
048	4,817	1,760	37.8	231 / 997
Southwest Prong Slocum Creek				
113	11,283	2,709	8.3	351 / 215
119	11,869	2,658	8.6	321 / 376
127	12,657	2,658	9.0	301 / 218
131	13,107	2,658	9.3	145 / 260
136	13,580	2,658	9.9	115 / 245
140	14,044	2,658	10.8	192 / 126
146	14,556	2,658	11.9	304 / 68
149	14,946	2,658	12.4	226 / 165
154	15,404	2,658	12.8	137 / 221
157	15,740	2,658	13.2	189 / 328
166	16,597	1,952	14.0	101 / 399
173	17,343	1,952	15.1	121 / 12
178	17,821	1,952	16.4	80 / 106
183	18,315	1,952	17.0	224 / 111
188	18,790	1,952	17.4	40 / 355
192	19,225	1,952	17.9	83 / 152
198	19,805	1,952	19.4	56 / 107

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
204	20,393	1,679	20.7	102 / 83
210	20,958	1,679	21.6	153 / 68
214	21,377	1,679	22.1	65 / 59
219	21,922	1,679	23.6	45 / 64
224	22,422	1,679	25.0	59 / 100
228	22,785	1,679	25.6	202 / 52
234	23,392	1,679	26.1	19 / 433
240	23,953	1,679	26.4	251 / 219
246	24,597	1,679	26.8	46 / 608
251	25,123	1,517	27.2	155 / 364
257	25,668	1,517	27.4	116 / 45
Spe Branch				
006	589	407	9.6[1]	51 / 112
009	868	407	9.6[1]	97 / 21
013	1,347	407	9.6[1]	41 / 75
018	1,827	407	9.6[1]	14 / 14
024	2,426	407	10.6	14 / 38
038	3,843	407	15.4	44 / 14
Swift Creek				
713	71,305	11,000	13.9	1,050 / 800
754	75,445	11,000	14.2	130 / 2,000
814	81,421	11,000	14.6	950 / 460
820	82,042	11,000	14.6	478 / 736
839	83,865	11,000	14.8	750 / 450
850	84,954	11,000	14.8	800 / 400
866	86,615	11,000	15.1	65 / 800
886	88,629	11,000	15.4	350 / 800
895	89,490	11,000	15.4	500 / 600
910	91,000	11,000	15.5	800 / 180
917	91,714	11,000	15.6	1,000 / 254
933	93,269	10,800	15.9	600 / 900
939	93,896	10,800	15.9	488 / 1,111
950	95,000	10,800	16.0	539 / 1,045
959	95,904	10,800	16.0	1,140 / 467
965	96,479	10,800	16.1	900 / 500
978	97,838	10,800	16.1	700 / 500
986	98,599	10,800	16.2	500 / 650
1001	100,105	10,800	16.3	400 / 700
1010	101,016	10,800	16.4	600 / 250
1016	101,593	10,800	16.5	278 / 700
1030	102,995	9,510	16.7	700 / 500
1036	103,579	9,510	16.8	200 / 1,100
1045	104,455	9,510	16.8	1,200 / 625
1056	105,627	9,510	16.9	1,630 / 110
1063	106,311	9,510	17.1	800 / 630

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
1070	106,981	9,510	17.1	600 / 500
1077	107,747	8,980	17.2	75 / 570
1087	108,721	8,980	17.5	302 / 925
1093	109,332	8,980	17.5	510 / 822
1098	109,820	8,980	17.6	609 / 477
1103	110,287	8,980	17.6	626 / 351
1111	111,095	8,980	17.7	838 / 464
1125	112,480	8,980	17.9	375 / 821
1136	113,572	8,980	18.0	717 / 422
1148	114,835	8,980	18.1	650 / 641
1155	115,469	8,980	18.2	405 / 739
1161	116,060	8,500	18.2	300 / 750
1165	116,500	8,500	18.3	432 / 440
1173	117,265	8,500	18.4	468 / 210
1180	117,979	8,500	18.5	717 / 498
1188	118,842	8,500	18.7	800 / 400
1197	119,704	8,120	18.8	1,200 / 125
1204	120,359	8,120	18.8	943 / 627
1210	121,035	8,120	18.9	918 / 560
1219	121,919	7,690	19.0	398 / 1,021
1230	123,011	7,690	19.2	250 / 750
1238	123,837	7,690	19.3	550 / 335
1256	125,585	6,210	19.8	1,000 / 250
1266	126,560	6,210	20.0	833 / 404
1270	126,979	6,210	20.0	432 / 666
1282	128,194	6,210	20.3	412 / 249
1294	129,375	6,120	20.6	300 / 550
1303	130,298	6,120	20.9	375 / 590
1309	130,915	6,120	21.0	300 / 500
1320	131,990	6,120	21.3	250 / 450
1336	133,608	6,120	22.2	770 / 455
1341	134,059	6,120	22.3	800 / 320
1351	135,109	6,120	22.5	365 / 381
1361	136,082	6,120	22.9	304 / 612
1366	136,643	6,120	23.0	556 / 290
1381	138,058	6,120	23.4	135 / 505
1403	140,252	6,030	24.1	525 / 320
1417	141,737	6,030	24.4	500 / 500
1427	142,709	6,030	24.6	47 / 588
1434	143,370	6,030	24.8	100 / 500
1442	144,207	6,030	25.1	300 / 475
1454	145,398	6,030	25.4	450 / 500
1468	146,770	6,030	25.9	100 / 500
1482	148,181	6,030	26.4	90 / 320
1490	149,009	6,030	26.7	250 / 125

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
1505	150,519	6,030	27.5	700 / 300
Tracey Swamp				
002	231	2,156	38.8	23 / 916
004	430	2,156	38.8	26 / 1,314
005	500	2,156	38.8	26 / 1,314
010	993	2,156	38.9	911 / 662
025	2,520	2,156	39.1	489 / 1,065
036	3,628	2,046	39.2	1,980 / 22
045	4,537	2,046	39.4	1,423 / 90
058	5,804	1,981	39.6	140 / 205
074	7,371	1,981	40.6	24 / 890
086	8,553	1,981	41.0	22 / 1,021
104	10,413	1,550	41.4	1,167 / 505
125	12,477	1,426	41.9	165 / 209
138	13,811	1,426	42.6	18 / 590
157	15,677	1,350	43.2	870 / 45
Upper Broad Creek				
071	7,082	1,420	30.8	35 / 1,041
076	7,583	1,420	30.9	73 / 627
081	8,138	1,420	31.1	108 / 910
086	8,607	1,420	31.2	219 / 793
091	9,138	1,420	31.4	50 / 700
097	9,745	1,420	31.8	52 / 631
106	10,600	1,230	32.4	466 / 161
112	11,216	1,230	32.7	339 / 324
117	11,699	1,230	33.0	425 / 230
122	12,202	1,230	33.2	600 / 50
124	12,392	1,230	33.3	122 / 521
124	12,437	1,230	33.3	122 / 521
130	12,988	604	33.6	106 / 361
136	13,637	604	33.8	214 / 94
142	14,214	604	34.4	185 / 79
148	14,840	604	34.8	229 / 94
152	15,176	604	35.1	85 / 32
157	15,685	604	35.6	239 / 26
157	15,708	-8,888	35.6	-9,999 / -9,999
157	15,730	604	35.6	239 / 26
160	16,011	604	35.8	175 / 20
167	16,676	604	36.3	250 / 100
173	17,326	604	36.5	200 / 100
350	35,000	4,132	8.0	605 / 378
360	36,000	3,901	8.1	589 / 290
372	37,169	3,901	8.2	846 / 622
380	38,000	3,901	8.2	1,007 / 382
389	38,944	3,901	8.3	820 / 393

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
399	39,924	3,901	8.3	641 / 372
410	41,000	3,802	8.4	778 / 507
423	42,287	3,802	8.4	465 / 456
440	44,000	3,802	8.5	206 / 704
449	44,945	3,802	8.6	383 / 215
460	46,000	3,802	8.7	569 / 197
475	47,500	3,802	8.8	309 / 448
490	49,000	3,666	9.0	466 / 473
500	50,000	3,666	9.0	395 / 543
511	51,111	3,666	9.1	592 / 235
520	52,000	3,666	9.2	464 / 653
528	52,829	3,666	9.3	314 / 485
540	54,000	3,666	9.5	623 / 180
550	55,000	3,666	9.7	301 / 639
561	56,053	3,666	9.8	320 / 359
570	57,000	2,669	10.0	28 / 680
577	57,690	2,669	10.2	148 / 347
587	58,737	2,669	10.6	223 / 144
606	60,568	2,553	11.3	161 / 394
625	62,500	2,553	11.9	147 / 575
635	63,500	2,553	12.3	623 / 113
645	64,500	2,553	12.6	529 / 813
656	65,601	2,500	13.0	239 / 120
666	66,611	2,500	13.8	26 / 552
675	67,500	2,500	14.3	26 / 509
685	68,500	2,500	14.8	418 / 69
696	69,614	2,500	15.2	204 / 491
710	71,000	2,436	15.7	646 / 28
721	72,085	2,436	16.1	366 / 235
735	73,453	2,436	17.0	418 / 261
753	75,304	1,579	17.6	133 / 261
767	76,670	1,579	18.2	430 / 37
778	77,824	1,524	18.8	141 / 288
791	79,066	1,524	20.0	180 / 161
807	80,688	1,524	21.4	183 / 166
825	82,475	1,159	22.3	64 / 449
845	84,468	1,159	23.6	171 / 133
864	86,416	1,159	26.0	23 / 278
881	88,069	1,159	27.2	408 / 213
897	89,667	569	28.5	100 / 15
Village Creek				
180	18,002	970	44.8	87 / 87
185	18,535	362	44.8	87 / 87
West Prong Brice Creek				
012	1,197	2,664	15.0[1]	635 / 142

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
020	2,023	2,664	15.0[1]	171 / 288
027	2,706	2,664	15.0[1]	334 / 215
032	3,203	2,664	15.0[1]	450 / 260
039	3,931	2,664	15.0[1]	174 / 203
044	4,357	2,664	15.0[1]	93 / 329
052	5,188	2,664	15.5	55 / 377
063	6,322	2,664	16.1	108 / 707
071	7,075	2,664	16.4	459 / 158
078	7,832	2,449	16.9	487 / 162
084	8,424	2,449	17.3	343 / 157
090	8,995	2,441	17.7	312 / 337
101	10,089	2,441	18.4	338 / 163
108	10,819	2,441	18.9	700 / 53
116	11,622	2,366	19.3	738 / 50
122	12,198	2,288	19.6	609 / 143
130	12,994	2,288	20.1	758 / 130
140	14,014	2,288	20.9	558 / 31
149	14,906	2,224	21.9	157 / 294
157	15,681	2,224	22.5	323 / 378
165	16,541	2,224	23.2	201 / 193
176	17,555	2,224	24.0	336 / 46
183	18,310	2,224	24.5	164 / 284
189	18,898	2,224	24.8	225 / 333
196	19,649	2,224	25.3	156 / 412
203	20,262	2,224	25.8	255 / 352
208	20,843	2,224	26.2	96 / 477
215	21,503	1,776	26.5	229 / 353
221	22,067	1,776	26.8	378 / 141
227	22,664	1,776	27.1	502 / 175
232	23,192	1,776	27.4	341 / 206
242	24,224	1,776	27.9	115 / 565
258	25,772	1,446	28.7	403 / 222
268	26,838	1,446	29.6	270 / 99
277	27,718	1,446	30.5	397 / 65
286	28,589	1,446	31.3	274 / 91
296	29,567	1,131	32.0	194 / 338
305	30,473	1,131	32.5	278 / 224
315	31,529	1,131	33.3	196 / 268
366	36,550	556	36.2	885 / 522
West Prong Mortons Mill Pond				
019	1,869	834	9.5	50 / 173
026	2,614	834	9.9	30 / 192
040	4,042	834	11.3	32 / 170
047	4,744	834	12.5	90 / 62
054	5,376	365	13.3	14 / 182

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
064	6,378	365	14.6	34 / 14
070	6,954	365	17.1	89 / 22
075	7,530	365	18.0	14 / 94

[1]Elevation includes backwater effects

5.3 Coastal Analyses

For the areas of Craven County that are impacted by coastal flooding processes, coastal flood hazard analyses were performed to provide estimates of coastal BFEs. Coastal BFEs reflect the increase in water levels during a flood event due to extreme tides and storm surge as well as overland wave effects.

The following subsections provide summaries of how each coastal process was considered for the FIS Report. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation. Table 15 summarizes the methods and/or models used for each of the coastal analyses. Refer to Section 2.5.1 for descriptions of the terms used in this section.

Table 18P, “Summary of Coastal Analyses - Preliminary: Revised or Newly Studied”

Table 18P - Summary of Coastal Analyses - Preliminary: Revised or Newly Studied

Flooding Source	Study Limits From	Study Limits To	Hazard Evaluated	Model or Method Used	Date Analysis Was Completed	Study Type
Neuse River	The confluences of South River and Neuse River	Approximately 1.1 miles upstream of the confluence with Swift Creek	*	CHAMP 2.0	1/24/2014	DETAILED STUDY
Neuse River	The confluences of South River and Neuse River	Approximately 1.1 miles upstream of the confluence with Swift Creek	*	ADCIRC	1/22/2013	DETAILED STUDY
Neuse River	The confluences of South River and Neuse River	Approximately 1.1 miles upstream of the confluence with Swift Creek	*	CHAMP / RUNUP 2.0 (2007)	1/24/2014	DETAILED STUDY
Neuse River	The confluences of South River and Neuse River	Approximately 1.1 miles upstream of the confluence with Swift Creek	*	WHAFIS 4.0	1/24/2014	DETAILED STUDY

Table 18, “Summary of Coastal Analyses”

Table 18 - Summary of Coastal Analyses

Flooding Source	Study Limits From	Study Limits To	Hazard Evaluated	Model or Method Used	Date Analysis Was Completed
Neuse River	The confluences of South River and Neuse River	Approximately 1.1 miles upstream of the confluence with Swift Creek	*	CHAMP 2.0	1/24/2014
Neuse River	The confluences of South River and Neuse River	Approximately 1.1 miles upstream of the confluence with Swift Creek	*	ADCIRC	1/22/2013
Neuse River	The confluences of South River and Neuse River	Approximately 1.1 miles upstream of the confluence with Swift Creek	*	CHAMP / RUNUP 2.0 (2007)	1/24/2014
Neuse River	The confluences of South River and Neuse River	Approximately 1.1 miles upstream of the confluence with Swift Creek	*	WHAFIS 4.0	1/24/2014

5.3.1 Total Stillwater Elevations

The total stillwater elevations (stillwater including storm surge plus wave setup) for the 1% annual chance flood were determined for areas subject to coastal flooding. The models and methods that were used to determine storm surge and wave setup are listed in Table 15. The stillwater elevation that was used for each transect in coastal analyses is shown in Table 20, “Coastal Transect Parameters.”

Astronomical Tide
Astronomical tidal statistics were generated directly from local tidal constituents by sampling the predicted tide at random times throughout the tidal epoch.

Storm Surge Statistics
Storm surge is modeled based on characteristics of actual storms responsible for significant coastal flooding. The characteristics of these storms are typically determined by statistical study of the regional historical record of storms or by statistical study of tidal gages.

When historic records are used to calculate storm surge, characteristics such as the strength, size, track, etc., of storms are identified by site. Storm data was used in conjunction with numerical hydrodynamic models to determine the corresponding storm surge levels. An extreme value analysis was performed on the storm surge modeling results to determine a stillwater elevation for the 1% annual chance event.

Tidal gages can be used instead of historic records of storms when the available tidal gage record for the area represents both the astronomical tide component and the storm surge component. Table 16 provides the gage name, managing agency, gage type, gage identifier, start date, end date, and statistical methodology applied to each gage used to determine the stillwater elevations. For areas between gages, peak stillwater elevations for selected recurrence intervals were estimated by combining interpolation between gages and observed high water marks during major storms. A regionalized statistical approach was applied to the gage data so that stillwater elevations in areas between gages could be identified.

Table 19, "Tide Gage Analysis Specifics" is not applicable in Craven County.

Combined Riverine and Tidal Effects
Riverine and surge rates for the lower reaches of the Inundation River were combined by developing curves for rate of occurrence vs. flood level for each flood source.

Wave Setup Analysis
Wave setup was computed during the storm surge modeling through the methods and models listed in Table 15 and included in the frequency analysis for the determination of the total stillwater elevations. The oscillating component of wave setup, dynamic wave setup, was calculated for areas subject to wave runup hazards.

5.3.2 Waves

A coastal wave model (Coastal State University 2007) was used to calculate the nearshore wave fields required for the addition of wave setup effects. Three nested grids were used to obtain sufficient nearshore resolution to represent the radiation stress gradients required as ADCIRC inputs. Radiation stress fields output from the inner grids are used by ADCIRC to estimate the contribution of breaking waves (wave setup effects) to the total stillwater elevation.

5.3.3 Coastal Erosion

A single storm episode can cause extensive erosion in coastal areas. Storm-induced erosion was evaluated to determine the modification to existing topography that is expected to be associated with flooding events. Erosion was evaluated using the methods listed in Table 15. The post-event eroded profile was used for the subsequent transect-based onshore wave hazard analyses.

5.3.4 Wave Hazard Analyses

Overland wave hazards were evaluated to determine the combined effects of ground elevation, vegetation, and physical features on overland wave propagation and wave runup. These analyses were performed at representative transects along all shorelines for which waves were expected to be present during the floods of the selected recurrence intervals. The results of these analyses were used to determine elevations for the 1% annual chance flood.

Transect locations were chosen with consideration given to the physical land characteristics as well as development type and density so that they would closely represent conditions in their locality. Additional consideration was given to changes in the total stillwater elevation. Transects were spaced close together in areas of complex topography and dense development or where total stillwater elevations varied. In areas having more uniform characteristics, transects were spaced at larger intervals. Transects shown in Figure 9, "Transect Location Map," are also depicted on the FIRM. Table 17 provides the location, stillwater elevations, and starting wave conditions for each transect evaluated for overland wave hazards. In this table, "starting" indicates the parameter value at the beginning of the transect.

Wave Height Analysis

Wave height analyses were performed to determine wave heights and corresponding wave crest elevations for the areas inundated by coastal flooding and subject to overland wave propagation hazards. Refer to Figure 6 for a schematic of a coastal transect evaluated for overland wave propagation hazards.

Wave heights and wave crest elevations were modeled using the methods and models listed in Table 18, "Summary of Coastal Analyses".

Wave Runup Analysis

Wave runup analyses were performed to determine the height and extent of runup beyond the limit of stillwater inundation for the 1% annual chance flood. Wave runup elevations were modeled using the methods and models listed in Table 15.

Table 20, "Coastal Transect Parameters"

Table 20: Coastal Transect Parameters

Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
	Significant Wave Height Hs (ft)	Peak Wave Period Tp (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	.2% Annual Chance
Neuse River		**From The confluences of South River and Neuse River**			**To Approximately 1.1 miles upstream of the confluence with Swift Creek**		
1	5.4	4.2	*	*	*	6.2	7.7
			*	*	*	6.2 - 6.7	7.7 - 8.1
3	5.4	4.2	*	*	*	6.1	7.7
			*	*	*	6.1 - 7.3	7.7 - 8.8
5	5.4	4.2	*	*	*	6.4	8.0
			*	*	*	6.4 - 6.7	8.0 - 8.1
7	5.4	4.2	*	*	*	6.6	8.2
			*	*	*	6.6 - 6.8	8.2 - 8.3
9	5.4	4.2	*	*	*	6.8	8.5
			*	*	*	6.8 - 6.8	8.5 - 8.5
11	5.4	4.2	*	*	*	6.9	8.7
			*	*	*	6.9 - 7.4	8.7 - 9.3
13	5.4	4.2	*	*	*	6.9	8.6
			*	*	*	6.9 - 6.9	8.6 - 8.6
15	5.4	4.2	*	*	*	6.9	8.6
			*	*	*	6.9 - 6.9	8.6 - 8.6
17	5.4	4.2	*	*	*	6.9	8.7
			*	*	*	6.9 - 6.9	8.7 - 8.7
19	5.4	4.2	*	*	*	6.9	8.7
			*	*	*	6.9 - 6.9	8.7 - 8.7
21	5.4	4.2	*	*	*	7.2	9.0
			*	*	*	7.2 - 7.5	9.0 - 9.4
23	5.4	4.2	*	*	*	7.3	9.3
			*	*	*	7.3 - 7.5	9.3 - 9.4
25	5.4	4.2	*	*	*	7.3	9.2
			*	*	*	7.3 - 7.5	9.2 - 9.4
27	5.4	4.2	*	*	*	7.4	9.4
			*	*	*	7.4 - 7.4	9.3 - 9.4
29	5.4	4.2	*	*	*	7.7	9.6
			*	*	*	7.7 - 7.7	9.6 - 9.7
31	5.4	4.2	*	*	*	7.7	9.6
			*	*	*	7.7 - 7.8	9.6 - 9.8
33	5.4	4.2	*	*	*	7.7	9.6
			*	*	*	7.7 - 7.8	9.6 - 9.8
35	5.4	4.2	*	*	*	7.8	9.8
			*	*	*	7.8 - 7.8	9.7 - 9.8

Table 20: Coastal Transect Parameters

Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
	Significant Wave Height Hs (ft)	Peak Wave Period Tp (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	.2% Annual Chance
37	5.4	4.2	*	*	*	7.8	9.8
			*	*	*	7.8 - 7.8	9.8 - 9.8
39	5.4	4.2	*	*	*	8.0	9.9
			*	*	*	8.0 - 8.0	9.9 - 9.9
41	5.4	4.2	*	*	*	8.0	9.9
			*	*	*	8.0 - 8.0	9.9 - 9.9
43	5.4	4.2	*	*	*	8.2	10.1
			*	*	*	8.2 - 8.2	10.1 - 10.1
45	5.4	4.2	*	*	*	8.2	10.1
			*	*	*	8.2 - 8.2	10.1 - 10.1
47	5.4	4.2	*	*	*	8.2	10.1
			*	*	*	8.2 - 8.2	10.1 - 10.1
49	5.4	4.2	*	*	*	8.2	10.1
			*	*	*	8.2 - 8.2	10.1 - 10.1
51	3.8	3.4	*	*	*	8.3	10.1
			*	*	*	8.3 - 8.3	10.1 - 10.1
53	3.8	3.4	*	*	*	8.2	10.1
			*	*	*	8.2 - 8.9	10.1 - 10.8
55	3.8	3.4	*	*	*	8.2	10.1
			*	*	*	8.2 - 8.9	10.1 - 10.8
57	2.9	2.9	*	*	*	8.2	10.1
			*	*	*	8.2 - 8.2	10.1 - 10.1
59	2.9	2.9	*	*	*	8.2	10.1
			*	*	*	8.2 - 8.8	10.1 - 10.8
61	2.9	2.9	*	*	*	8.3	10.3
			*	*	*	8.3 - 9.0	10.3 - 11.0
63	2.9	2.9	*	*	*	8.4	10.4
			*	*	*	8.4 - 9.0	10.4 - 11.0
65	2.9	2.9	*	*	*	8.4	10.4
			*	*	*	8.4 - 8.5	10.4 - 10.5
67	2.9	2.9	*	*	*	8.5	10.5
			*	*	*	8.5 - 8.6	10.5 - 10.6
69	1.8	2.4	*	*	*	8.6	10.6
			*	*	*	8.6 - 8.6	10.6 - 10.6
71	1.8	2.4	*	*	*	8.6	10.7
			*	*	*	8.6 - 8.7	10.7 - 10.8
73	1.8	2.4	*	*	*	8.6	10.7
			*	*	*	8.5 - 8.6	10.6 - 10.7
75	1.8	2.4	*	*	*	8.6	10.7
			*	*	*	8.6 - 8.6	10.7 - 10.7
77	1.8	2.4	*	*	*	8.6	10.6
			*	*	*	8.6 - 8.6	10.6 - 10.6
79	1.8	2.4	*	*	*	8.5	10.5
			*	*	*	8.5 - 8.5	10.5 - 10.5
81	2.8	2.9	*	*	*	8.4	10.3
			*	*	*	7.6 - 8.4	9.3 - 10.4
83	2.8	2.9	*	*	*	8.3	10.2
			*	*	*	7.6 - 8.3	9.3 - 10.2
85	2.8	2.9	*	*	*	8.2	10.1
			*	*	*	7.6 - 8.2	9.3 - 10.1
87	2.8	2.9	*	*	*	8.1	9.9
			*	*	*	7.6 - 8.1	9.3 - 9.9
89	2.8	2.9	*	*	*	8.1	9.9
			*	*	*	7.6 - 8.1	9.3 - 9.9
91	4.5	3.7	*	*	*	8.0	9.9
			*	*	*	7.6 - 8.0	9.3 - 9.9
93	4.5	3.7	*	*	*	7.8	9.6
			*	*	*	7.6 - 7.9	9.3 - 9.7
95	4.5	3.7	*	*	*	7.6	9.4

Table 20: Coastal Transect Parameters

Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
	Significant Wave Height Hs (ft)	Peak Wave Period Tp (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	.2% Annual Chance
			*	*	*	7.5 - 7.6	9.3 - 9.4

6.0 Mapping Methods

6.1 Vertical and Horizontal Control

Vertical Datum

All FISs 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. With the finalization of the North American Vertical Datum of 1988 (NAVD 88), all North Carolina FISs have been prepared using NAVD 88 as the referenced vertical datum.

All flood elevations shown on the FIRM for Craven County are referenced to NAVD 88. Structure and ground elevations in the county must, therefore, be referenced to NAVD 88. It is important to note that FISs for adjacent communities in neighboring states may be referenced to NGVD 29. This may result in BFE differences across political boundaries between the communities.

As noted above, the elevations shown in this FIS are referenced to NAVD 88. Ground, structure, and flood elevations may be compared and/or referenced to NGVD 29 by applying a standard conversion factor. The conversion factor for Craven County is # feet. The locations used to establish the conversion factor were USGS quadrangle corners that fell within the county, as well as those that were within 2.5 miles outside the county. The benchmarks are referenced to NAVD 88. Table 21, “Datum Conversion Locations and Values,” is shown below.

Table 21, “Datum Conversion Locations and Values.”

Table 21 - Datum Conversion Locations and Values

Latitude	Longitude	Conversion from NGVD29 to NAVD88 (feet)
35.37	-77.13	-1.10
35.25	-77.38	-1.21
35.25	-77.25	-1.19
35.25	-77.13	-1.12
35.25	-77.00	-1.08
35.12	-77.25	-1.14
35.13	-77.12	-1.11
35.12	-77.00	-1.06
35.00	-77.00	-1.05
34.87	-77.00	-1.04
34.88	-76.87	-1.03
34.88	-76.75	-1.00
Average conversion in Craven County from NGVD 29 to NAVD 88 = -1.09 feet		

The vertical datum conversion factor for all flooding sources which run along a county boundary are in accordance with the conversion factor used in those contiguous counties.

BFEs shown on the FIRM represent whole-foot rounded values. For example, a 1% annual chance water-surface elevation of 102.4 feet will appear as 102 on the FIRM and 102.6 feet will appear as 103. Therefore, users who wish to convert the elevations in this FIS to NGVD 29 should apply the stated conversion factor(s) to elevations shown on the Flood Profiles and/or Water-surface elevation rasters and supporting data tables in the FIS Report, which are shown, at a minimum, to the nearest 0.1 foot.

For more information on NAVD 88, see Converting the National Flood Insurance Program to the North American Vertical Datum of

1988, or contact the Vertical Network Branch, National Geodetic Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, Rockville, Maryland 20910 (http://www.ngs.noaa.gov).

Vertical Control Monuments

Qualifying bench marks within Craven County that are cataloged by the National Geodetic Survey (NGS) and entered into the National Spatial Reference System (NSRS) as First or Second Order Vertical, with a vertical stability classification of A, B, or C, are shown and labeled on the FIRM with their 6-character NSRS Permanent Identifier (PID).

The National Geodetic Survey establishes precisely located monuments on the North Carolina Grid System and Bench Marks referenced to a vertical datum (NGVD 1929 and NAVD 1988).

Bench marks cataloged by the NGS and entered into the NSRS vary widely in vertical stability classification. NSRS vertical stability classifications are as follows:

- Stability A: Monuments of the most reliable nature, expected to hold position/elevation well (e.g., mounted in bedrock)
- Stability B: Monuments which generally hold their position/elevation well (e.g., concrete bridge abutment)
- Stability C: Monuments which may be affected by surface ground movements (e.g., concrete monument below frost line)
- Stability D: Mark of questionable or unknown vertical stability (e.g., concrete monument above frost line, or steel witness post)

Monuments with a Stability D classification may be used as Elevation Reference Marks (ERMs) when a Stability C or better monument is not an option. These ERMs must be approved by NCGS and can be set and used as elevation bench marks to establish vertical control and produce NC DFIRMs. Including such ERMs will greatly augment North Carolina’s useable vertical control network.

In addition, when local jurisdictions have established their own vertical monument network, these monuments may also be shown on the FIRM with the appropriate designations. Local monuments will be placed on the FIRM if the community has requested that they be included and if the monuments meet the aforementioned criteria.

North Carolina Geodetic Survey (NCGS) and contractor surveyed vertical control monuments will be shown on the FIRM panels. Those cataloged by NCGS meet similar requirements to the NGS monuments as described above. Most monuments that have been cataloged by NCGS have been established to NGS standards, but have not been submitted to NGS for inclusion into the NSRS. The qualifying criteria for depicting bench marks established by the State’s contractors on the new digital FIRM panels include:

- GPS surveying of permanent 3-D survey monuments to 5-centimeter or better local network accuracy guidelines, in accordance with NOAA Technical Memorandum NOS NGS-58 “Guidelines for Establishing GPS-Derived Ellipsoid Heights (Standards: 2 cm and 5 cm),” and conversion to NAVD 88 orthometric heights using NGS’ latest geoid mode;
- Requiring a stability classification of “C” or better; and
- Submitting GPS files and station descriptions to NCGS.

To obtain current information for cataloging local bench marks in the NSRS, please visit the Data Sheet page of the NGS website at http://www.ngs.noaa.gov/cgi-bin/datasheet.prl, or contact the NGS Information Services Branch at:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-32822
(301) 713-3242

Information regarding the NCGS or State contractor bench marks can be obtained through the NCGS website at www.ncgs.state.nc.us, or by phone at (919) 733-3836.

It is important to note that temporary vertical monuments, sometimes called Elevation Reference Marks, are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, interested individuals may contact FEMA to access this information.

Horizontal Datum and Control

The digital files that comprise the FIRM are georeferenced to an established coordinate system. The coordinate system used for the production of this FIRM is North Carolina State Plane (FIPSZONE 3200) referenced to the North American Datum of 1983 (NAD83), GRS80 ellipsoid.

6.2 Base Map

The FIRMs and FIS Report for this project have been produced in a digital format. The flood hazard information was converted to a Geographic Information System (GIS) format that meets FEMA's FIRM database specifications and geographic information standards. This information is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community. The FIRM Database includes most of the tabular information contained in the FIS Report in such a way that the data can be associated with pertinent spatial features.

The projection used in the preparation of this map was the North Carolina State Plane Coordinate System. The horizontal datum was NAD83, GRS80 spheroid. Differences in datum, spheroid, or projection used in the production of FIRMs for adjacent states may result in slight positional differences in map features across the state boundary. These differences do not affect the accuracy of this FIRM.

As part of the North Carolina CTS Initiative, North Carolina digital FIRM panel numbers are consistent with the North Carolina Land Records Management Program (LRMP).

The 11-digit digital FIRM panel numbering system for North Carolina is: SS MM LLLL PP X, where SS = State Federal Information Processing Code (37); MM = Easting-Northing (EN) 1,000,000-foot coordinates; LLLL = LRMP map numbers to include the EN 100,000-foot coordinates, and the EN 10,000-foot coordinates; PP = place holders for additional EN 1,000-foot coordinates; and X = suffix ("J" for the initial edition). North Carolina's State Plane Coordinate System origin is outside the State boundary to the southwest (in Georgia), the eastings range from approximately 0,404,000 (Tennessee border) to 3,040,000 (Atlantic Ocean); and the northings range from approximately 0,045,000 (South Carolina border) to 1,043,000 (Virginia border). Digital FIRM panels were compiled at either 1"=1,000', covering an area of 20,000 feet x 20,000 feet (20" x 20" panels); or at 1"=500', covering an area of 10,000 feet x 10,000 feet (20" x 20" panels). An additional 2 digits (both zeros) are held in reserve as a "place holder" in the event that future FIRMs are printed at a larger scale; e.g., 1"=250', covering an area of 5,000 feet x 5,000 feet for which the 1,000-foot coordinates would either be 0 or 5.

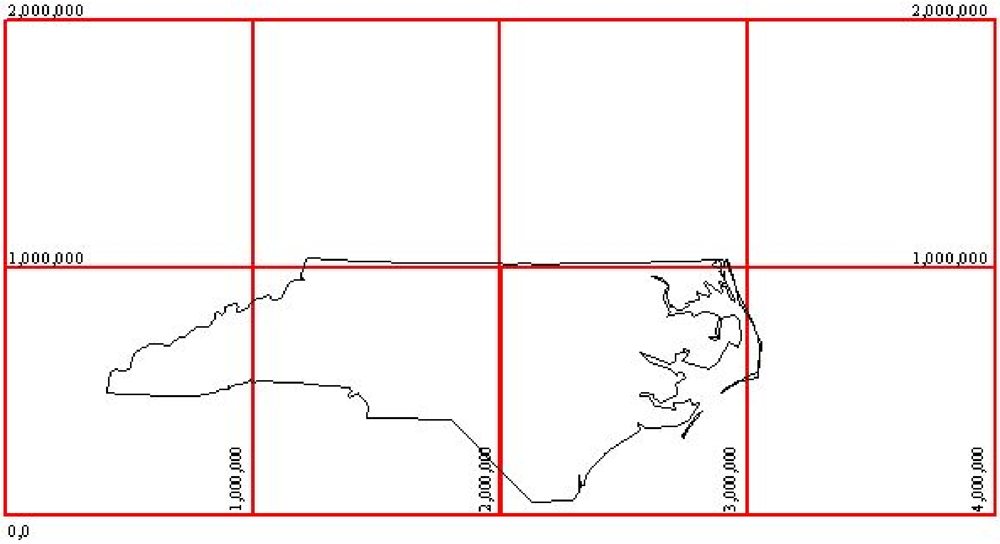

Figure 3 - North Carolina's State Plane Coordinate System

6.3 Floodplain and Floodway Delineation

Floodplain Boundaries

For streams restudied by detailed and limited detailed methods, the 1% and 0.2% annual chance floodplains were delineated using flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic data acquired using airborne Light Detection and Ranging (LIDAR). This LIDAR data was acquired during the (insert date from basin plan and update for map maintenance, if necessary) flying season.

The topographic data satisfies a vertical root-mean-square error (RMSE) accuracy standard of 20 cm (1.3 feet accuracy at the 95% confidence limit) for the Outer Banks and 25 cm (1.6 feet accuracy at the 95% confidence limit) for those portions of the basin lying west of the Outer Banks. These data could be contoured at roughly a 2-foot vertical contour interval. All elevations were referenced to the NAVD 88 and reflect orthometric heights. Variably spaced, bare-earth digital topographic data in ASCII point file format were combined with imagery (either flown concurrently with the LIDAR data or using existing digital orthophotos) to establish a Triangulated Irregular Network (TIN) of digital elevation points, which include selected breaklines to be used for hydraulic modeling. Furthermore, a uniformly spaced sampling of the TIN resulted in uniformly spaced Digital Elevation Models (DEMs), with 20 ft x 20 ft post spacing, which was generated in multiple file formats.

For coastal floodplains, after analyzing wave heights along each transect, wave elevations were interpolated between transects. Various source data were used in the interpolation, including topographic data described above. Controlling features affecting the elevations were identified and considered in relation to their positions at particular transect and their variation between transects. •

The 1% annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones VE, AO, AH, A99, AR, A, and AE), and the 0.2% annual chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundaries have been shown.

Floodway Delineation

The floodways presented in this FIS were 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. The results of the floodway computations are tabulated for selected cross sections (Table 22, "Floodway Data"). The computed floodway is shown on the FIRM. In cases where the floodway and 1% annual chance floodplain boundaries are either close together or collinear, only the floodway boundary is shown. In areas where the top of the bridge or road is higher than the 1.0-percent annual chance (100-year) flood, the FIRM will show the flood discharge as contained within the structure for emergency management purposes. It is important to note that FEMA and community floodway regulations still apply in and around those areas.

Table 22 - Floodway Data

Floodway Source		Floodway			Water Surface Elevation			
Cross Section	Distance (Feet Above Mouth)	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet Per Second)	Regulatory	Without Floodway	With Floodway	Increase
Deep Gully								
036	3,630	70	278	3.4	9.8	9.8	10.1	0.3
042	4,204	70	340	2.8	11.3	11.3	11.4	0.2
045	4,511	75	418	2.0	11.7	11.7	12.0	0.3
052	5,224	75	289	2.9	12.3	12.3	12.8	0.5
058	5,757	70	260	3.2	13.1	13.1	14.1	1.0
065	6,455	45	201	4.1	15.6	15.6	16.3	0.7
066	6,614	33	189	4.4	16.1	16.1	16.8	0.8
068	6,843	37	271	3.1	17.1	17.1	17.7	0.6
070	6,954	47	215	3.9	17.4	17.4	17.9	0.4
071	7,103	64	349	2.4	17.7	17.7	18.3	0.6
East Prong Slocum Creek								
049	4,893	410	1,726	4.6	8.1	8.1	4.2	-3.9
058	5,812	510	2,276	4.2	8.1	8.1	5.0	-3.1
068	6,783	500	2,225	4.0	8.1	8.1	5.7	-2.4
080	7,998	119	679	5.5	8.2	8.2	6.8	-1.4
087	8,691	175	1,641	3.1	11.2	11.2	11.0	-0.2
093	9,272	210	2,133	2.2	11.6	11.6	11.5	-0.1
100	9,998	290	3,419	1.7	13.8	13.8	14.1	0.3
108	10,765	210	2,367	2.2	13.8	13.8	14.2	0.3
113	11,313	270	2,924	1.9	13.8	13.8	14.2	0.4
120	12,003	270	2,813	2.0	13.9	13.9	14.3	0.4
125	12,532	230	2,265	1.5	13.9	13.9	14.4	0.5
131	13,070	230	2,174	1.7	13.9	13.9	14.4	0.5
136	13,638	190	1,782	2.0	13.9	13.9	14.5	0.6
141	14,121	220	1,981	1.8	13.9	13.9	14.5	0.6
146	14,560	200	1,684	1.9	13.9	13.9	14.6	0.6
147	14,683	240	2,111	1.6	14.0	14.0	14.6	0.6
151	15,145	290	2,315	1.6	14.0	14.0	14.6	0.6
157	15,695	340	2,538	1.4	14.0	14.0	14.7	0.7
166	16,643	270	1,802	1.9	14.1	14.1	14.8	0.7
173	17,279	52	387	3.5	14.2	14.2	14.9	0.8
East Prong Slocum Creek Tributary								
001	104	50	229	7.8	8.1[1]	2.5	3.2	0.7
002	186	50	232	7.7	8.1[1]	3.3	3.8	0.5
004	407	50	592	3.2	11.4	11.4	12.0	0.6
006	633	45	458	5.2	11.4	11.4	12.1	0.7
008	760	45	401	5.6	11.4	11.4	12.2	0.8
009	931	55	659	3.9	16.9	16.9	17.6	0.8
011	1,139	80	719	3.6	16.9	16.9	17.7	0.8
015	1,511	155	801	3.8	17.2	17.2	17.9	0.8
019	1,869	265	895	2.9	17.3	17.3	18.1	0.8
022	2,163	420	1,989	1.6	19.5	19.5	20.3	0.8
024	2,394	355	1,747	2.0	19.5	19.5	20.4	0.8
027	2,652	340	1,615	2.1	19.6	19.6	20.4	0.8

Table 22 - Floodway Data

Floodway Source		Floodway			Water Surface Elevation			
Cross Section	Distance (Feet Above Mouth)	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet Per Second)	Regulatory	Without Floodway	With Floodway	Increase
027	2,737	320	1,303	2.9	19.6	19.6	20.4	0.8
030	3,014	150	1,032	2.1	19.6	19.6	20.5	0.8
034	3,405	195	988	2.5	19.7	19.7	20.6	0.8
067	3,665	240	790	3.5	19.8	19.8	20.7	0.9
040	4,039	215	1,074	2.2	19.9	19.9	20.8	0.9
043	4,347	125	863	1.9	20.0	20.0	20.9	0.9
044	4,440	81	363	4.9	20.2	20.2	20.9	0.7
048	4,790	60	316	5.3	20.7	20.7	21.3	0.7
053	5,348	50	322	4.8	21.8	21.8	22.2	0.5
Jimmies Creek								
014	1,436	82	512	2.0	9.5	9.5	10.0	0.4
017	1,673	94	549	1.9	9.9	9.9	10.5	0.6
019	1,873	85	474	2.2	10.4	10.4	11.0	0.7
021	2,103	109	625	1.7	11.0	11.0	11.7	0.8
024	2,392	77	409	0.8	11.4	11.4	12.2	0.8
026	2,591	40	147	2.1	11.4	11.4	12.2	0.8
027	2,716	25	72	4.2	11.6	11.6	12.3	0.7
028	2,809	25	86	3.5	12.7	12.7	13.2	0.5
030	3,012	31	126	2.4	13.4	13.4	14.2	0.8
031	3,124	25	113	2.7	14.1	14.1	14.9	0.9
033	3,273	25	93	3.3	14.8	14.8	15.6	0.8
035	3,471	25	97	3.1	15.6	15.6	16.4	0.8
036	3,563	32	115	2.6	15.8	15.8	16.6	0.8
037	3,663	35	105	2.9	16.1	16.1	17.0	1.0
039	3,936	58	234	1.3	17.4	17.4	18.3	0.9
Little Swift Creek								
133	13,262	650	3,677	1.4	10.0[1]	4.5	5.5	1.0
147	14,652	1,100	6,541	0.8	10.0[1]	5.2	6.2	1.0
176	17,599	1,260	8,167	0.6	10.0[1]	5.9	6.9	1.0
199	19,869	580	4,276	1.2	10.0[1]	6.6	7.6	1.0
212	21,248	250	2,296	2.2	10.0[1]	8.5	9.0	0.5
Maple Cypress								
033	3,313	320	1,425	3.2	20.1[2]	9.3	10.3	1.0
040	4,000	180	627	6.6	20.2[2]	10.3	11.2	0.9
045	4,500	129	595	6.1	20.2[2]	12.2	12.7	0.5
050	4,954	117	616	7.3	20.2[2]	13.2	13.9	0.7
050	4,993	117	489	4.5	20.2[2]	13.2	14.1	0.9
051	5,113	120	647	5.4	20.2[2]	13.6	14.3	0.7
053	5,264	136	839	4.4	20.2[2]	13.8	14.6	0.8
055	5,500	134	782	4.7	20.3[1]	14.0	14.9	0.9
060	6,010	142	822	4.6	20.3[1]	14.6	15.5	0.9
062	6,207	163	989	3.4	20.3[1]	14.7	15.7	1.0
065	6,515	133	806	3.7	20.3[1]	14.9	15.9	1.0
068	6,772	93	579	4.4	20.3[1]	15.1	16.1	0.9
071	7,075	120	642	4.5	20.3[1]	15.5	16.4	0.9

Table 22 - Floodway Data

Floodway Source		Floodway			Water Surface Elevation			
Cross Section	Distance (Feet Above Mouth)	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet Per Second)	Regulatory	Without Floodway	With Floodway	Increase
073	7,262	230	978	3.8	20.3[1]	15.7	16.7	1.0
073	7,338	230	1,192	2.3	20.3[1]	17.3	17.8	0.6
075	7,500	191	1,185	2.2	20.3[1]	17.3	17.9	0.6
079	7,937	101	543	4.9	20.3[1]	17.4	18.0	0.6
083	8,325	142	826	3.1	20.3[1]	17.9	18.6	0.7
085	8,511	139	700	1.9	20.3[1]	18.0	18.8	0.8
086	8,559	139	621	2.2	20.3[1]	18.0	18.8	0.8
088	8,764	75	332	3.6	20.3[1]	18.1	18.9	0.8
090	9,000	70	310	4.0	20.3[1]	18.5	19.3	0.8
096	9,627	58	255	4.6	20.3[1]	20.0	20.5	0.5
100	10,000	73	282	3.6	20.6	20.6	21.2	0.6
104	10,427	125	335	3.6	21.2	21.2	21.8	0.6
109	10,888	220	498	2.5	21.4	21.4	22.4	0.9
115	11,500	260	727	1.7	21.7	21.7	22.7	1.0
120	12,020	132	355	2.7	22.0	22.0	22.9	0.8
123	12,321	90	305	3.2	22.6	22.6	23.2	0.6
124	12,374	90	268	3.4	23.7	23.7	23.9	0.2
127	12,692	69	266	3.4	24.2	24.2	24.3	0.2
130	13,000	39	189	3.0	24.4	24.4	24.7	0.3
134	13,406	70	303	3.0	24.5	24.5	25.0	0.5
138	13,770	125	497	1.9	24.6	24.6	25.3	0.7
138	13,828	175	547	1.8	24.6	24.6	25.3	0.7
142	14,170	264	459	3.0	24.6	24.6	25.4	0.8
144	14,435	330	772	2.0	24.7	24.7	25.7	1.0
152	15,157	185	493	2.1	25.0	25.0	26.0	1.0
156	15,560	180	561	1.3	25.2	25.2	26.2	1.0
159	15,902	252	563	1.5	25.3	25.3	26.2	0.9
160	15,976	456	686	1.5	25.3	25.3	26.3	1.0
163	16,344	411	801	1.3	25.5	25.5	26.4	0.9
167	16,711	214	552	1.8	25.6	25.6	26.4	0.8
170	17,020	114	283	2.8	25.8	25.8	26.5	0.7
173	17,285	114	272	3.0	26.1	26.1	26.8	0.7
174	17,370	114	273	2.9	27.0	27.0	27.4	0.4
176	17,625	104	277	2.5	27.1	27.1	27.7	0.5
180	18,000	164	588	1.3	27.2	27.2	27.8	0.6
185	18,500	316	921	1.0	27.2	27.2	27.9	0.7
189	18,868	265	610	1.5	27.2	27.2	27.9	0.7
192	19,171	264	512	1.8	27.2	27.2	28.0	0.8
200	19,982	225	433	2.0	27.4	27.4	28.3	0.9
202	20,158	170	464	1.7	27.5	27.5	28.4	0.8
207	20,675	280	723	1.5	27.7	27.7	28.5	0.8
212	21,250	270	692	1.5	27.7	27.7	28.7	1.0
Mauls Swamp								
001	100	282	2,260	1.4	13.6	13.6	14.6	1.0
006	620	426	4,969	0.6	13.7	13.7	14.7	1.0

Table 22 - Floodway Data

Floodway Source		Floodway			Water Surface Elevation			
Cross Section	Distance (Feet Above Mouth)	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet Per Second)	Regulatory	Without Floodway	With Floodway	Increase
037	3,670	701	5,026	0.6	14.4	14.4	15.4	1.0
066	6,629	589	4,029	0.7	15.2	15.2	16.1	0.9
Mills Branch								
055	5,543	84	638	2.4	9.9	9.9	10.2	0.3
085	8,500	310	1,957	0.8	10.6	10.6	11.3	0.7
103	10,343	395	2,043	0.7	10.8	10.8	11.5	0.7
128	12,773	318	1,230	1.2	11.6	11.6	12.5	0.9
140	13,950	341	1,522	0.9	12.5	12.5	13.3	0.8
167	16,680	290	1,112	1.1	15.1	15.1	16.0	0.9
193	19,270	340	1,330	0.7	16.2	16.2	17.2	1.0
Mills Branch Tributary								
025	2,470	105	915	1.1	11.1	11.1	11.9	0.8
029	2,858	105	721	1.7	11.2	11.2	12.0	0.8
031	3,124	105	771	1.4	11.2	11.2	12.0	0.8
037	3,664	215	1,176	1.5	11.2	11.2	12.1	0.9
042	4,230	136	629	2.2	11.3	11.3	12.2	0.9
044	4,389	85	451	2.6	11.4	11.4	12.3	0.9
045	4,512	70	401	2.4	11.5	11.5	12.4	0.9
046	4,576	70	363	2.5	11.6	11.6	12.4	0.9
046	4,639	75	420	2.9	11.6	11.6	12.5	0.9
Morris Branch								
055	5,503	50	304	3.2	9.0	9.0	8.8	-0.2
060	5,979	72	412	2.4	10.0	10.0	10.4	0.4
062	6,211	89	568	1.7	10.2	10.2	10.8	0.6
063	6,308	98	549	1.8	10.2	10.2	10.9	0.7
065	6,549	74	466	2.1	10.3	10.3	11.0	0.7
067	6,721	130	824	1.2	10.6	10.6	11.3	0.7
071	7,102	95	775	1.3	13.4	13.4	14.1	0.6
074	7,405	75	537	1.4	13.5	13.5	14.2	0.8
077	7,690	90	604	1.2	13.5	13.5	14.3	0.8
078	7,846	90	568	1.3	13.6	13.6	14.4	0.8
084	8,404	75	487	1.5	15.5	15.5	16.3	0.8
088	8,824	72	458	1.6	15.6	15.6	16.5	0.9
093	9,253	50	250	3.0	15.8	15.8	16.8	1.0
Moseley Creek (into Neuse River)								
020	1,957	265	3,276	1.3	24.8[1]	19.4	20.4	1.0
060	6,017	465	4,375	1.0	24.8[1]	20.0	21.0	1.0
078	7,784	395	3,661	1.1	24.8[1]	20.6	21.5	0.9
100	9,994	365	1,927	2.1	24.8[1]	22.2	23.0	0.8
114	11,373	120	1,015	4.0	24.8[1]	23.1	23.8	0.7
129	12,944	510	3,557	1.1	24.8[1]	24.0	24.9	0.9
149	14,865	570	4,746	0.8	24.8[1]	24.3	25.2	0.9
167	16,689	470	3,298	1.2	24.8[1]	24.5	25.5	1.0
192	19,223	490	2,838	1.4	25.2	25.2	26.2	1.0
223	22,252	380	2,222	1.8	26.2	26.2	27.1	0.9

Table 22 - Floodway Data

Floodway Source		Floodway			Water Surface Elevation			
Cross Section	Distance (Feet Above Mouth)	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet Per Second)	Regulatory	Without Floodway	With Floodway	Increase
263	26,341	460	1,626	2.2	27.6	27.6	28.6	1.0
283	28,330	425	1,817	1.9	29.4	29.4	30.3	0.9
307	30,675	105	1,262	2.8	31.8	31.8	32.3	0.5
326	32,595	450	2,324	1.4	32.6	32.6	33.5	0.9
345	34,499	525	2,364	1.4	33.2	33.2	34.1	0.9
370	36,974	450	2,151	1.5	33.7	33.7	34.6	0.9
396	39,621	425	1,798	1.8	34.9	34.9	35.7	0.8
427	42,727	590	2,246	1.4	35.7	35.7	36.7	1.0
458	45,782	660	2,258	1.3	37.2	37.2	38.2	1.0
483	48,308	725	2,162	1.3	38.1	38.1	39.0	0.9
539	53,924	449	460	3.7	40.8	40.8	41.5	0.7
553	55,281	420	830	2.0	44.9	44.9	45.7	0.8
578	57,768	290	1,036	1.6	45.8	45.8	46.8	1.0
Mosley Creek Tributary								
018	1,812	105	488	2.3	25.4[1]	25.1	26.0	0.9
027	2,684	55	382	3.0	26.3	26.3	27.2	0.9
039	3,863	60	432	2.6	28.2	28.2	29.0	0.8
Neuse River								
604	60,351	2,762	33,598	1.5	10.5	10.5	11.0	0.5
642	64,163	2,825	33,246	1.5	11.1	11.1	11.8	0.7
665	66,528	3,360	41,279	1.2	11.6	11.6	12.3	0.8
697	69,723	3,899	51,865	1.0	12.0	12.0	12.9	0.8
748	74,823	3,694	52,367	1.0	12.6	12.6	13.5	0.9
780	78,000	4,148	57,304	0.9	12.9	12.9	13.8	0.9
826	82,584	3,631	53,262	0.9	13.4	13.4	14.3	0.9
868	86,846	2,950	46,308	1.1	13.9	13.9	14.8	1.0
912	91,200	4,026	61,134	0.8	14.4	14.4	15.4	1.0
948	94,762	3,800	58,065	0.9	14.8	14.8	15.8	1.0
989	98,897	3,625	54,639	0.9	15.3	15.3	16.2	0.9
1038	103,752	3,640	55,608	0.9	16.0	16.0	17.0	1.0
1083	108,266	4,320	67,127	0.7	16.5	16.5	17.4	1.0
1128	112,762	3,425	54,810	0.9	16.9	16.9	17.8	1.0
1182	118,200	3,107	45,864	1.1	17.5	17.5	18.5	1.0
1229	122,874	3,373	57,858	0.9	18.1	18.1	19.1	1.0
1260	125,991	3,871	59,096	0.8	18.4	18.4	19.4	1.0
1311	131,090	3,680	52,411	0.9	19.0	19.0	20.0	1.0
1349	134,862	2,980	44,255	1.1	19.5	19.5	20.5	1.0
1388	138,787	3,525	62,275	0.8	20.3	20.3	21.3	1.0
1419	141,866	3,450	60,782	0.8	20.7	20.7	21.7	1.0
1433	143,279	3,335	58,530	0.8	20.9	20.9	21.9	1.0
1445	144,535	3,283	55,496	0.9	21.1	21.1	22.1	1.0
1461	146,079	3,225	54,216	0.9	21.3	21.3	22.3	1.0
1475	147,517	3,261	54,288	0.9	21.6	21.6	22.5	0.9
1494	149,376	3,175	54,508	0.9	21.8	21.8	22.8	1.0
1510	151,037	3,227	50,334	1.0	22.1	22.1	23.1	1.0

Table 22 - Floodway Data

Floodway Source		Floodway			Water Surface Elevation			
Cross Section	Distance (Feet Above Mouth)	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet Per Second)	Regulatory	Without Floodway	With Floodway	Increase
1530	152,990	2,821	47,966	1.0	22.4	22.4	23.4	1.0
1546	154,640	2,605	42,303	1.2	22.7	22.7	23.7	1.0
1564	156,388	2,804	45,979	1.1	23.0	23.0	24.0	1.0
1581	158,070	2,750	49,144	1.0	23.3	23.3	24.3	1.0
1598	159,831	3,760	67,696	0.7	23.5	23.5	24.5	1.0
1614	161,425	3,811	63,726	0.8	23.7	23.7	24.7	1.0
1626	162,580	3,890	65,823	0.7	23.9	23.9	24.9	1.0
1642	164,224	4,052	67,741	0.7	24.1	24.1	25.1	1.0
1658	165,767	4,104	69,932	0.7	24.3	24.3	25.3	1.0
1673	167,281	4,400	81,486	0.6	24.4	24.4	25.4	1.0
Reedy Branch								
084	8,427	83	354	3.3	9.3	9.3	8.6	-0.7
086	8,560	90	425	2.8	9.6	9.6	9.0	-0.5
087	8,664	100	504	2.3	9.6	9.6	9.2	-0.4
088	8,781	112	506	2.3	9.6	9.6	9.4	-0.2
089	8,948	112	549	2.1	9.7	9.7	9.7	-0.1
091	9,094	109	458	2.6	9.8	9.8	9.9	0.1
092	9,221	112	417	2.8	9.9	9.9	10.1	0.2
094	9,397	115	527	2.2	10.1	10.1	10.5	0.4
096	9,552	125	549	2.1	10.2	10.2	10.8	0.5
097	9,674	133	685	1.7	10.3	10.3	10.9	0.6
098	9,817	140	712	1.6	10.4	10.4	11.0	0.6
100	10,019	128	679	1.7	10.4	10.4	11.1	0.7
104	10,361	125	662	1.4	10.6	10.6	11.4	0.7
108	10,813	125	577	1.6	10.9	10.9	11.6	0.8
114	11,392	130	539	1.7	11.4	11.4	12.2	0.9
120	12,036	130	533	1.7	12.2	12.2	13.2	0.9
Samuels Creek/Rocky Run								
125	12,500	56	362	3.1	10.2	10.2	9.4	-0.8
128	12,818	75	461	2.4	10.3	10.3	9.9	-0.4
131	13,071	61	378	2.9	10.4	10.4	10.2	-0.2
132	13,229	70	404	2.7	10.5	10.5	10.5	0.1
137	13,728	101	718	1.5	12.4	12.4	13.3	0.9
141	14,125	137	970	1.1	12.7	12.7	13.6	0.9
146	14,617	94	595	0.8	12.9	12.9	13.8	0.9
148	14,781	84	457	1.0	12.9	12.9	13.8	0.9
150	15,048	52	263	1.8	13.1	13.1	14.0	0.8
157	15,659	87	615	0.8	16.9	16.9	17.8	0.9
159	15,910	83	551	0.9	16.9	16.9	17.8	0.9
162	16,205	70	444	1.1	17.0	17.0	17.9	0.9
165	16,500	80	418	1.1	17.1	17.1	18.1	1.0
167	16,716	99	511	0.9	17.3	17.3	18.3	1.0
170	17,000	53	227	1.9	17.6	17.6	18.5	0.9
174	17,412	74	334	1.3	18.6	18.6	19.5	0.8
175	17,548	56	259	1.7	18.9	18.9	19.7	0.8

Table 22 - Floodway Data

Floodway Source		Floodway			Water Surface Elevation			
Cross Section	Distance (Feet Above Mouth)	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet Per Second)	Regulatory	Without Floodway	With Floodway	Increase
178	17,812	61	245	1.8	19.4	19.4	20.3	0.9
180	18,000	53	228	1.9	19.9	19.9	20.8	0.9
183	18,257	33	148	3.0	20.7	20.7	21.6	0.9
186	18,565	36	186	2.4	21.8	21.8	22.8	1.0
187	18,679	33	168	2.6	22.2	22.2	23.1	0.9
188	18,798	26	111	3.9	22.5	22.5	23.4	0.9
189	18,905	33	154	2.8	23.2	23.2	24.0	0.8
192	19,154	22	104	4.2	24.8	24.8	25.6	0.8
Scotts Creek								
097	9,727	13	22	3.8	9.4	9.4	9.0	-0.4
103	10,293	8	17	5.0	10.9	10.9	10.9	-0.1
113	11,285	25	31	2.7	15.3	15.3	15.3	0.0
121	12,063	29	71	1.2	18.0	18.0	18.5	0.5
Snake Branch								
032	3,175	52	244	1.8	12.2	12.2	12.8	0.6
Swift Creek								
237	23,677	2,500	21,240	0.6	10.2[2]	7.3	8.3	1.0
265	26,539	1,671	16,411	0.7	10.5[2]	7.6	8.6	1.0
305	30,546	1,925	19,207	0.6	10.9[1]	8.4	9.2	0.9
329	32,932	1,925	19,813	0.6	10.9[1]	8.5	9.4	0.9
368	36,780	2,150	20,996	0.6	10.9[1]	8.7	9.7	1.0
392	39,188	1,900	17,401	0.7	10.9[1]	8.9	9.9	1.0
423	42,316	2,665	23,947	0.5	10.9[1]	9.1	10.1	1.0
449	44,920	2,460	22,981	0.5	10.9[1]	9.3	10.3	1.0
489	48,866	2,530	26,055	0.4	10.9[1]	9.6	10.6	1.0
518	51,832	1,150	9,859	1.2	10.9[1]	10.0	10.9	1.0
544	54,410	825	9,902	1.2	10.9[1]	10.5	11.5	1.0
579	57,858	488	5,328	2.2	11.1	11.1	12.1	1.0
596	59,555	488	6,739	1.7	11.9	11.9	12.8	0.9
684	68,377	1,050	14,461	0.8	13.6	13.6	14.6	1.0
713	71,305	1,850	20,197	0.5	13.9	13.9	14.9	1.0
Trent River Tributary								
045	4,478	91	365	1.6	9.0	9.0	9.3	0.3
050	5,038	120	238	2.2	9.7	9.7	10.5	0.8
055	5,519	111	475	0.7	10.2	10.2	11.0	0.8
059	5,929	128	458	0.7	10.3	10.3	11.2	0.9
064	6,411	136	415	0.8	10.6	10.6	11.6	0.9
068	6,839	90	333	1.0	11.0	11.0	11.9	0.9
074	7,441	140	702	0.5	13.4	13.4	14.0	0.6
076	7,620	143	577	0.6	13.4	13.4	14.0	0.6
Tucker Creek								
163	16,328	112	694	1.9	9.7	9.7	10.3	0.6
170	17,025	100	357	3.1	12.0	12.0	12.5	0.5
172	17,200	276	1,275	0.9	13.8	13.8	14.5	0.7
198	19,800	100	486	2.1	19.8	19.8	20.6	0.8

Table 22 - Floodway Data

Floodway Source		Floodway			Water Surface Elevation			
Cross Section	Distance (Feet Above Mouth)	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet Per Second)	Regulatory	Without Floodway	With Floodway	Increase
Village Creek								
001	60	174	1,042	0.9	20.0[1]	18.5	18.8	0.3
057	5,700	74	182	4.3	27.1	27.1	27.9	0.8
084	8,400	29	193	3.4	37.8	37.8	38.7	0.9
109	10,900	84	236	2.3	44.0	44.0	44.8	0.8
Wilson Creek								
089	8,910	140	780	2.0	9.0	9.0	7.9	-1.1
092	9,168	123	705	2.2	9.1	9.1	8.2	-0.9
094	9,401	80	360	4.3	9.1	9.1	8.3	-0.8
096	9,597	93	476	3.2	9.2	9.2	9.2	0.0
099	9,850	65	284	5.4	9.7	9.7	9.8	0.1
111	11,124	80	1,012	1.2	17.9	17.9	17.9	0.0
116	11,605	80	944	1.3	17.9	17.9	18.0	0.1
121	12,141	80	797	1.6	18.0	18.0	18.2	0.2
126	12,574	90	943	1.3	18.0	18.0	18.3	0.3
131	13,135	120	1,519	0.8	20.2	20.2	21.1	0.9
135	13,507	120	1,484	0.8	20.2	20.2	21.1	0.9
140	13,968	120	1,390	0.9	20.3	20.3	21.2	0.9

[1]Elevation includes backwater effects

[2]Elevation includes flooding controlled by Neuse River

6.4 Coastal Flood Hazard Mapping

Flood insurance zones and BFEs including the wave effects were identified on each transect based on the results from the onshore wave hazard analyses. Between transects, elevations were interpolated using topographic maps, land-use and land-cover data, and knowledge of coastal flood processes to determine the aerial extent of flooding. Sources for topographic data are shown in Table 23.

Zone VE is subdivided into elevation zones and BFEs are provided on the FIRM.

The limit of Zone VE shown on the FIRM is defined as the farthest inland extent of any of these criteria (determined for the 1% annual chance flood condition):

- *The primary frontal dune* zone is defined in 44 CFR Section 59.1 of the NFIP regulations. The primary frontal dune represents a continuous or nearly continuous mound or ridge of sand with relatively steep seaward and landward slopes that occur immediately landward and adjacent to the beach. The primary frontal dune zone is subject to erosion and overtopping from high tides and waves during major coastal storms. The inland limit of the primary frontal dune zone occurs at the point where there is a distinct change from a relatively steep slope to a relatively mild slope.

- *The wave runup zone* occurs where the (eroded) ground profile is 3.0 feet or more below the 2-percent wave runup elevation.

- *The wave overtopping splash zone* is the area landward of the crest of an overtopped barrier, in cases where the potential 2-percent wave runup exceeds the barrier crest elevation by 3.0 feet or more.

- *The breaking wave height zone* occurs where 3-foot or greater wave heights could occur (this is the area where the wave crest profile is 2.1 feet or more above the total stillwater elevation).

- *The high-velocity flow zone* is landward of the overtopping splash zone (or area on a sloping beach or other shore type), where the product of depth of flow times the flow velocity squared (hv2) is greater than or equal to 200 ft3/sec2. This zone may only be used on the Pacific Coast.

The SFHA boundary indicates the limit of SFHAs shown on the FIRM as either "V" zones or "A" zones.

Table 23: Summary of Coastal Transect Mapping Considerations

Source	Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
			Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
Adams Creek	1	*	*	AE 0-5 VE 3-5	WHAFIS	SWEL
	2	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	3	*	*	AE 4 VE 2-5	WHAFIS	SWEL
Atlantic Ocean	118	X	*	AE 4 VE 8	PFD	PFD
Neuse River	4	*	*	AE 4 VE 4-5	WHAFIS	SWEL
	5	*	*	AE 2 VE 4-6	WHAFIS	SWEL
	6	*	*	AE 3 VE 4-6	WHAFIS	SWEL
	7	*	*	AE 3 VE 3-6	WHAFIS	SWEL
	8	*	*	AE 3 VE 4-6	WHAFIS	SWEL
	9	*	*	AE 0-4 VE 3-6	WHAFIS	SWEL
	10	*	*	AE 4 VE 5-6	WHAFIS	SWEL
	11	*	*	AE 4 VE 5-6	WHAFIS	SWEL
	12	*	*	AE 3 VE 3-6	WHAFIS	SWEL
	13	*	*	AE 1-4 VE 4-6	WHAFIS	SWEL
	14	*	*	VE 1-6	WHAFIS	SWEL
	15	*	*	AE 2 VE 2-6	WHAFIS	SWEL
	16	*	*	AE 4 VE 3-6	WHAFIS	SWEL

Table 23: Summary of Coastal Transect Mapping Considerations

Source	Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
			Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
	17	*	*	AE 4 VE 4-6	WHAFIS	SWEL
	18	*	*	AE 4 VE 1-6	WHAFIS	SWEL
	19	*	*	VE 6	WHAFIS	SWEL
	20	*	*	AE 3 VE 1-6	WHAFIS	SWEL
	21	*	*	AE 1 VE 0-6	WHAFIS	SWEL
	22	*	*	AE 2 VE 6	WHAFIS	SWEL
	23	*	*	AE 4 VE 3-7	WHAFIS	SWEL
	24	*	*	AE 4 VE 3-6	WHAFIS	SWEL
	25	*	*	AE 1 VE 6	WHAFIS	SWEL
	26	*	*	AE 1 VE 0-9	WHAFIS	SWEL
	27	*	*	AE 1-4 VE 4-6	WHAFIS	SWEL
	28	*	*	VE 6	WHAFIS	SWEL
	29	*	*	AE 1 VE 6	WHAFIS	SWEL
	30	*	*	AE 4 VE 6	WHAFIS	SWEL
	31	*	*	AE 4 VE 3-6	WHAFIS	SWEL
	32	*	*	AE 2 VE 2-6	WHAFIS	SWEL
	33	*	*	AE 2 VE 0-6	WHAFIS	SWEL
	34	*	*	VE 0-6	WHAFIS	SWEL
	35	*	*	VE 3-7	WHAFIS	SWEL
	36	*	*	VE 7	WHAFIS	SWEL
	37	*	*	VE 2-7	WHAFIS	SWEL
	38	*	*	AE 1 VE 0-7	WHAFIS	SWEL
	39	*	*	VE 0-7	WHAFIS	SWEL

Table 23: Summary of Coastal Transect Mapping Considerations

Source	Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
			Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
	40	*	*	AE 4 VE 3-7	WHAFIS	SWEL
	41	*	*	VE 0-7	WHAFIS	SWEL
	42	*	*	AE 3 VE 4-7	WHAFIS	SWEL
	43	*	*	VE 1-7	WHAFIS	SWEL
	44	*	*	AO 1 VE 1-7	WHAFIS	SWEL
	45	*	*	VE 2-7	WHAFIS	SWEL
	46	*	*	VE 7	WHAFIS	SWEL
	47	*	*	AE 4 VE 6	WHAFIS	SWEL
	48	*	*	VE 0-7	WHAFIS	SWEL
	49	*	*	VE 1-7	WHAFIS	SWEL
	50	*	*	AE 1 VE 3-7	WHAFIS	SWEL
	51	*	*	VE 6	WHAFIS	SWEL
	52	*	*	AE 1 VE 6	WHAFIS	SWEL
	53	*	*	AE 0 VE 6	WHAFIS	SWEL
	54	*	*	VE 0-6	WHAFIS	SWEL
	55	*	*	AE 1 VE 5	WHAFIS	SWEL
	56	*	*	AE 1 VE 6	WHAFIS	SWEL
	57	*	*	VE 6	WHAFIS	SWEL
	58	*	*	VE 0-5	WHAFIS	SWEL
	59	*	*	AE 3 VE 5	WHAFIS	SWEL
	60	*	*	AE 2 VE 5	WHAFIS	SWEL
	61	*	*	AE 4 VE 2-6	WHAFIS	SWEL
	62	*	*	AE 4 VE 0-5	WHAFIS	SWEL
	63	*	*	AE 4 VE 6	WHAFIS	SWEL

Table 23: Summary of Coastal Transect Mapping Considerations

Source	Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
			Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
	64	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	65	*	*	AE 0-3 VE 4-5	WHAFIS	SWEL
	66	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	67	*	*	AE 3 VE 3-5	WHAFIS	SWEL
	68	*	*	AE 4	WHAFIS	SWEL
	69	*	*	AE 4	WHAFIS	SWEL
	70	*	*	AE 4	WHAFIS	SWEL
	71	*	*	AE 0-4	WHAFIS	SWEL
	72	*	*	AE 4	WHAFIS	SWEL
	73	*	*	AE 4	WHAFIS	SWEL
	74	*	*	AE 4	WHAFIS	SWEL
	75	*	*	AE 4	WHAFIS	SWEL
	76	*	*	AE 4	WHAFIS	SWEL
	77	*	*	AE 4	WHAFIS	SWEL
	78	*	*	AE 4	WHAFIS	SWEL
	79	*	*	AE 4 VE 3-4	WHAFIS	SWEL
	80	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	81	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	82	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	83	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	84	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	85	*	*	AE 3 VE 4-5	WHAFIS	SWEL
	86	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	87	*	*	AE 4 VE 5	WHAFIS	SWEL
	88	*	*	AE 4 VE 3-4	WHAFIS	SWEL

Table 23: Summary of Coastal Transect Mapping Considerations

Source	Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
			Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
	89	*	*	AE 4 VE 5	WHAFIS	SWEL
	90	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	91	*	*	AE 4 VE 3-6	WHAFIS	SWEL
	92	*	*	AE 4 VE 2-5	WHAFIS	SWEL
	93	*	*	AE 4 VE 5	WHAFIS	SWEL
Upper Broad Creek	94	*	*	AE 4 VE 5	WHAFIS	SWEL
	95	*	*	AE 4 VE 3-6	WHAFIS	SWEL

A LiMWA boundary has also been added in coastal areas subject to wave action for use by local communities in safe rebuilding practices. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. In areas where the Zone VE designation is based on the presence of a primary frontal dune the LiMWA was not delineated.

7.0 Revising the FIS

7.1 Letters of Map Amendment and Letters of Map Revision - Based on Fill

LOMAs and LOMR-Fs are documents issued by FEMA that officially remove a property and/or a structure from a Special Flood Hazard Area (SFHA), if data supporting the removal are submitted. LOMAs and LOMR-Fs are generally determinations regarding areas that are too small to be shown on a FIRM panel; consequently, the changes they describe become official without revising the FIRM or the FIS Report.

NFIP regulations require that the lowest adjacent grade (the lowest ground touching the structure) be at or above the 1% annual chance flood elevation for a LOMA to be issued. Currently, there is no fee for FEMA's review of a LOMA request, but the requester of a LOMA is responsible for providing all the information needed for the review, which may include structure and/or property elevations certified by a licensed land surveyor or professional engineer. Therefore, LOMA requesters may need to retain the services of a land surveyor or engineer.

A LOMA cannot be used for property on which fill has been placed. For those situations, a LOMR-F must be used. As a participant in the NFIP, a local government must adopt ordinances that meet the minimum Federal floodplain management standards, which are outlined in Section 60.3 of the NFIP regulations. For a number of reasons, these ordinances generally vary from community to community. Nonetheless, because the placement of fill within the floodplain can affect flood hazards in the surrounding area, additional information is needed before FEMA can process a LOMR-F request. Among the data required for a LOMR-F is the community acknowledgment form. This form is FEMA's assurance that all appropriate Federal, State, and local floodplain management requirements have been met. Furthermore, NFIP regulations require that the lowest adjacent grade (the lowest ground touching the structure) be at or above the 1% annual chance flood elevation for a LOMR-F to be issued removing the structure from the floodplain. Because LOMR-F requests are the result of changed physical conditions rather than limitations of scale or topographic definition, FEMA charges a fee for the review of a LOMR-F request. As with the LOMA, the requester of a LOMR-F is responsible for providing all supporting information, including structure and/or property elevation data.

In cases where property owners plan to add fill in the SFHA, NFIP regulations require plans and technical information to be submitted for review by FEMA before construction takes place. FEMA will issue a conditional LOMR-F stating how flood hazards would change and what portions of the property, if any, would remain in the SFHA if the project were built according to the submitted plans.

The issuance of a LOMA or LOMR-F ends the property owner's obligation to purchase flood insurance as a condition of Federal or federally backed financing. However, the property owner's mortgage company maintains the prerogative to require flood insurance as a condition of providing financing. Before attempting to obtain a LOMA or LOMR-F, property owners are advised to consult their mortgage companies regarding this policy. Even if the mortgage company indicates that it will require flood insurance if a LOMA or LOMR-F is issued, it may be advantageous for property owners to request a LOMA or LOMR-F because flood insurance premiums are lower for properties removed from the SFHA than for properties that remain within the SFHA.

For additional information regarding LOMAs, LOMR-Fs, conditional LOMR-Fs, or current application fees, please call the FEMA Map Information eXchange (FMIX) toll-free information line at 1-877-FEMA MAP (1-877-336-2627).

7.2 Letters of Map Revision

A Letter of Map Revision (LOMR) is a document issued by FEMA and the NCFMP that revises an FIS Report and/or FIRM. A LOMR is used to change flood risk zones, floodplain and/or floodway delineations, flood elevations, or planimetric features such as road systems or corporate limits. A LOMR provides FEMA and the NCFMP with a cost-effective means of revising the FIS information without physically changing and reprinting the map or report itself. A portion of the FIRM panel or FIS Report showing the revised information is issued with the LOMR. The LOMR is sent to all affected communities and is archived in the communities' NFIP map repository for public reference.

In cases where a proposed project (such as construction in the 1% annual chance floodplain) would result in a significant rise in 1% annual chance water-surface elevations, NFIP regulations require the community to submit plans and technical information for review by FEMA and the NCFMP before construction takes place. This assures communities participating in the NFIP that proposed projects meet minimum NFIP requirements. The result of FEMA and the NCFMP reviews is documented in a conditional LOMR.

For additional information regarding LOMRs, conditional LOMRs, or current application fees, please call the FEMA Map Assistance Center toll-free information line at 1-877-FEMA MAP (1-877-336-2627) or the NCFMP at 919-715-5711.

7.3 Physical Map Revisions

Physical Map Revisions (PMRs) are processed to incorporate information concerning conditions present in the community that are not reflected in the FIS, and involve distributing republished FISs that supersede the most current NFIP data in the community repository. PMRs may be initiated by a request from a community resident or agency, or FEMA may initiate a PMR to incorporate one or more LOMRs, to reflect significant changes in corporate limits, to correct errors, or to update flood hazards to match new information from an adjacent community's FIS. Due to the costs associated with updating and distributing FISs, map revisions will be processed as LOMRs rather than PMRs whenever possible. For more information regarding PMRs, please contact the FEMA Map Information eXchange (FMIX) toll-free information line at 1-877-FEMA MAP (1-877-336-2627), the FEMA Regional Office at the address listed on the Notice to Flood Insurance Study Users page at the front of this report, or the NCFMP at 919-715-5711.

7.4 Contracted Restudies

The NFIP provides for a periodic review and restudy of flood hazards in a given community. FEMA accomplishes this through a national mapping needs assessment process that assigns priorities and allocates funds to sponsor or subsidize new flood hazard analyses used to update FIS Reports. For map maintenance restudies within the state of North Carolina, scoping will be performed by county approximately 2.5-3.5 years after the previous effective date. Scoping will focus on streams with restudy needs within those previously effective counties rather than on full countywide restudies. A restudy refers specifically to updating or reevaluating engineering analyses that were performed for a flood mapping project that directly impact BFEs and/or flood hazard boundary extents or analysis of previously unstudied flood prone areas. Restudy project evaluation triggers and prioritization values are an essential component of the map maintenance program. For more information regarding NCFMP-contracted restudies, please contact the NCFMP at 919-715-5711 or at www.ncfloodmaps.com. For more information regarding FEMA-contracted restudies, please contact the FEMA Map Information eXchange (FMIX) toll-free information line at 1-877-FEMA MAP(1-877-336-2627) or the FEMA Regional Office at the address listed on the Notice to Flood Insurance Study Users page at the front of this report.

7.5 Map Revision History

The current FIRM is a subset of the Statewide FIRM, showing flood hazard information for the entire geographic area of Craven County. Previously, separate Flood Hazard Boundary Maps (FHBMs), Flood Boundary and Floodway Maps (FBFMs), and/or FIRMs were prepared for each identified flood prone jurisdiction within the county. Historical data relating to the NFIP maps prepared for each community prior to and including the 7/2/2004 North Carolina Statewide FIRM, which includes Craven County, are presented in Table 24, "Map Revision History."

Information pertaining to revised and unrevised flood hazards for each jurisdiction within Craven County has been compiled into this FIS. Therefore, this FIS supersedes all previously printed FIS Reports, FHBMs, FIRMs, and/or FBFMs for all of the incorporated and unincorporated jurisdictions within Craven County.

Table 24 - Map Revision History

Community	Initial Identification Date	Initial FIRM Effective Date	FIS Revision Date
CITY OF HAVELOCK	9/13/1974	5/4/1987	04/16/2013
CITY OF NEW BERN	2/22/1974	5/4/1987	04/16/2013
CRAVEN COUNTY	12/20/1974	5/4/1987	04/16/2013
TOWN OF BRIDGETON	12/20/1974	5/4/1987	04/16/2013
TOWN OF COVE CITY	7/2/2004	7/2/2004	04/16/2013
TOWN OF DOVER	7/2/2004	7/2/2004	04/16/2013
TOWN OF RIVER BEND	5/14/1982	8/19/1986	04/16/2013
TOWN OF TRENT WOODS	5/4/1987	9/8/1999	04/16/2013
TOWN OF VANCEBORO	12/20/1974	5/4/1987	04/16/2013

8.0 Study Contracting and Community Coordination

8.1 Authority and Acknowledgments

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

This FIS revises and updates the previous countywide FIS for the geographic area of Craven County and Incorporated Areas. Table 25, "Authority and Acknowledgments," includes information for the previous countywide FIS and for this revision. This table also includes information for the single-jurisdiction FISs published for each community included in this countywide FIS (if available) as compiled from their previously printed FIS Reports

Table 25 — Authority and Acknowledgments

Community	FIS Dated	Study Contracted By	Data Source	Contract or IAA Number	Work Completed In
CITY OF HAVELOCK	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014
CITY OF HAVELOCK	7/2/2004	NCFMP	NCFMP	19-000017	8/8/8888
CITY OF NEW BERN	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014
CITY OF NEW BERN	7/2/2004	NCFMP	NCFMP	19-000017	8/8/8888
CRAVEN COUNTY	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014
CRAVEN COUNTY	7/2/2004	NCFMP	NCFMP	19-000017	8/8/8888
TOWN OF BRIDGETON	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014
TOWN OF BRIDGETON	7/2/2004	NCFMP	NCFMP	19-000017	8/8/8888

Table 25 — Authority and Acknowledgments

Community	FIS Dated	Study Contracted By	Data Source	Contract or IAA Number	Work Completed In
TOWN OF COVE CITY	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014
TOWN OF COVE CITY	7/2/2004	NCFMP	NCFMP	19-000017	8/8/8888
TOWN OF DOVER	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014
TOWN OF DOVER	7/2/2004	NCFMP	NCFMP	19-000017	8/8/8888
TOWN OF RIVER BEND	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014
TOWN OF RIVER BEND	7/2/2004	NCFMP	NCFMP	19-000017	8/8/8888
TOWN OF TRENT WOODS	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014
TOWN OF TRENT WOODS	7/2/2004	NCFMP	NCFMP	19-000017	8/8/8888
TOWN OF VANCEBORO	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014
TOWN OF VANCEBORO	7/2/2004	NCFMP	NCFMP	19-000017	8/8/8888

This FIS Report was produced through a unique cooperative partnership between the State of North Carolina and FEMA. The State of North Carolina, through FEMA's Cooperating Technical Partner (CTP) Initiative, has become the first Cooperating Technical State (CTS) and will assume primary ownership of the NFIP FIRM panels for all North Carolina communities. This role has traditionally been fulfilled by FEMA. The North Carolina Floodplain Mapping Program is conducting flood hazard analyses and producing updated, digital FIRM panels. The hydrologic and hydraulic analyses and the FIRM panels for the initial statewide mapping for Craven County were produced by NCFMP under contract with the State of North Carolina and issued on effective 6/30/2016. For this revision, the hydrologic and hydraulic analyses and the FIRM panels were produced by NCFMP, under contract with the State of North Carolina.

8.2 Consultation Coordination Officer's Meetings/Scoping Meetings

In general, for each FIS an initial Consultation Coordination Officer's (CCO) meeting is held with representatives from FEMA, the communities, and the study contractors to explain the nature and purpose of the FIS and to identify the streams to be studied by detailed methods. A final CCO meeting is held with representatives from FEMA, the communities, and the study contractors to review the results of the study

The dates of the initial and final CCO meetings held for Craven County and Incorporated Areas were compiled from the previous countywide FIS Report and are shown in Table 26, "Consultation Coordination Officer's Meetings

Table 26 — Consultation Coordination Officer's Meetings

Community	For FIS Dated	Initial CCO Date	Attended By	Final CCO Date	Attended By
CITY OF HAVELOCK	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., Craven County, and FEMA
CITY OF HAVELOCK	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and City of Havelock
CITY OF HAVELOCK	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and City of New Bern
CITY OF HAVELOCK	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and Town of Bridgeton
CITY OF HAVELOCK	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and Town of Trent Woods
CITY OF HAVELOCK ETJ	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., Craven County, and FEMA
CITY OF HAVELOCK ETJ	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and City of Havelock
CITY OF HAVELOCK ETJ	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and City of New Bern
CITY OF HAVELOCK ETJ	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and Town of Bridgeton
CITY OF HAVELOCK ETJ	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and Town of Trent Woods

Table 26 — Consultation Coordination Officer's Meetings

Community	For FIS Dated	Initial CCO Date	Attended By	Final CCO Date	Attended By
CITY OF NEW BERN	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., Craven County, and FEMA
CITY OF NEW BERN	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and City of Havelock
CITY OF NEW BERN	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and City of New Bern
CITY OF NEW BERN	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and Town of Bridgeton
CITY OF NEW BERN	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and Town of Trent Woods
CITY OF NEW BERN ETJ	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., Craven County, and FEMA
CITY OF NEW BERN ETJ	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and City of Havelock
CITY OF NEW BERN ETJ	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and City of New Bern
CITY OF NEW BERN ETJ	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and Town of Bridgeton
CITY OF NEW BERN ETJ	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and Town of Trent Woods
CRAVEN COUNTY	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., Craven County, and FEMA
CRAVEN COUNTY	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and City of Havelock
CRAVEN COUNTY	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and City of New Bern
CRAVEN COUNTY	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and Town of Bridgeton
CRAVEN COUNTY	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and Town of Trent Woods
CRAVEN COUNTY	2/16/1995	9/2/1993	Notified by letter	2/28/1994	NP
TOWN OF BRIDGETON	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., Craven County, and FEMA
TOWN OF BRIDGETON	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and City of Havelock
TOWN OF BRIDGETON	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and City of New Bern
TOWN OF BRIDGETON	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and Town of Bridgeton
TOWN OF BRIDGETON	5/4/1987	8/8/8888	NP	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and Town of Trent Woods
TOWN OF RIVER BEND	8/19/1986	8/8/8888	NP	3/6/1986	Representatives of Tetra Tech Inc., FEMA, and Town of River Bend
TOWN OF TRENT WOODS	5/4/1987	9/15/1995	Notified by letter	6/3/1986	Representatives of Tetra Tech Inc., Craven County, and FEMA
TOWN OF TRENT WOODS	5/4/1987	9/15/1995	Notified by letter	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and City of Havelock
TOWN OF TRENT WOODS	5/4/1987	9/15/1995	Notified by letter	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and City of New Bern
TOWN OF TRENT WOODS	5/4/1987	9/15/1995	Notified by letter	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and Town of Bridgeton
TOWN OF TRENT WOODS	5/4/1987	9/15/1995	Notified by letter	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and Town of Trent Woods

Table 26 — Consultation Coordination Officer's Meetings

Community	For FIS Dated	Initial CCO Date	Attended By	Final CCO Date	Attended By
TOWN OF TRENT WOODS	9/8/1999	9/15/1995	Notified by letter	6/3/1986	Representatives of Tetra Tech Inc., FEMA, and Town of Trent Woods
TOWN OF VANCEBORO	8/4/1988	8/8/8888	Representatives of FEMA and Town of Vanceboro	9/16/1987	Representatives of FEMA and Town of Vanceboro

For each FIS produced during the initial phase of statewide, an Initial Scoping Meeting was held with representatives from FEMA, the county, the incorporated communities, and the State of North Carolina. A Final Scoping meeting was held to review the Draft Basin Plan and finalize the streams to be studied by detailed methods. This information was then used to create the Final Basin Plan.

For map maintenance revisions, only one scoping meeting was held to identify the streams to be newly studied by detailed methods, redelineated, or to be studied by limited detailed methods. This information was then used to create the Map Maintenance Plan.

The historical dates of the Initial and Final Scoping Meetings held during the first round of statewide mapping for Craven County are shown in Table 28, "Scoping Meetings." Meetings held for the map maintenance revision are also included below for Craven County.

Table 28 — Scoping Meetings

Community	Riverbasin	Initial Scoping Date	Attended By	Final Scoping Date	Attended By
CITY OF HAVELOCK	NEUSE	10/26/2000	Representatives of the State, FEMA, Dewberry, and Craven County	4/25/2001	Representatives of the State, FEMA, Dewberry, and Craven County
CITY OF HAVELOCK ETJ	NEUSE	10/26/2000	Representatives of the State, FEMA, Dewberry, and Craven County	4/25/2001	Representatives of the State, FEMA, Dewberry, and Craven County
CITY OF NEW BERN	NEUSE	10/26/2000	Representatives of the State, FEMA, Dewberry, and Craven County	4/25/2001	Representatives of the State, FEMA, Dewberry, and Craven County
CITY OF NEW BERN ETJ	NEUSE	10/26/2000	Representatives of the State, FEMA, Dewberry, and Craven County	4/25/2001	Representatives of the State, FEMA, Dewberry, and Craven County
CRAVEN COUNTY	NEUSE	10/26/2000	Representatives of the State, FEMA, Dewberry, and Craven County	4/25/2001	Representatives of the State, FEMA, Dewberry, and Craven County
TOWN OF BRIDGETON	NEUSE	10/26/2000	Representatives of the State, FEMA, Dewberry, and Craven County	4/25/2001	Representatives of the State, FEMA, Dewberry, and Craven County
TOWN OF COVE CITY	NEUSE	10/26/2000	Representatives of the State, FEMA, Dewberry, and Craven County	4/25/2001	Representatives of the State, FEMA, Dewberry, and Craven County
TOWN OF DOVER	NEUSE	10/26/2000	Representatives of the State, FEMA, Dewberry, and Craven County	4/25/2001	Representatives of the State, FEMA, Dewberry, and Craven County
TOWN OF RIVER BEND	NEUSE	10/26/2000	Representatives of the State, FEMA, Dewberry, and Craven County	4/25/2001	Representatives of the State, FEMA, Dewberry, and Craven County
TOWN OF TRENT WOODS	NEUSE	10/26/2000	Representatives of the State, FEMA, Dewberry, and Craven County	4/25/2001	Representatives of the State, FEMA, Dewberry, and Craven County
TOWN OF VANCEBORO	NEUSE	10/26/2000	Representatives of the State, FEMA, Dewberry, and Craven County	4/25/2001	Representatives of the State, FEMA, Dewberry, and Craven County

Preliminary Meetings are held in each county to disseminate and review the FIS Report and FIRM panels. This meeting is required by FEMA. Public Participation Meetings are not required by FEMA, but provide an opportunity to review and discuss the FIS Report and FIRM panels for each jurisdiction in a public setting. The dates for the preliminary and public participation meetings are shown in Table 30, "Preliminary and Public Participation Meetings."

Table 30 — Preliminary and Public Participation Meetings

Community	For FIS Dated	Meeting Location	Preliminary Meeting Date	Attended By	Public Meeting Date	Attended By
CRAVEN COUNTY	7/2/2004	New Bern	9/4/2003	Representatives from the State, Dewberry, Watershed Concepts, and Craven County	4/17/2002	The Public

Table 30 — Preliminary and Public Participation Meetings

Community	For FIS Dated	Meeting Location	Preliminary Meeting Date	Attended By	Public Meeting Date	Attended By
CRAVEN COUNTY	7/2/2004	New Bern	9/4/2003	Representatives from the State, Dewberry, Watershed Concepts, and Craven County	5/5/2002	The Public
CRAVEN COUNTY	7/2/2004	New Bern	9/4/2003	Representatives from the State, Dewberry, Watershed Concepts, and Craven County	8/18/2003	NP
CRAVEN COUNTY	7/2/2004	New Bern	9/4/2003	Representatives from the State, Dewberry, Watershed Concepts, and Craven County	10/28/2003	NP

9.0 Guide to Additional Information

Information concerning the pertinent data used in the preparation of this FIS Report can be obtained by submitting an order with any required payment to the FEMA Engineering Library. For more information on this process, see http://www.fema.gov.

The Map Repositories table below lists locations where FIRMs for Craven County can be viewed. Please note that the maps at these locations are for reference only and are not for distribution. Also, please note that only the maps for the community listed in the table are available at that particular repository. A user may need to visit another repository to view maps from an adjacent community.

Table 27 — Map Repositories

Community	Address	City	State	Zip Code
Town of Dover	NP, 105 North Main Street	Dover	NC	28526
Town of Cove City	NP, 204 South Main Street	Cove City	NC	28523
City of New Bern	New Bern City Hall, 300 Pollock Street	New Bern	NC	28563
City of Havelock	City of Havelock Planning Department, 199 Cunningham Boulevard	Havelock	NC	28532
Town of Trent Woods	Trent Woods Town Hall, 912 Country Club Drive	Trent Woods	NC	28562
Town of River Bend	River Bend Town Hall, 45 Shoreline Drive	River Bend	NC	28562
Town of Vanceboro	Craven County Planning Department, 2828 Neuse Boulevard	New Bern	NC	28562
Craven County	Craven County GIS/Mapping Dept, 226 Pollock Street	New Bern	NC	28560
Town of Bridgeton	Bridgeton Town Hall, 201 Highway 17 North	Bridgeton	NC	28519

9.1 Additional Information

All FIRM panels created for the State of North Carolina are produced in a seamless statewide format; however, FIS Reports are produced for individual counties.

Copies of FIRM panels are available for a nominal fee. To obtain a copy of the current flood map for a specific community, contact the FEMA Map Service Center at 1-800-358-9616. To facilitate the processing of your request, please review the current flood map on file at your local community repository and obtain the panel number in which you are interested. If necessary, users may also order a FIRM Index from the Map Service Center to determine the appropriate panel numbers. The Map Service Center also accepts orders for the Community Status Book and the Flood Insurance Manual. The FIS Report, FIRM panels, and digital data used to produce the FIRM panels are available online at www.ncfloodmaps.com.

Information concerning the data used in the preparation of this FIS, contained in an Engineering Study Data Package, may be obtained by contacting the FEMA Regional Office at the address listed on the Notice to Flood Insurance Study Users page at the front of this report.

Table 29, “Additional Information” is not applicable in Craven County.

10.0 Appendix

10.1 Bibliography

All bibliography and reference information associated within this Flood Insurance Study are maintained and accessible within the geodatabase structure and associated metadata. Users requiring more specific information should contact the North Carolina Floodplain Mapping Program (NCFMP) at www.ncfloodmaps.com under the Contacts menu