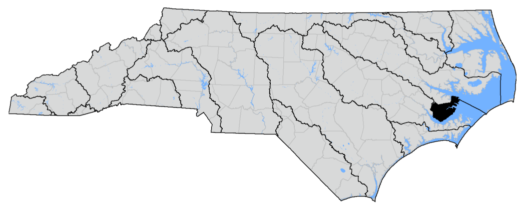
PRELIMINARY FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

A Report of Flood Hazards in

PAMLICO COUNTY, NORTH CAROLINA AND INCORPORATED AREAS



Community Name	Community Number
PAMLICO COUNTY	370181
TOWN OF ALLIANCE	370404
TOWN OF ARAPAHOE	370591
TOWN OF BAYBORO	370183
TOWN OF GRANTSBORO	370571
TOWN OF HOLLYVILLE	370181
TOWN OF MERRITT	370181
TOWN OF MESIC	370426
TOWN OF MINNESOTT BEACH	370418
TOWN OF ORIENTAL	370279
TOWN OF STONEWALL	370437
TOWN OF VANDEMERE	370438

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

37137CV000

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. Pamlico 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

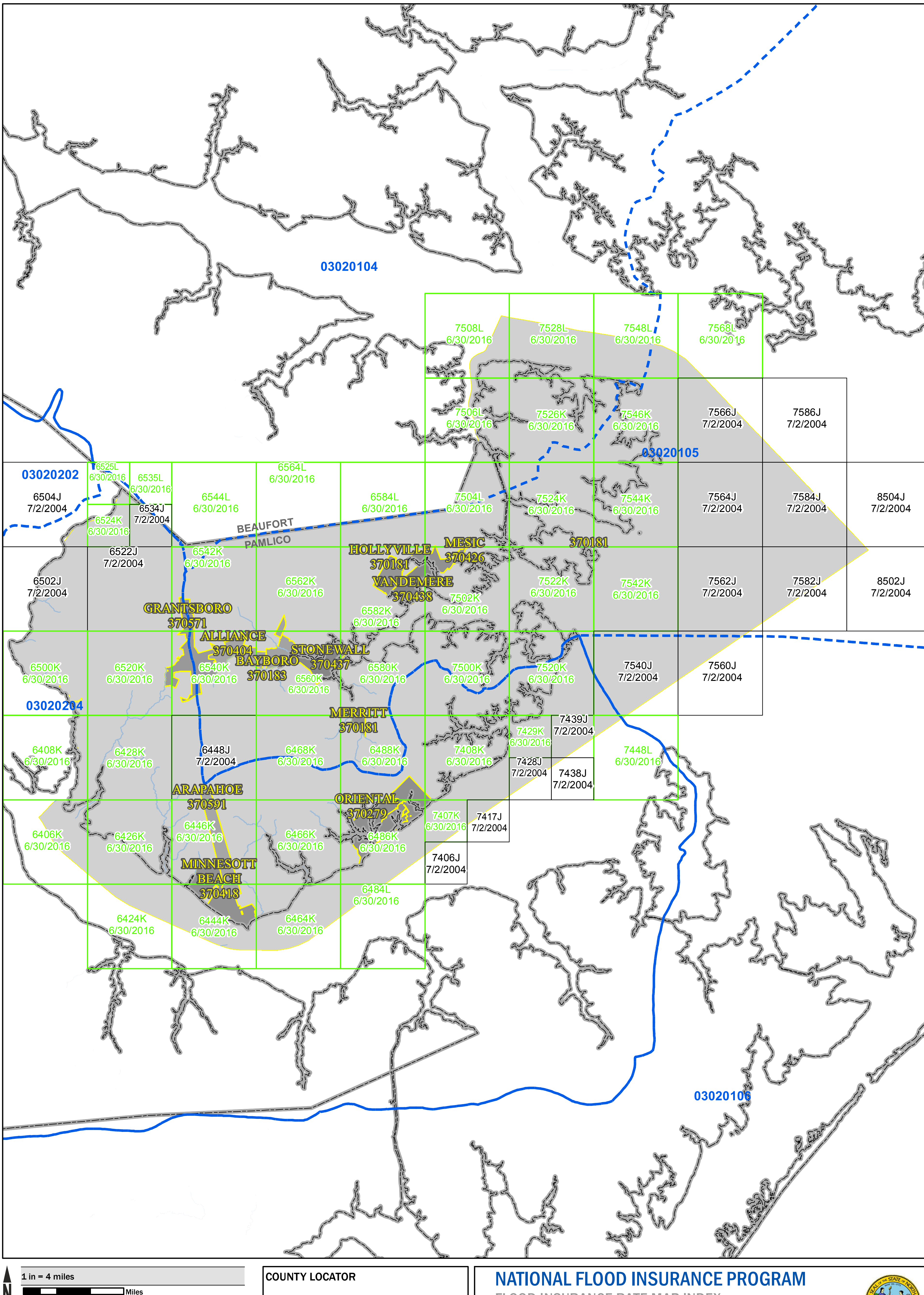
3003 Chamblee Tucker Road

Atlanta, Georgia 30341

(770) 220-5400

Table of Contents

Figures **Page**



Map Projection:
Lambert Conformal Conic
North American Datum 1983

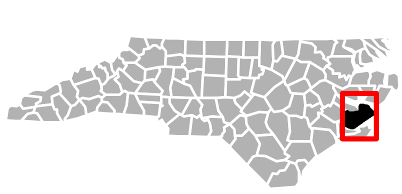
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://FRIS.NC.GOV/FRIS

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

PRELIMINARY
06/30/2016

COUNTY LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM

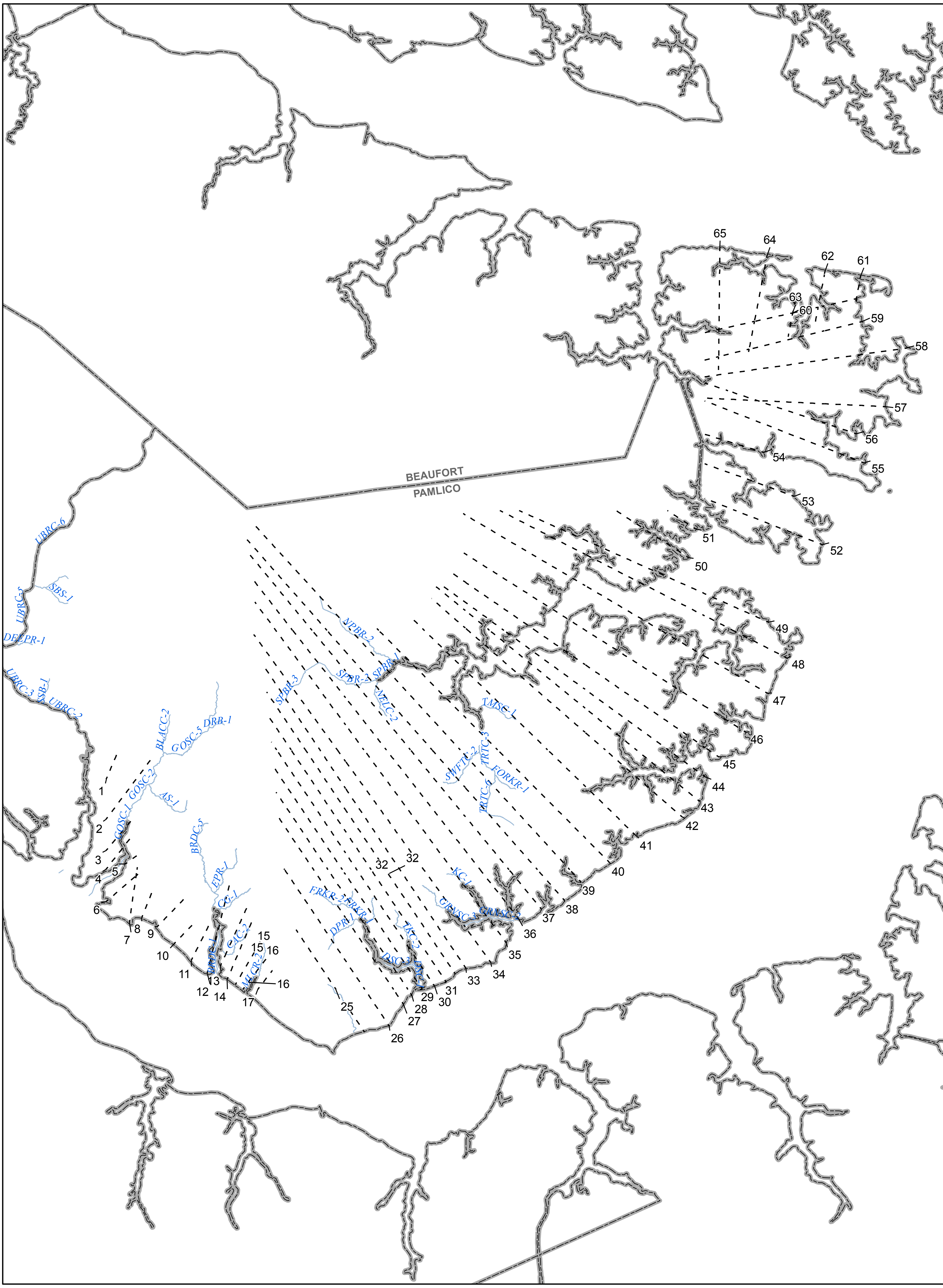
FLOOD INSURANCE RATE MAP INDEX

PAMLICO COUNTY, NORTH CAROLINA And Incorporated Areas

PANELS PRINTED:
7506, 7526, 7546, 7566, 7586, 6525, 6535, 6544, 6564, 6584, 7504, 7524, 7544, 7564, 7584, 8504, 6580, 7500, 7520, 7540, 7560, 6408, 6428, 6448, 6468, 6488, 7408, 7429, 7439, 7448, 7428, 7438, 6406, 6426, 6446, 6466, 6486, 7407, 7417, 7406, 6424, 6444, 6464, 6484, 6504, 6524, 6534, 6502, 6522, 6542, 6562, 6582, 7502, 7522, 7542, 7562, 7582, 8502, 6500, 6520, 6540, 6560, 7508, 7528, 7548, 7568

FEMA

MAP NUMBER
37137CIND0B



N

1 in = 3 miles

0 0.5 1 2 3 Miles

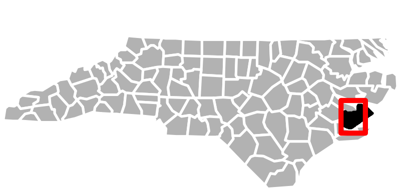
Map Projection:
Lambert Conformal Conic
North American Datum 1983

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

COUNTY LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM

TRANSECT LOCATOR MAP

PAMLICO COUNTY, NORTH CAROLINA

PANELS WITH TRANSECTS:

7508, 7528, 7568, 7506, 7526, 7546, 6544, 6564, 6584, 7504, 7524, 7544, 6502, 6542, 6562, 6582, 7502, 7522, 6500, 6520, 6540, 6560, 6580, 7500, 7520, 6408, 6428, 6448, 6468, 6488, 7408, 7429, 7448, 6406, 6426, 6446, 6466, 6486, 6424, 6444, 6464, 6484

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 Pamlico County and the jurisdictions therein (hereinafter referred to collectively as Pamlico 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 Pamlico County, North Carolina, including the jurisdictions listed in Table 1.

Table 1 - Jurisdictions in Pamlico County

Community	Included in this FIS	If Not Included, Location of Flood Hazard/Flood Insurance Rate Data
PAMLICO COUNTY	Yes	*
TOWN OF ALLIANCE	Yes	*
TOWN OF ARAPAHOE	Yes	*
TOWN OF BAYBORO	Yes	*
TOWN OF GRANTSBORO	Yes	*
TOWN OF HOLLYVILLE	Yes	*
TOWN OF MERRITT	Yes	*
TOWN OF MESIC	Yes	*
TOWN OF MINNESOTT BEACH	Yes	*
TOWN OF ORIENTAL	Yes	*

TOWN OF STONEWALL	Yes	*
TOWN OF VANDEMERE	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 Pamlico 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.

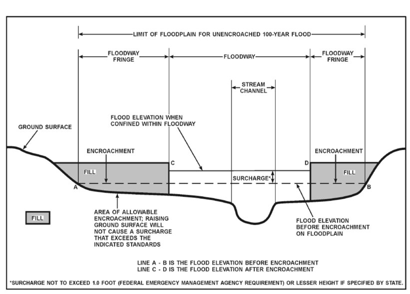


Figure 1- Floodway Schematic

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.

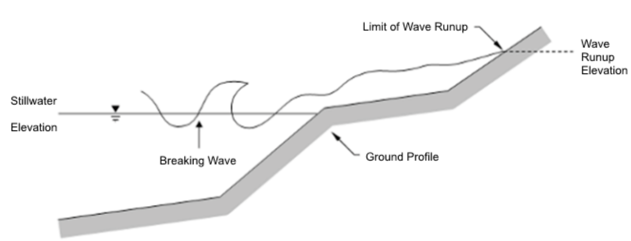


Figure 5: Wave Runup Transect Schematic

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.

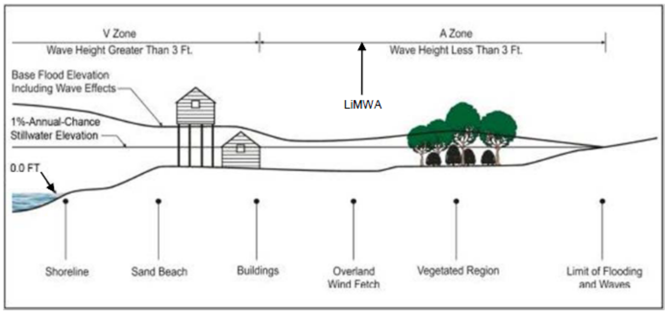


Figure 6: Coastal Transect Schematic

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 Pamlico County.

4.0 Area Studied

Pamlico County is found in the Coastal Plain region of North Carolina. It is surrounded by Beaufort County to the north, Hyde County to the northeast, Carteret County to the southeast, and Craven 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
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
Pamlico Sound	03020105	Pamlico Sound	The Pamlico Sound Basin includes coastal regions of Carteret, Dare, Hyde, and Pamlico Counties. The Neuse River and Pamlico River both end in the Pamlico Sound.	1,952

4.2 Principal Flood Problems

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

Table 4 - Principal Flood Problems

Flooding Source	Problem
All Sources	The dominant source of flooding in Pamlico County is wind-driven surge generated in the Atlantic Ocean by tropical storms and hurricanes. The surge propagates into Pamlico Sound and further propagates into Bay River, Big Porpoise Bay, Jones Bay, Kershaw
All Sources	The dominant source of flooding in Pamlico County is wind-driven surge generated in the Atlantic Ocean by tropical storms and hurricanes. The surge propagates into Pamlico Sound and further propagates into Bay River, Big Porpoise Bay, Jones Bay, Kershaw Creek, Middle Bay, Morris Creek, Pamlico River, Pamlico Sound, Smith Creek, Thomas Creek, and Trent Creek. Flooding from heavy rainfall occurs on Greens Creek, Kershaw Creek, Morris Creek, North Prong Bay River, Smith Creek, South Prong Bay River, Thomas Creek and Trent Creek. High winds associated with tropical storms can also produce extremely high waves which create higher than normal surge. The wave action during a tidal flood can be much more damaging than the higher water level. Not all storms which pass close to the study area produce extremely high surge. Similarly, storms which 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 extratropical 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 and over long distances for several days (Baker, 1978). The contribution from northeasters to the overall storm surge elevation in Pamlico County area was found to be insignificant compared to hurricanes; therefore, only the effects of hurricane and tropical storm-induced surge elevations were considered.

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" is not applicable in Pamlico County.

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 Pamlico County.

Table 7, “Levees” is not applicable in Pamlico County.

4.5 Scope of Study

For this map maintenance revision, a scoping meeting was held in Pamlico 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 Pamlico 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 Pamlico 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	
Greens Creek	Approximately 460 feet downstream of NC Highway 55	Approximately 1.3 miles upstream of NC Highway 55	Pamlico County Town Of Hollyville Town Of Merritt
South Prong Bay River	Approximately 1,940 feet upstream of Neals Creek Road	Approximately 1.8 miles upstream of Cooper Road	Pamlico County Town Of Alliance Town Of Grantsboro Town Of Hollyville Town Of Merritt

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	
North Prong Bay River[1]	Approximately 40 feet downstream of Vandemere Highway	Approximately 0.47 mile upstream of 3rd Street	Pamlico County Town Of Bayboro Town Of Hollyville Town Of Merritt

[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	
Alexander Swamp[1]	The confluence with Goose Creek	Approximately 1.49 miles upstream of the confluence with Goose Creek	Pamlico County Town Of Hollyville Town Of Merritt

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

Source	Riverine Sources		Affected Communties
	From	To	
Beard Creek[1]	Approximately 0.58 mile upstream of the confluence of Caraway Creek	Approximately 0.7 mile upstream of Neuse Road	Pamlico County Town Of Hollyville Town Of Merritt
Black Creek[1]	Approximately 0.46 mile upstream of the confluence with Goose Creek	Approximately 0.64 mile upstream of the confluence with Goose Creek	Pamlico County Town Of Hollyville Town Of Merritt
Caraway Creek[1]	Approximately 0.73 mile upstream of the confluence with Beard Creek	Approximately 1,250 feet upstream of Marvin Field Road	Pamlico County Town Of Hollyville Town Of Merritt
Cedar Gut[1]	The confluence with Beard Creek	Approximately 520 feet upstream of Neuse Road	Pamlico County Town Of Hollyville Town Of Merritt
Dawson Creek[1]	Approximately 2.0 miles upstream of the confluence of Tarklin Creek	Approximately 400 feet upstream of confluence with Deep Run South and Fork Run	Pamlico County Town Of Hollyville Town Of Merritt
Deep Run South[1]	The confluences with Fork Run and Dawson Creek	Approximately 750 feet downstream of Don Lee Road	Pamlico County Town Of Hollyville Town Of Merritt
East Prong[1]	The confluence with Beard Creek	Approximately 0.81 mile upstream of the confluence with Beard Creek	Pamlico County Town Of Hollyville Town Of Merritt
Fork Run	The confluences of Deep Run 1 and Dawson Creek	Approximately 0.55 mile upstream of Kershaw Road	Pamlico County Town Of Hollyville Town Of Merritt
Goose Creek[1]	Approximately 0.18 mile upstream of the confluence with Black Creek 2	Approximately 0.56 mile upstream of Neuse Road	Pamlico County Town Of Grantsboro Town Of Hollyville Town Of Merritt
Granny Gut	The confluence with Dawson Creek	Approximately 0.32 mile upstream of Kershaw Road	Pamlico County Town Of Hollyville Town Of Merritt
Mill Creek[1]	Approximately 0.21 mile upstream of the confluence with Neuse River	Approximately 1.84 miles upstream of the confluence with Neuse River	Pamlico County Town Of Hollyville Town Of Merritt Town Of Minnesott Beach
Neal Creek	Approximately 0.77 mile upstream of the confluence with South Prong Bay River	Approximately 1.57 miles upstream of the confluence with South Prong Bay River	Pamlico County Town Of Hollyville Town Of Merritt
North Prong Bay River[1]	Approximately 0.92 mile upstream of the confluence of South Prong Bay River	At Mill Pond Road	Pamlico County Town Of Bayboro Town Of Hollyville Town Of Merritt
Southwest Fork Trent Creek[1]	Approximately 0.50 mile upstream of the confluence with Trent Creek	Approximately 1.82 mile upstream of the confluence with Trent Creek	Pamlico County Town Of Hollyville Town Of Merritt
Trent Creek[1]	Approximately 0.33 mile downstream of the confluence of Fork Run 1	Approximately 3.57 miles upstream of NC Highway 55	Pamlico County Town Of Hollyville Town Of Merritt
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	Pamlico County Town Of Hollyville Town Of Merritt
Wheeler Gut[1]	The confluence with Fork Run	Approximately 70 feet upstream of Kershaw Road	Pamlico County Town Of Hollyville Town Of Merritt

[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	
Greens Creek	Approximately 460 feet downstream of NC Highway 55	Approximately 1.3 miles upstream of NC Highway 55	Pamlico County Town Of Hollyville Town Of Merritt
South Prong Bay River	Approximately 1,940 feet upstream of Neals Creek Road	Approximately 1.8 miles upstream of Cooper Road	Pamlico County Town Of Alliance Town Of Grantsboro Town Of Hollyville Town Of Merritt

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	
North Prong Bay River	Approximately 40 feet downstream of Vandemere Highway	Approximately 0.51 mile 3rd Street	Pamlico County Town Of Bayboro Town Of Hollyville Town Of Merritt

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	
Alexander Swamp	The confluence with Goose Creek	Approximately 2.3 miles upstream of the confluence with Goose Creek	Pamlico County Town Of Hollyville Town Of Merritt
Beard Creek	Approximately 0.58 mile upstream of the confluence of Caraway Creek	Approximately 0.81 mile upstream of Roberts Road	Pamlico County Town Of Hollyville Town Of Merritt
Black Creek	Approximately 0.46 mile upstream of the confluence with Goose Creek	Approximately 0.09 mile upstream of Prescott Road	Pamlico County Town Of Hollyville Town Of Merritt
Caraway Creek	Approximately 0.73 mile upstream of the confluence with Beard Creek	Approximately 0.72 mile upstream of Marvin Field Road	Pamlico County Town Of Hollyville Town Of Merritt
Cedar Gut	The confluence with Beard Creek	Approximately 0.73 mile upstream of Neuse Road	Pamlico County Town Of Hollyville Town Of Merritt
Dawson Creek	Approximately 2.0 miles upstream of the confluence of Tarklin Creek	Approximately 2.7 miles upstream of the confluence of Tarklin Creek	Pamlico County Town Of Hollyville Town Of Merritt
Deep Run Branch	At the confluence of Goose Creek	Approximately 0.56 mile upstream of confluence of Goose Creek	Pamlico County Town Of Hollyville Town Of Merritt
Deep Run North	At the confluence of Upper Broad Creek	Approximately 0.58 mile upstream of confluence of Upper Broad Creek	Pamlico County Town Of Hollyville Town Of Merritt
Deep Run South	The confluences with Fork Run and Dawson Creek	Approximately 0.17 mile upstream of Don Lee Road	Pamlico County Town Of Hollyville Town Of Merritt
East Prong	The confluence with Beard Creek	Approximately 2.04 miles upstream of the confluence with Beard Creek	Pamlico County Town Of Hollyville Town Of Merritt
Fork Run	The confluences of Deep Run 1 and Dawson Creek	Approximately 0.55 mile upstream of Kershaw Road	Pamlico County Town Of Hollyville Town Of Merritt
Goose Creek	Approximately 0.18 mile upstream of the confluence with Black Creek 2	Approximately 1.72 miles upstream of the confluence of Deep Run Branch	Pamlico County Town Of Grantsboro Town Of Hollyville Town Of Merritt
Granny Gut	The confluence with Dawson Creek	Approximately 0.32 mile upstream of Kershaw Road	Pamlico County Town Of Hollyville Town Of Merritt
Mill Creek	Approximately 0.21 mile upstream of the confluence with Neuse River	Approximately 2.04 miles upstream of the confluence with Neuse River	Pamlico County Town Of Hollyville Town Of Merritt Town Of Minnesott Beach
Neal Creek	Approximately 0.77 mile upstream of the confluence with South Prong Bay River	Approximately 1.57 miles upstream of the confluence with South Prong Bay River	Pamlico County Town Of Hollyville Town Of Merritt
North Prong Bay River	Approximately 0.92 mile upstream of the confluence of South Prong Bay River	Approximately 1.14 miles upstream of Mill Pond Road	Pamlico County Town Of Bayboro Town Of Hollyville Town Of Merritt
Possum Swamp	At the confluence of Upper Broad Creek	Approximately 0.43 mile upstream of Blades Trail crossing	Pamlico County Town Of Hollyville Town Of Merritt
Sasses Branch	At the confluence of Upper Broad Creek	Approximately 0.12 mile upstream of State Highway 55 crossing	Pamlico County Town Of Hollyville Town Of Merritt

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

Source	Riverine Sources		Affected Communties
	From	To	
Savannah Bridge Swamp	At the confluence of Possum Swamp	Approximately 0.90 mile upstream of confluence of Possum Swamp	Pamlico County Town Of Hollyville Town Of Merritt
South Creek	Approximately 0.35 mile upstream of the confluence with Cypress Run	Approximately 2.8 miles upstream of the confluence with Cypress Run	Pamlico County Town Of Hollyville Town Of Merritt
Southwest Fork Trent Creek	Approximately 0.50 mile upstream of the confluence with Trent Creek	Approximately 0.76 mile upstream of Isabelle Road	Pamlico County Town Of Hollyville Town Of Merritt
Trent Creek	Approximately 0.33 mile downstream of the confluence of Fork Run 1	Approximately 3.25 miles upstream of the confluence of Fork Run 1	Pamlico County Town Of Hollyville Town Of Merritt
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	Pamlico County Town Of Hollyville Town Of Merritt
Upper Broad Creek	At the confluence with Durham Creek	Approximately 3.3 miles upstream of the confluence with Durham Creek	Pamlico County Town Of Hollyville Town Of Merritt
Upper Broad Creek	The confluence with Durham Creek	Approximately 3.3 miles upstream of the confluence with Durham Creek	Pamlico County Town Of Hollyville Town Of Merritt
Wheeler Gut	The confluence with Fork Run	Approximately 0.19 mile upstream of Kershaw Road	Pamlico County Town Of Hollyville Town Of Merritt

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

Table 12, “Letters of Map Revision” is not applicable in Pamlico 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
Alexander Swamp					

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 0.02 mile upstream of confluence with Goose Creek	4.88	*	*	1150	*
Approximately 0.50 mile upstream of confluence with Goose Creek	2.40	*	*	768	*
Approximately 0.93 mile upstream of confluence with Goose Creek	2.09	*	*	709	*
Approximately 1.37 miles upstream of confluence with Goose Creek	1.77	*	*	646	*
Approximately 1.53 miles upstream of confluence with Goose Creek	1.15	*	*	506	*
Approximately 1.64 miles upstream of confluence with Goose Creek	0.63	*	*	359	*
Beard Creek					
Approximately 0.58 mile upstream of confluence with Caraway Creek	11.00	*	*	1820	*
Approximately 0.02 mile upstream of confluence with Cedar Gut	8.82	*	*	1610	*
Approximately 0.41 mile upstream of confluence with Cedar Gut	8.57	*	*	1580	*
Approximately 0.02 mile upstream of confluence with East Prong	5.37	*	*	1210	*
Approximately 0.21 mile upstream of confluence with East Prong	5.27	*	*	1200	*
Approximately 0.67 mile upstream of confluence with East Prong	4.89	*	*	1150	*
Approximately 1.17 miles upstream of confluence with East Prong	4.52	*	*	1100	*
Approximately 0.16 mile downstream of Roberts Road crossing	3.84	*	*	1000	*
Approximately 0.24 mile upstream of Roberts Road crossing	3.46	*	*	945	*
Approximately 0.72 mile upstream of Roberts Road crossing	3.35	*	*	928	*
Black Creek					
Approximately 0.39 mile upstream of confluence with Goose Creek	1.44	*	*	576	*
Caraway Creek					
Approximately 0.27 mile downstream of Marvin Field Road crossing	1.04	*	*	479	*
Approximately 0.09 mile downstream of Marvin Field Road crossing	0.82	*	*	419	*
Approximately 0.02 mile upstream of Marvin Field Road crossing	0.65	*	*	366	*
Approximately 0.52 mile upstream of Marvin Field Road crossing	0.47	*	*	306	*
Cedar Gut					
Approximately 0.01 mile upstream of confluence with Beard Creek	1.69	*	*	631	*
Approximately 0.43 mile upstream of confluence with Beard Creek	1.60	*	*	612	*
Approximately 0.83 mile upstream of confluence with Beard Creek	1.49	*	*	587	*
Approximately 0.94 mile upstream of confluence with Beard Creek	1.40	*	*	566	*
Approximately 1.31 miles upstream of confluence with Beard Creek	0.74	*	*	395	*
Deep Run North					
Approximately 0.01 mile US of confluence with Upper Broad Creek	1.46	*	*	579	*
Approximately 0.13 mile upstream of confluence with Upper Broad Creek	1.02	*	*	473	*
Approximately 0.54 mile upstream of confluence with Upper Broad Creek	0.83	*	*	422	*
Deep Run South					
Approximately 0.03 mile upstream of confluence with Fork Run	2.22	*	*	735	*
Approximately 0.36 mile upstream of confluence with Fork Run	2.11	*	*	714	*
Approximately 0.87 mile downstream of Camp Don Lee Road crossing	1.98	*	*	689	*
Approximately 0.60 mile downstream of Don Lee Road crossing	1.86	*	*	664	*
Approximately 0.30 mile downstream of Don Lee Road crossing	1.64	*	*	619	*
Approximately 0.19 mile downstream of Don Lee Road crossing	1.52	*	*	594	*
Approximately 0.06 mile downstream of Don Lee Road crossing	1.37	*	*	560	*
Approximately 0.12 mile upstream of Don Lee Road crossing	0.72	*	*	389	*
East Prong					

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 0.01 mile upstream of confluence with Beard Creek	3.08	*	*	885	*
Approximately 0.59 mile upstream of confluence with Beard Creek	2.75	*	*	830	*
Approximately 0.99 mile upstream of confluence with Beard Creek	2.26	*	*	742	*
Approximately 1.21 miles upstream of confluence with Beard Creek	2.06	*	*	704	*
Approximately 1.34 miles upstream of confluence with Beard Creek	1.73	*	*	637	*
Approximately 1.57 miles upstream of confluence with Beard Creek	1.64	*	*	619	*
Approximately 1.80 miles upstream of confluence with Beard Creek	1.56	*	*	601	*
Fork Run					
Approximately 0.04 mile upstream of confluence with Deep Run 1	11.82	*	*	1890	*
Approximately 0.03 mile upstream of confluence with Wheeler Gut	7.92	*	*	1510	*
Approximately 0.20 mile downstream of Kershaw Road crossing	5.47	*	*	1220	*
Approximately 0.22 mile upstream of Kershaw Road crossing	5.37	*	*	1210	*
Goose Creek					
Approximately 0.01 mile upstream of confluence with Black Creek	25.63	*	*	*	*
Approximately 0.66 mile upstream of confluence with Black Creek	24.84	*	*	*	*
Approximately 1.48 miles upstream of confluence with Black Creek	24.07	*	*	*	*
Approximately 0.02 mile upstream of confluence with Deep Run Branch	20.80	*	*	*	*
Approximately 0.86 mile upstream of confluence with Deep Run Branch	20.07	*	*	*	*
Approximately 1.47 miles upstream of confluence with Deep Run Branch	19.09	*	*	2484	*
Granny Gut					
Approximately 0.01 mile upstream of confluence with Dawson Creek	1.64	*	*	619	*
Approximately 0.37 mile upstream of confluence with Dawson Creek	0.87	*	*	432	*
Approximately 0.19 mile upstream of Kershaw Road crossing	0.16	*	*	163	*
Greens Creek					
Approximately 630 feet upstream of Broad Street	8.57	705	1273	1579	2461
Approximately 500 feet upstream of confluence with Kershaw Creek	3.93	436	810	1015	1616
Approximately 0.98 miles upstreamof confluence with Kershaw Creek	3.05	373	700	879	1409
Approximately 1.15 miles downstream of Kershaw Road	1.34	225	435	553	906
Approximately 0.6 miles downstream of Kershaw Road	0.96	184	359	458	757
Approximately 2,450 feet downstream of Kershaw Road	0.94	181	354	452	748
Approximately 1,750 feet downstream of Kershaw Road	0.78	161	318	407	676
Approximately 240 feet upstream of Kershaw Road	0.51	124	248	319	536
Kershaw Creek					
Approximately 490 feet upstream of confluence with Greens Creek	4.01	441	820	1026	1633
Approximately 3,865 feet upstream of confluence with Greens Creek	3.59	413	770	965	1540
Approximately 0.98 miles downstream of Kershaw Road	3.28	390	730	917	1466
Approximately 0.62 miles downstream of Kershaw Road	3.02	371	696	875	1403
Approximately 0.57 miles downstream of Kershaw Road	2.51	331	625	788	1269
Approximately 2,075 feet downstream of Kershaw Road	2.42	323	612	771	1244
Approximately 400 feet downstream of Kershaw Road	2.31	315	596	752	1214
Approximately 1,490 feet upstream of Kershaw Road	1.38	229	442	562	920
Mill Creek					
Approximately 0.31 mile upstream of the confluence of Neuse River	2.41	*	*	769	*
Approximately 0.63 mile upstream of the confluence of Neuse River	2.30	*	*	751	*

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 0.89 mile upstream of the confluence of Neuse River	1.62	*	*	615	*
Approximately 1.08 miles upstream of the confluence of Neuse River	1.41	*	*	569	*
Approximately 1.21 miles upstream of the confluence of Neuse River	1.02	*	*	474	*
Approximately 1.40 miles upstream of the confluence of Neuse River	1.00	*	*	468	*
Approximately 1.78 miles upstream of the confluence of Neuse River	0.32	*	*	245	*
Neal Creek					
Approximately 0.57 mile upstream of confluence with South Prong Bay River	2.37	*	*	763	*
Approximately 0.90 mile upstream of confluence with South Prong Bay River	1.62	*	*	615	*
Approximately 1.07 miles upstream of confluence with South Prong Bay River	1.50	*	*	589	*
Approximately 1.44 miles upstream of confluence with South Prong Bay River	0.54	*	*	331	*
North Prong Bay River					
Approximately 1.40 miles downstream of Mill Pond Road crossing	18.29	*	*	2420	*
Approximately 1.07 miles downstream of Mill Pond Road crossing	15.01	*	*	2170	*
Approximately 0.71 mile downstream of Mill Pond Road crossing	13.88	*	*	2070	*
Approximately 0.15 mile downstream of Mill Pond Road crossing	12.44	*	*	1950	*
Approximately 0.01 mile downstream of Mill Pond Road crossing	10.08	*	*	1730	*
Approximately 0.34 mile upstream of Mill Pond Road crossing	9.41	*	*	1660	*
Approximately 0.87 mile upstream of Mill Pond Road crossing	8.54	*	*	1580	*
Possum Swamp					
Approximately 0.03 mile upstream of confluence with Upper Broad Creek	8.96	*	*	1620	*
Approximately 0.25 mile upstream of Olympia Road crossing	4.30	*	*	1070	*
Approximately 0.29 mile upstream of Blades Trail crossing	4.07	*	*	1040	*
Approximately 0.43 mile upstream of Blades Trail crossing	3.71	*	*	983	*
Sasses Branch					
Approximately 0.01 mile upstream of confluence with Upper Broad Creek	1.01	*	*	472	*
Approximately 0.50 mile upstream of confluence with Upper Broad Creek	0.80	*	*	414	*
Savannah Bridge Swamp					
Approximately 0.04 mile upstream of confluence with Possum Swamp	4.33	*	*	1070	*
Approximately 0.54 mile upstream of confluence with Possum Swamp	3.88	*	*	1010	*
Approximately 0.87 mile upstream of confluence with Possum Swamp	2.91	*	*	857	*
South Prong Bay River					
Just upstream of confluence with Neals Creek	17.93	1110	1952	2398	3664
Approximately 1,365 feet upstream of Neals Creek Road	16.98	1073	1891	2324	3557
Approximately 1,100 feet downstream of Cooper Road	15.19	1002	1773	2183	3350
Approximately 1,175 feet upstream of Cooper Road	12.19	875	1561	1927	2976
Approximately 3,450 feet upstream of Cooper Road	10.80	812	1456	1800	2787
Approximately 0.99 mile upstream of Cooper Road crossing	10.34	*	*	1760	*
Approximately 1.47 miles upstream of Cooper Road	9.34	743	1338	1658	2578
Southwest Fork Trent Creek					
Approximately 0.49 mile upstream of confluence with Trent Creek	7.51	*	*	1460	*
Approximately 0.56 mile upstream of confluence with Trent Creek	7.29	*	*	1440	*
Approximately 1.26 miles upstream of confluence with Trent Creek	6.46	*	*	1350	*
Approximately 1.62 miles upstream of confluence with Trent Creek	3.29	*	*	918	*

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
Trent Creek					
Approximately 0.39 mile downstream of confluence with Fork Run 1	8.41	*	*	1530	*
Approximately 0.28 mile downstream of confluence with Fork Run 1	7.43	*	*	1460	*
Approximately 0.01 mile upstream of confluence with Fork Run 1	4.84	*	*	1140	*
Approximately 0.24 mile upstream of confluence with Fork Run 1	4.64	*	*	1120	*
Approximately 0.47 mile upstream of confluence with Fork Run 1	4.40	*	*	1080	*
Approximately 1.01 miles upstream of confluence with Fork Run 1	4.06	*	*	1030	*
Approximately 2.64 miles upstream of confluence with Fork Run 1	1.90	*	*	672	*
Approximately 2.74 miles upstream of confluence with Fork Run 1	1.74	*	*	640	*
Approximately 3.0 miles upstream of confluence with Fork Run 1	1.45	*	*	578	*
Approximately 3.44 miles upstream of confluence with Fork Run 1	1.17	*	*	512	*
Approximately 3.55 miles upstream of confluence with Fork Run 1	0.96	*	*	457	*
Upper Broad Creek					
Approximately 2.33 miles downstream of confluence the Sasses Branch	49.47	*	*	4260	*
Approximately 1.88 miles downstream of confluence the Sasses Branch	46.92	*	*	4130	*
Approximately 0.80 mile downstream of confluence the Sasses Branch	42.38	*	*	3900	*
Approximately 0.01mile downstream of confluence the Sasses Branch	40.50	*	*	3800	*
Approximately 0.01 mile upstream of State Highway 55	37.96	*	*	3670	*
Approximately 1.45 miles upstream of State Highway 55	21.67	*	*	2670	*
Approximately 0.04 mile upstream of confluence with Deep Run 2	20.03	*	*	2550	*
Approximately 0.91 mile upstream of confluence with Deep Run 2	19.30	*	*	2500	*
Approximately 1.87 miles upstream of confluence with Deep Run 2	18.43	*	*	2440	*
Approximately 0.25 mile upstream of Craven County Road crossing	8.57	*	*	1580	*
Approximately 0.73 mile upstream of Craven County Road crossing	8.05	*	*	1520	*
Approximately 1.78 miles upstream of Craven County Road crossing	4.96	*	*	1160	*
Approximately 3.04 miles upstream of Craven County Road crossing	1.41	*	*	569	*
Wheeler Gut					
Approximately 0.04 mile upstream of confluence with Fork Run	3.53	*	*	956	*

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

Table 15, “Gage Information” is not applicable in Pamlico County.

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"
Alexander Swamp	0.045 to 0.050	0.110 to 0.150
Beard Creek	0.050	0.140 to 0.150
Black Creek	0.040 to 0.050	0.110 to 0.150
Caraway Creek	0.050	0.150
Cedar Gut	0.045 to 0.050	0.140 to 0.150
Dawson Creek	0.045	0.140
Deep Run Branch	0.040 to 0.045	0.150
Deep Run North	0.040 to 0.045	0.130 to 0.150
Deep Run South	0.045 to 0.050	0.130 to 0.150
East Prong	0.040 to 0.050	0.130 to 0.150
Fork Run	0.035 to 0.052	0.060 to 0.140
Goose Creek	0.040 to 0.050	0.130 to 0.150
Granny Gut	0.035 to 0.045	0.060 to 0.150
Greens Creek	0.045 to 0.053	0.060 to 0.140
Mill Creek	0.040 to 0.045	0.130 to 0.150
Neal Creek	0.040 to 0.045	0.060 to 0.150
North Prong Bay River	0.040 to 0.060	0.110 to 0.200
Possum Swamp	0.040 to 0.050	0.130 to 0.150
Sasses Branch	0.045 to 0.050	0.140 to 0.150
Savannah Bridge Swamp	0.040 to 0.045	0.130 to 0.140
South Creek	0.020 to 0.060	0.080 to 0.200
South Prong Bay River	0.043 to 0.060	0.050 to 0.200
Southwest Fork Trent Creek	0.040 to 0.045	0.110 to 0.140
Trent Creek	0.040 to 0.045	0.120 to 0.140
Upper Broad Creek	0.040 to 0.045	0.130 to 0.150
Wheeler Gut	0.040 to 0.045	0.130 to 0.140

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
Alexander Swamp				
079	7,931	709	8.1	205 / 13
086	8,582	646	9.2	90 / 112
092	9,176	646	10.1	56 / 99
098	9,771	506	10.6	79 / 309
117	11,673	359	13.5	15 / 120
122	12,182	359	15.0	15 / 38
Beard Creek				
158	15,787	1,579	7.0	267 / 198
166	16,555	1,211	7.2	455 / 20
170	17,000	1,211	7.2	257 / 137
175	17,500	1,199	7.3	275 / 88
181	18,132	1,199	7.4	80 / 375
190	19,000	1,199	7.6	153 / 208
200	20,035	1,150	7.7	106 / 309
209	20,913	1,150	7.8	52 / 286
217	21,658	1,150	8.0	181 / 114
224	22,420	1,099	8.1	377 / 66
230	23,000	1,099	8.2	218 / 192
235	23,500	1,099	8.2	72 / 298
239	23,894	1,099	8.3	217 / 105
245	24,500	1,099	8.4	20 / 280
250	25,000	1,099	8.6	144 / 127
258	25,770	1,099	9.0[1]	145 / 92
265	26,500	1,099	9.3	237 / 115
270	27,000	1,002	9.6	384 / 21
282	28,202	1,002	11.2	72 / 159
290	29,000	945	11.7	15 / 355

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
294	29,398	945	11.8	83 / 432
299	29,924	945	11.9	15 / 533
306	30,591	945	12.2	17 / 257
311	31,131	945	12.8	15 / 280
319	31,924	928	13.6	103 / 190
325	32,500	928	13.9	101 / 155
Black Creek				
041	4,055	576	8.8	81 / 68
047	4,692	576	9.8	69 / 64
052	5,183	576	10.8	109 / 22
057	5,714	576	11.9	73 / 45
063	6,313	576	13.3	93 / 36
074	7,368	576	16.0	21 / 77
Caraway Creek				
071	7,054	366	7.5	92 / 30
075	7,457	366	7.9	70 / 56
080	7,982	366	9.0	20 / 13
086	8,616	306	10.7	50 / 13
092	9,198	306	11.9	50 / 13
100	10,005	306	13.5	10 / 40
Cedar Gut				
034	3,363	612	7.0	50 / 182
041	4,085	612	7.1	205 / 48
052	5,179	587	8.3	10 / 190
059	5,889	566	8.6	7 / 173
064	6,381	566	9.0	20 / 154
070	6,967	566	9.9	12 / 173
076	7,602	395	11.0	53 / 35
081	8,059	395	11.8	4 / 96
085	8,472	395	13.1	37 / 18
Deep Run Branch				
006	580	693	10.9[1]	245 / 189
011	1,056	693	10.9[1]	102 / 137
015	1,500	693	10.9[1]	70 / 68
020	2,000	693	11.4	72 / 118
025	2,500	693	11.9	176 / 10
029	2,942	673	12.6	123 / 10
Deep Run North				
006	586	579	11.1[1]	96 / 69
011	1,068	473	11.1[1]	98 / 110
017	1,708	473	11.3	84 / 14
022	2,188	473	12.2	11 / 83
026	2,558	473	13.1	83 / 10
031	3,050	422	14.6	10 / 82
Deep Run South				
005	500	735	7.4[1]	382 / 69

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
011	1,115	735	7.4[1]	139 / 155
016	1,566	735	7.4[1]	28 / 166
020	2,000	714	7.4[1]	239 / 47
025	2,500	714	7.4[1]	143 / 91
031	3,129	714	7.4[1]	242 / 66
036	3,634	689	7.4[1]	197 / 36
041	4,100	689	7.4[1]	190 / 53
047	4,713	689	7.4[1]	181 / 62
051	5,135	664	7.4[1]	105 / 183
056	5,587	664	7.4[1]	180 / 44
061	6,105	664	7.4[1]	128 / 38
065	6,500	664	7.4[1]	225 / 13
070	7,044	619	7.4[1]	69 / 110
077	7,691	594	7.6	134 / 92
087	8,749	560	8.5	84 / 108
092	9,190	389	8.7	73 / 37
East Prong				
011	1,117	885	7.1[1]	30 / 163
016	1,643	885	7.2	94 / 154
022	2,211	885	7.3	15 / 206
026	2,570	885	7.3	58 / 117
030	3,043	885	7.4	66 / 88
036	3,613	830	7.6	116 / 56
042	4,217	830	7.8	212 / 16
054	5,380	830	8.5	19 / 160
061	6,050	742	8.8	140 / 58
066	6,550	742	9.0	181 / 13
070	7,000	704	9.5	178 / 13
077	7,715	637	10.6	118 / 20
082	8,245	637	12.0	57 / 107
089	8,885	619	13.0	147 / 22
094	9,439	619	13.8	13 / 122
100	10,000	619	14.8	11 / 128
104	10,425	601	15.5	98 / 99
108	10,795	601	16.2	60 / 78
Fork Run				
001	500	1,893	7.4[1]	87 / 66
001	979	1,893	7.4[1]	72 / 70
002	1,500	1,893	7.4[1]	74 / 84
002	2,064	1,893	7.4[1]	67 / 158
003	2,569	1,893	7.4[1]	53 / 53
003	3,000	1,893	7.4[1]	55 / 103
004	3,555	1,893	7.4[1]	48 / 61
004	4,084	1,510	7.4[1]	91 / 51
005	4,500	1,510	7.4[1]	114 / 38

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
005	4,811	1,510	7.4[1]	113 / 90
006	5,565	1,510	7.4[1]	86 / 55
006	6,000	1,510	7.4[1]	54 / 161
007	6,685	1,510	7.4[1]	131 / 167
008	7,578	1,225	7.4[1]	55 / 100
008	8,007	1,211	7.4[1]	50 / 67
008	8,143	1,225	8.6	50 / 67
009	8,673	1,225	8.9	100 / 85
010	9,538	1,211	9.2	17 / 181
010	9,955	1,211	9.5	89 / 17
011	10,500	1,211	10.2	95 / 48
011	11,000	1,211	11.0	41 / 66
Goose Creek				
356	35,572	2,883	8.0	614 / 35
361	36,060	2,883	8.1	753 / 226
365	36,500	2,883	8.3	370 / 101
370	37,000	2,883	8.4	367 / 264
373	37,340	2,883	8.5	346 / 188
383	38,273	2,883	8.9	341 / 245
390	38,957	2,883	9.2	281 / 295
395	39,500	2,883	9.4	177 / 440
400	40,000	2,833	9.6	93 / 645
406	40,563	2,833	9.8	101 / 708
410	41,007	2,833	10.0	257 / 321
415	41,500	2,833	10.2	502 / 135
420	42,046	2,833	10.4	695 / 156
425	42,500	2,833	10.5	651 / 28
430	43,000	2,833	10.7	589 / 104
437	43,668	2,608	11.1	366 / 202
445	44,500	2,608	11.7	241 / 158
450	45,000	2,608	12.1	322 / 113
455	45,500	2,608	12.4	323 / 133
461	46,077	2,608	12.6	172 / 433
466	46,610	2,608	12.8	347 / 250
473	47,347	2,608	13.1	371 / 104
479	47,868	2,608	13.3	313 / 226
484	48,386	2,556	13.5	258 / 196
490	49,000	2,556	13.8	498 / 148
495	49,500	2,556	14.0	165 / 420
500	50,000	2,556	14.1	371 / 212
506	50,590	2,556	14.4	326 / 165
513	51,349	2,556	14.7	297 / 332
520	52,000	2,484	15.0	204 / 161
524	52,419	2,484	15.2	461 / 129
Granny Gut				

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
006	603	619	7.4[2]	59 / 43
010	1,000	619	7.4[2]	39 / 58
014	1,382	619	7.4[1]	58 / 37
020	2,000	619	7.4[1]	31 / 38
026	2,558	432	7.4[1]	32 / 22
029	2,863	432	7.4[1]	30 / 50
032	3,220	432	7.4[1]	15 / 69
035	3,534	432	7.4[1]	57 / 33
039	3,937	432	7.4[1]	16 / 50
040	4,001	432	8.1	16 / 50
043	4,257	432	8.1	22 / 34
045	4,504	432	8.1	12 / 44
050	4,965	432	8.1	25 / 30
053	5,268	163	8.2	17 / 39
057	5,675	163	8.2	12 / 39
Mill Creek				
045	4,500	615	8.0[1]	213 / 48
052	5,167	615	8.0[1]	165 / 69
056	5,630	569	8.0[1]	76 / 191
061	6,105	474	8.0[1]	216 / 16
067	6,734	474	8.0[1]	103 / 91
073	7,342	468	8.0[1]	55 / 161
083	8,277	468	8.0[1]	75 / 93
088	8,803	468	8.0[1]	85 / 87
096	9,624	245	8.0[1]	56 / 10
101	10,125	245	9.0	5 / 14
Neal Creek				
040	4,048	763	6.0	158 / 22
044	4,428	763	6.2	191 / 15
048	4,777	763	6.4	56 / 141
054	5,434	615	6.7	13 / 162
060	6,000	615	7.1	124 / 76
062	6,229	589	7.2	20 / 189
068	6,794	589	7.8	36 / 136
074	7,366	589	8.4	111 / 39
080	8,000	589	9.1	15 / 139
083	8,338	331	9.3	69 / 107
North Prong Bay River				
047	4,658	2,425	6.6	271 / 152
053	5,272	2,425	6.8	346 / 67
057	5,724	2,425	6.8	470 / 74
063	6,272	2,425	6.9	203 / 114
068	6,847	2,168	7.0	718 / 23
073	7,331	2,168	7.1	321 / 129
078	7,772	2,168	7.2	163 / 235
083	8,272	2,168	7.2	393 / 68

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
089	8,865	2,074	7.3	325 / 214
093	9,335	2,074	7.4	99 / 281
097	9,699	2,074	7.4	309 / 240
103	10,272	2,074	7.5	158 / 151
109	10,867	2,074	7.7	174 / 241
113	11,272	2,074	7.8	125 / 280
118	11,772	1,950	7.9	361 / 74
130	13,034	1,730	8.1	196 / 1,275
138	13,772	1,730	8.2	231 / 1,060
152	15,229	1,665	8.4	250 / 303
164	16,355	1,665	8.7	408 / 15
169	16,898	1,576	9.0	349 / 100
173	17,272	1,576	9.1	358 / 114
178	17,772	1,576	9.4	262 / 9
183	18,272	1,576	9.8	317 / 18
Possum Swamp				
004	427	1,619	17.3[1]	191 / 168
011	1,067	1,619	17.4	215 / 117
024	2,366	1,619	18.4	249 / 132
032	3,168	1,069	19.1	109 / 101
037	3,665	1,069	19.8	134 / 67
040	4,000	1,069	20.2	165 / 18
047	4,726	1,069	21.2	98 / 120
053	5,288	1,069	21.7	222 / 14
059	5,932	1,037	22.4	213 / 71
066	6,642	983	23.9	15 / 188
Sasses Branch				
015	1,542	472	8.3[1]	86 / 73
021	2,086	472	8.3[1]	67 / 93
025	2,548	414	8.3[1]	47 / 63
031	3,069	414	8.3[1]	28 / 32
036	3,634	414	8.3[1]	101 / 14
048	4,828	414	9.4	80 / 10
Savannah Bridge Swamp				
004	414	1,073	18.6[1]	66 / 186
009	899	1,073	18.9	204 / 46
013	1,324	1,073	19.2	117 / 145
019	1,870	1,073	19.6	35 / 228
022	2,249	1,073	20.0	117 / 184
029	2,873	1,008	20.9	111 / 120
035	3,472	1,008	21.7	25 / 180
040	4,023	857	22.3	194 / 61
048	4,775	857	22.8	99 / 112
South Creek				
892	89,159	2,210	8.6	487 / 351
902	90,159	2,210	10.3	25 / 1,300

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
911	91,140	2,210	11.9	400 / 1,600
Southwest Fork Trent Creek				
064	6,434	1,440	6.2	92 / 229
070	7,000	1,346	6.4	108 / 233
075	7,500	1,346	6.6	181 / 64
080	8,000	1,346	6.8	266 / 56
086	8,613	1,346	7.0	430 / 17
092	9,178	918	7.2	81 / 173
096	9,616	918	7.4	74 / 115
Trent Creek				
114	11,361	1,083	6.1	190 / 196
119	11,861	1,034	6.2	257 / 259
124	12,392	1,034	6.2	188 / 207
129	12,910	1,034	6.3	237 / 95
134	13,410	1,034	6.4	238 / 140
139	13,861	1,034	6.5	212 / 168
151	15,098	640	6.6	143 / 284
159	15,861	578	6.7	385 / 99
164	16,361	578	6.7	253 / 80
169	16,861	578	6.8	88 / 145
173	17,295	578	7.0	125 / 252
178	17,787	578	7.0[1]	1,235 / 12
184	18,361	512	7.0	316 / 81
189	18,892	457	7.0	13 / 595
Upper Broad Creek				
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

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
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
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

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
897	89,667	569	28.5	100 / 15
Wheeler Gut				
006	555	956	7.4	122 / 51
010	1,000	956	7.5	66 / 211
015	1,500	956	7.6	27 / 108
025	2,500	956	8.4	90 / 71
030	3,000	956	8.7	70 / 32

[1]Elevation includes backwater effects

[2]Elevation includes flooding controlled by Dawson Creek

5.3 Coastal Analyses

For the areas of Pamlico 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
Pamlico Sound	From confluence of Neuse River with Pamlico Sound	Lee Landing Road on Upper Broad Creek	*	CHAMP / RUNUP 2.0 (2007)	4/21/2014	DETAILED STUDY
Pamlico Sound	From confluence of Neuse River with Pamlico Sound	Lee Landing Road on Upper Broad Creek	*	ADCIRC	1/22/2013	DETAILED STUDY
Pamlico Sound	From confluence of Neuse River with Pamlico Sound	Lee Landing Road on Upper Broad Creek	*	WHAFIS 4.0	4/21/2014	DETAILED STUDY
Pamlico Sound	From confluence of Neuse River with Pamlico Sound	Lee Landing Road on Upper Broad Creek	*	CHAMP 2.0	4/21/2014	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
Pamlico Sound	From confluence of Neuse River with Pamlico Sound	Lee Landing Road on Upper Broad Creek	*	CHAMP / RUNUP 2.0 (2007)	4/21/2014
Pamlico Sound	From confluence of Neuse River with Pamlico Sound	Lee Landing Road on Upper Broad Creek	*	ADCIRC	1/22/2013
Pamlico Sound	From confluence of Neuse River with Pamlico Sound	Lee Landing Road on Upper Broad Creek	*	WHAFIS 4.0	4/21/2014
Pamlico Sound	From confluence of Neuse River with Pamlico Sound	Lee Landing Road on Upper Broad Creek	*	CHAMP 2.0	4/21/2014

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 Pamlico 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
Pamlico Sound		**From Carteret / Pamlico county boundary**			**To End of coastal influence on Pamlico River and Neuse River**		
49	6.8	5.5	*	*	*	4.2	5.4
			*	*	*	4.2 - 5.1	5.4 - 6.4
51	6.8	5.5	*	*	*	4.5	5.9
			*	*	*	4.5 - 4.6	5.9 - 6.0
57	6.8	5.5	*	*	*	3.7	4.8
			*	*	*	3.7 - 4.3	4.8 - 5.6
54	6.8	5.5	*	*	*	4.0	5.2
			*	*	*	4.0 - 4.4	5.2 - 5.7
56	6.8	5.5	*	*	*	3.8	4.9
			*	*	*	3.8 - 4.3	4.9 - 5.6
7	5.3	4.0	*	*	*	7.4	9.1
			*	*	*	7.4 - 7.4	9.1 - 9.2
9	5.3	4.0	*	*	*	7.3	8.9
			*	*	*	7.3 - 7.3	8.9 - 8.9
11	5.3	4.0	*	*	*	7.2	8.9
			*	*	*	7.2 - 7.2	8.9 - 8.9
13	5.3	4.0	*	*	*	7.0	8.6
			*	*	*	6.9 - 7.0	8.6 - 8.7
15	5.3	4.0	*	*	*	7.0	8.7
			*	*	*	7.0 - 7.0	8.7 - 8.7
17	5.3	4.0	*	*	*	7.0	8.7
			*	*	*	7.0 - 7.0	8.7 - 8.7
26	5.8	4.6	*	*	*	6.4	8.0
			*	*	*	6.4 - 6.4	8.0 - 8.0
28	5.8	4.6	*	*	*	6.2	7.8
			*	*	*	6.2 - 6.3	7.8 - 7.9
30	5.8	4.6	*	*	*	6.1	7.7
			*	*	*	6.1 - 6.1	7.7 - 7.7
32	5.8	4.6	*	*	*	6.0	7.5
			*	*	*	6.0 - 6.0	7.5 - 7.5
34	5.8	4.6	*	*	*	5.8	7.3
			*	*	*	5.8 - 5.9	7.3 - 7.5

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
36	5.8	4.6	*	*	*	5.6	7.1
			*	*	*	5.6 - 5.6	7.1 - 7.1
38	5.8	4.6	*	*	*	5.2	6.7
			*	*	*	5.2 - 6.2	6.7 - 7.6
40	5.8	4.6	*	*	*	5.0	6.4
			*	*	*	5.0 - 6.2	6.3 - 7.6
42	5.8	4.6	*	*	*	4.6	5.9
			*	*	*	4.6 - 6.1	5.9 - 7.5
44	6.8	5.5	*	*	*	4.5	5.8
			*	*	*	4.5 - 6.1	5.8 - 7.5
46	6.8	5.5	*	*	*	4.3	5.5
			*	*	*	4.3 - 5.5	5.5 - 7.1
48	6.8	5.5	*	*	*	4.2	5.3
			*	*	*	4.2 - 5.2	5.3 - 6.5
59	5.4	4.3	*	*	*	3.8	4.9
			*	*	*	3.8 - 4.3	4.9 - 5.6
61	5.4	4.3	*	*	*	3.8	4.9
			*	*	*	3.8 - 3.8	4.9 - 4.9
63	5.4	4.3	*	*	*	3.9	5.0
			*	*	*	3.9 - 3.9	5.0 - 5.0
65	5.4	4.3	*	*	*	4.0	5.2
			*	*	*	3.9 - 4.0	5.1 - 5.2
2	5.3	4.0	*	*	*	7.6	9.3
			*	*	*	7.6 - 7.6	9.3 - 9.3
4	5.3	4.0	*	*	*	7.5	9.3
			*	*	*	7.5 - 7.5	9.2 - 9.3
Pamlico Sound		**From The entire shoreline within the Tar Pamlico River Basin**			**To The entire shoreline within the Tar Pamlico River Basin**		

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 Pamlico 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 Pamlico 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)
35.25	-76.63	-1.07
35.25	-76.50	-1.03
35.13	-76.87	-1.06
35.12	-76.75	-1.06
35.12	-76.63	-1.05
35.00	-76.87	-1.04
35.00	-76.75	-1.03
Average conversion in Pamlico County from NGVD 29 to NAVD 88 = -1.05 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 Pamlico 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.

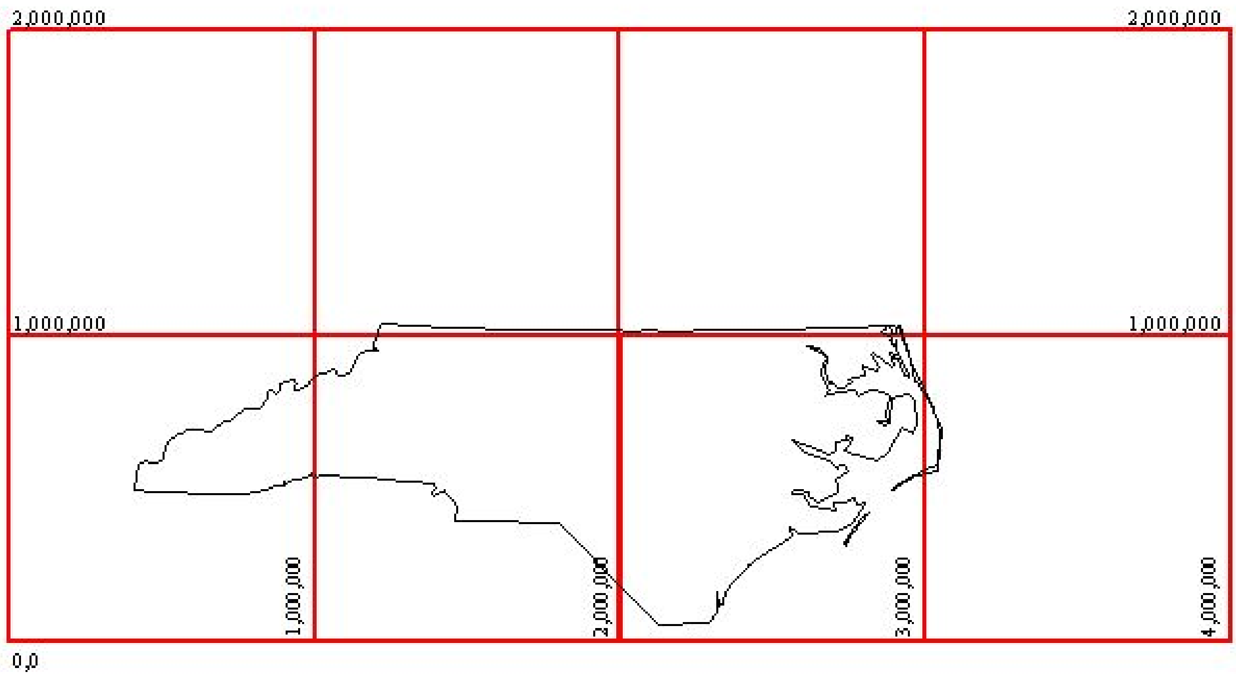


Figure 3 - North Carolina’s State Plane Coordinate System

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
Greens Creek								
191	19,106	69	188	3.0	6.1	6.1	6.4	0.3
195	19,518	43	162	3.3	7.6	7.6	8.6	0.9
201	20,060	27	109	4.1	8.7	8.7	9.7	1.0
North Prong Bay River								
059	5,854	491	3,416	0.6	6.6	6.6	7.5	0.9
South Prong Bay River								
095	9,496	940	4,325	1.9	7.0[1]	6.4	6.7	0.3
109	10,898	423	2,467	2.6	7.0[1]	6.6	7.0	0.4
119	11,874	525	3,394	2.0	7.0[1]	6.7	7.2	0.4
133	13,342	646	4,460	1.6	7.0[1]	6.8	7.4	0.5
144	14,381	825	6,054	1.3	7.0[1]	6.9	7.5	0.6
153	15,348	813	5,594	1.4	7.0[1]	7.0	7.6	0.6
163	16,345	855	5,869	1.3	7.0	7.0	7.6	0.6
179	17,874	444	3,144	2.0	7.3	7.3	8.0	0.6
189	18,874	544	3,329	2.2	7.4	7.4	8.2	0.7
199	19,910	593	3,860	1.5	7.6	7.6	8.4	0.8
209	20,874	816	4,758	1.4	7.6	7.6	8.5	0.8
218	21,797	712	4,193	1.5	7.7	7.7	8.6	0.8
229	22,875	623	3,707	1.6	8.0	8.0	8.8	0.9
239	23,874	603	2,990	2.0	8.1	8.1	9.0	0.9
249	24,874	639	2,736	1.7	8.4	8.4	9.3	0.9
258	25,789	565	2,174	2.7	8.8	8.8	9.7	0.9
269	26,874	452	1,864	3.0	9.6	9.6	10.5	1.0

[1]Elevation includes backwater effects

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)		
Bay River	49	*	*	AE 3 VE 3-4	WHAFIS	WHAFIS
	50	*	*	AE 3 VE 3	WHAFIS	WHAFIS
	51	*	*	AE 0-4 VE 3-4	WHAFIS	WHAFIS
	52	*	*	AE 0-4	WHAFIS	WHAFIS
Big Porpoise Bay	57	*	*	AE 4	WHAFIS	WHAFIS
Jones Bay	53	*	*	AE 4	WHAFIS	WHAFIS
	54	*	*	AE 4	WHAFIS	WHAFIS
Middle Bay	55	*	*	AE 4	WHAFIS	WHAFIS
	56	*	*	AE 4	WHAFIS	WHAFIS
Neuse River	6	*	*	AE 4 VE 2-6	WHAFIS	WHAFIS
	7	*	*	AE 4 VE 3-6	WHAFIS	WHAFIS
	8	*	*	AE 4 VE 3-6	WHAFIS	WHAFIS
	9	*	*	AE 4 VE 4-6	WHAFIS	WHAFIS
	82	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	83	*	*	AE 4 VE 3-5	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)		
	84	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	85	*	*	AE 3 VE 4-5	WHAFIS	SWEL
	87	*	*	AE 4 VE 5	WHAFIS	SWEL
	88	*	*	AE 4 VE 3-4	WHAFIS	SWEL
	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
	10	*	*	AE 1-4 VE 3-6	WHAFIS	WHAFIS
	11	*	*	VE 5	WHAFIS	RUNUP EXTENT
	12	*	*	AE 4 VE 5	WHAFIS	RUNUP EXTENT
	13	*	*	AE 1 VE 2-6	WHAFIS	RUNUP EXTENT
	14	*	*	VE 1-6	WHAFIS	WAVE OVERTOPPING SPLASH ZONE
	15	*	*	VE 1-6	WHAFIS	RUNUP EXTENT
	16	*	*	AE 1 VE 0-6	WHAFIS	RUNUP EXTENT
	17	*	*	AE 1 AO 1 VE 1-6	WHAFIS	RUNUP EXTENT
	25	*	*	AE 4 VE 5-6	WHAFIS	WHAFIS
	26	*	*	AE 0-4 VE 5	WHAFIS	WHAFIS
	27	*	*	AE 4 VE 5	WHAFIS	WHAFIS
	28	*	*	AE 3 VE 0-5	WHAFIS	WAVE OVERTOPPING SPLASH ZONE

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)		
	29	*	*	AE 5 VE 5	WHAFIS	WHAFIS
	30	*	*	AE 4 VE 4-6	WHAFIS	WHAFIS
	31	*	*	AE 0 VE 4	WHAFIS	RUNUP EXTENT
	32	*	*	AE 4 AO 1 VE 4-5	WHAFIS	WAVE OVERTOPPING SPLASH ZONE
	33	*	*	AE 3 VE 4	WHAFIS	WAVE OVERTOPPING SPLASH ZONE
	34	*	*	AE 3 VE 3-5	WHAFIS	RUNUP EXTENT
	35	*	*	AE 3 VE 0-4	WHAFIS	WAVE OVERTOPPING SPLASH ZONE
	36	*	*	AE 4 VE 1-4	WHAFIS	WHAFIS
	37	*	*	AE 3 VE 1-4	WHAFIS	RUNUP EXTENT
	38	*	*	AE 2 VE 4-8	WHAFIS	WHAFIS
	39	*	*	AE 3 VE 4-7	WHAFIS	WHAFIS
	40	*	*	AE 3 VE 1-4	WHAFIS	WHAFIS
	41	*	*	AE 3 VE 4-5	WHAFIS	WHAFIS
	42	*	*	AE 4 VE 3-5	WHAFIS	WHAFIS
	43	*	*	AE 4 VE 3-4	WHAFIS	WHAFIS
	44	*	*	AE 4 VE 3-5	WHAFIS	WHAFIS
	45	*	*	AE 4 VE 3-5	WHAFIS	WHAFIS
	46	*	*	AE 4 VE 3-4	WHAFIS	WHAFIS
	47	*	*	AE 0-4 VE 3-5	WHAFIS	WHAFIS
	48	*	*	AE 4 VE 3-5	WHAFIS	WHAFIS

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)		
Pamlico River	58	*	*	AE 4	WHAFIS	WHAFIS
	59	*	*	AE 4	WHAFIS	WHAFIS
	60	*	*	AE 0-4	WHAFIS	WHAFIS
	61	*	*	AE 3	WHAFIS	WHAFIS
	62	*	*	AE 4	WHAFIS	WHAFIS
	63	*	*	AE 3	WHAFIS	WHAFIS
	64	*	*	AE 4	WHAFIS	WHAFIS
	65	*	*	AE 3	WHAFIS	WHAFIS
Upper Broad Creek	1	*	*	AE 4 VE 3-6	WHAFIS	WHAFIS
	2	*	*	AE 4 VE 3-6	WHAFIS	WHAFIS
	3	*	*	AE 0-4 VE 3-6	WHAFIS	WHAFIS
	4	*	*	AE 0-4 VE 3-6	WHAFIS	WHAFIS
	5	*	*	AE 0-4 VE 3-6	WHAFIS	WHAFIS
	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 Pamlico 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 Pamlico County, are presented in Table 24, "Map Revision History."

Information pertaining to revised and unrevised flood hazards for each jurisdiction within Pamlico 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 Pamlico County.

Table 24 - Map Revision History

Community	Initial Identification Date	Initial FIRM Effective Date	FIS Revision Date
PAMLICO COUNTY	1/31/1975	9/4/1985	07/02/2004
TOWN OF ALLIANCE	7/14/1978	8/5/1985	07/02/2004
TOWN OF ARAPAHOE	7/2/2004	7/2/2004	07/02/2004
TOWN OF BAYBORO	7/30/1976	12/4/1985	07/02/2004
TOWN OF GRANTSBORO	6/16/1978	9/4/1985	07/02/2004
TOWN OF HOLLYVILLE	1/31/1975	9/4/1985	07/02/2004
TOWN OF MERRITT	1/31/1975	9/4/1985	07/02/2004
TOWN OF MESIC	7/30/1976	12/4/1985	07/02/2004
TOWN OF MINNESOTT BEACH	3/2/1979	8/5/1985	07/02/2004
TOWN OF ORIENTAL	1/31/1975	12/4/1985	07/02/2004
TOWN OF STONEWALL	1/31/1975	12/4/1985	07/02/2004
TOWN OF VANDEMERE	1/31/1975	12/4/1985	07/02/2004

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 Pamlico 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
PAMLICO COUNTY	7/2/2004	NCFMP	NCFMP	19-000017	10/29/2012
PAMLICO COUNTY	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014
TOWN OF ALLIANCE	7/2/2004	NCFMP	NCFMP	19-000017	10/29/2012
TOWN OF ALLIANCE	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014
TOWN OF ARAPAHOE	7/2/2004	NCFMP	NCFMP	19-000017	10/29/2012
TOWN OF ARAPAHOE	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014
TOWN OF BAYBORO	7/2/2004	NCFMP	NCFMP	19-000017	10/29/2012
TOWN OF BAYBORO	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014
TOWN OF GRANTSBORO	7/2/2004	NCFMP	NCFMP	19-000017	10/29/2012
TOWN OF GRANTSBORO	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014
TOWN OF HOLLYVILLE	7/2/2004	NCFMP	NCFMP	19-000017	10/29/2012
TOWN OF HOLLYVILLE	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014
TOWN OF MERRITT	7/2/2004	NCFMP	NCFMP	19-000017	10/29/2012
TOWN OF MERRITT	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014
TOWN OF MESIC	7/2/2004	NCFMP	NCFMP	19-000017	10/29/2012
TOWN OF MESIC	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014
TOWN OF MINNESOTT BEACH	7/2/2004	NCFMP	NCFMP	19-000017	10/29/2012
TOWN OF MINNESOTT BEACH	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014
TOWN OF ORIENTAL	7/2/2004	NCFMP	NCFMP	19-000017	10/29/2012
TOWN OF ORIENTAL	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014
TOWN OF STONEWALL	7/2/2004	NCFMP	NCFMP	19-000017	10/29/2012
TOWN OF STONEWALL	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014
TOWN OF VANDEMERE	7/2/2004	NCFMP	NCFMP	19-000017	10/29/2012
TOWN OF VANDEMERE	7/2/2004	NCFMP	NCFMP	286-000022	10/2/2014

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 Pamlico 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 Pamlico 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
PAMLICO COUNTY	3/4/1985	8/8/8888	NP	8/7/1984	Representatives of the SC, FEMA, and community officials

Table 26 — Consultation Coordination Officer's Meetings

Community	For FIS Dated	Initial CCO Date	Attended By	Final CCO Date	Attended By
TOWN OF ALLIANCE	2/5/1985	8/8/8888	NP	8/7/1984	Representatives of the SC, FEMA, and community officials
TOWN OF ALLIANCE	2/5/1985	8/8/8888	NP	8/28/1984	Representatives of the study contractor, FEMA, and community officials
TOWN OF ALLIANCE	2/5/1985	8/8/8888	NP	9/6/1984	Representatives of Tetra Tech, FEMA, and Town of Roper
TOWN OF BAYBORO	12/4/1985	8/8/8888	NP	8/7/1984	Representatives of the SC, FEMA, and community officials
TOWN OF BAYBORO	12/4/1985	8/8/8888	NP	1/1/1985	Representatives of the study contractor, FEMA, and the county
TOWN OF BAYBORO	12/4/1985	8/8/8888	NP	1/8/1985	Representatives from the Town of Manteo, Tetra Tech, Inc., and FEMA
TOWN OF BAYBORO	12/4/1985	8/8/8888	NP	1/9/1985	Representatives of Tetra Tech Inc., the county, and FEMA
TOWN OF HOLLYVILLE	3/4/1985	8/8/8888	NP	8/7/1984	Representatives of the SC, FEMA, and community officials
TOWN OF MERRITT	3/4/1985	8/8/8888	NP	8/7/1984	Representatives of the SC, FEMA, and community officials
TOWN OF MINNESOTT BEACH	2/5/1985	8/8/8888	NP	8/7/1984	Representatives of the SC, FEMA, and community officials
TOWN OF MINNESOTT BEACH	2/5/1985	8/8/8888	NP	8/28/1984	Representatives of the study contractor, FEMA, and community officials
TOWN OF MINNESOTT BEACH	2/5/1985	8/8/8888	NP	9/6/1984	Representatives of Tetra Tech, FEMA, and Town of Roper
TOWN OF ORIENTAL	12/4/1985	8/8/8888	NP	8/7/1984	Representatives of the SC, FEMA, and community officials
TOWN OF ORIENTAL	12/4/1985	8/8/8888	NP	1/1/1985	Representatives of the study contractor, FEMA, and the county
TOWN OF ORIENTAL	12/4/1985	8/8/8888	NP	1/8/1985	Representatives from the Town of Manteo, Tetra Tech, Inc., and FEMA
TOWN OF ORIENTAL	12/4/1985	8/8/8888	NP	1/9/1985	Representatives of Tetra Tech Inc., the county, and FEMA
TOWN OF ORIENTAL ETJ	12/4/1985	8/8/8888	NP	8/7/1984	Representatives of the SC, FEMA, and community officials
TOWN OF ORIENTAL ETJ	12/4/1985	8/8/8888	NP	1/1/1985	Representatives of the study contractor, FEMA, and the county
TOWN OF ORIENTAL ETJ	12/4/1985	8/8/8888	NP	1/8/1985	Representatives from the Town of Manteo, Tetra Tech, Inc., and FEMA
TOWN OF ORIENTAL ETJ	12/4/1985	8/8/8888	NP	1/9/1985	Representatives of Tetra Tech Inc., the county, and FEMA
TOWN OF STONEWALL	12/4/1985	8/8/8888	NP	8/7/1984	Representatives of the SC, FEMA, and community officials
TOWN OF STONEWALL	12/4/1985	8/8/8888	NP	1/1/1985	Representatives of the study contractor, FEMA, and the county
TOWN OF STONEWALL	12/4/1985	8/8/8888	NP	1/8/1985	Representatives from the Town of Manteo, Tetra Tech, Inc., and FEMA
TOWN OF STONEWALL	12/4/1985	8/8/8888	NP	1/9/1985	Representatives of Tetra Tech Inc., the county, and FEMA
TOWN OF VANDEMERE	12/4/1985	8/8/8888	NP	8/7/1984	Representatives of the SC, FEMA, and community officials
TOWN OF VANDEMERE	12/4/1985	8/8/8888	NP	1/1/1985	Representatives of the study contractor, FEMA, and the county
TOWN OF VANDEMERE	12/4/1985	8/8/8888	NP	1/8/1985	Representatives from the Town of Manteo, Tetra Tech, Inc., and FEMA

Table 26 — Consultation Coordination Officer's Meetings

Community	For FIS Dated	Initial CCO Date	Attended By	Final CCO Date	Attended By
TOWN OF VANDEMERE	12/4/1985	8/8/8888	NP	1/9/1985	Representatives of Tetra Tech Inc., the county, and FEMA

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 Pamlico County are shown in Table 28, "Scoping Meetings." Meetings held for the map maintenance revision are also included below for Pamlico County.

Table 28 — Scoping Meetings

Community	Riverbasin	Initial Scoping Date	Attended By	Final Scoping Date	Attended By
PAMLICO COUNTY	NEUSE	11/29/2000	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County	1/30/2001	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County
PAMLICO COUNTY	NEUSE	11/29/2000	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County	4/23/2001	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County
PAMLICO COUNTY	TAR-PAMLICO	11/29/2000	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County	1/30/2001	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County
PAMLICO COUNTY	TAR-PAMLICO	11/29/2000	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County	4/23/2001	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County
TOWN OF ALLIANCE	NEUSE	11/29/2000	Representatives of FEMA, FEMA-MCC/Dewberry, and the Town of Alliance	4/23/2001	Representatives of FEMA, FEMA-MCC/Dewberry, and the Town of Alliance
TOWN OF ARAPAHOE	NEUSE	11/29/2000	Representatives of FEMA, FEMA-MCC/Dewberry, and the Town of Arapahoe	4/23/2001	Representatives of FEMA, FEMA-MCC/Dewberry, and the Town of Arapahoe
TOWN OF BAYBORO	NEUSE	11/29/2000	Representatives of FEMA, FEMA-MCC/Dewberry, and the Town of Bayboro	4/23/2001	Representatives of FEMA, FEMA-MCC/Dewberry, and the Town of Bayboro
TOWN OF GRANTSBORO	NEUSE	11/29/2000	Representatives of FEMA, FEMA-MCC/Dewberry, and the Town of Grantsboro	4/23/2001	Representatives of FEMA, FEMA-MCC/Dewberry, and the Town of Grantsboro
TOWN OF HOLLYVILLE	NEUSE	11/29/2000	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County	1/30/2001	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County
TOWN OF HOLLYVILLE	NEUSE	11/29/2000	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County	4/23/2001	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County
TOWN OF HOLLYVILLE	TAR-PAMLICO	11/29/2000	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County	1/30/2001	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County
TOWN OF HOLLYVILLE	TAR-PAMLICO	11/29/2000	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County	4/23/2001	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County
TOWN OF MERRITT	NEUSE	11/29/2000	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County	1/30/2001	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County
TOWN OF MERRITT	NEUSE	11/29/2000	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County	4/23/2001	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County
TOWN OF MERRITT	TAR-PAMLICO	11/29/2000	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County	1/30/2001	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County
TOWN OF MERRITT	TAR-PAMLICO	11/29/2000	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County	4/23/2001	Representatives of FEMA, FEMA-MCC/Dewberry, and Pamlico County
TOWN OF MESIC	NEUSE	11/29/2000	Representatives of FEMA, FEMA-MCC/Dewberry, and the Town of Mesic	4/23/2001	Representatives of FEMA, FEMA-MCC/Dewberry, and the Town of Mesic
TOWN OF MINNESOTT BEACH	NEUSE	11/29/2000	Representatives of FEMA, FEMA-MCC/Dewberry, and the Town of Minnesott Beach	4/23/2001	Representatives of FEMA, FEMA-MCC/Dewberry, and the Town of Minnesott Beach

Table 28 — Scoping Meetings

Community	Riverbasin	Initial Scoping Date	Attended By	Final Scoping Date	Attended By
TOWN OF VANDEMERE	NEUSE	11/29/2000	Representatives of FEMA, FEMA-MCC/Dewberry, and the Town of Vandemere	4/23/2001	Representatives of FEMA, FEMA-MCC/Dewberry, and the Town of Vandemere

Table 30, "Preliminary and Public Participation Meetings" is not applicable in Pamlico County.

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 Pamlico 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
Pamlico County	Pamlico County Building Insector's Office, 202 Main Street	Bayboro	NC	28515
Town of Hollyville	Pamlico County Building Insector's Office, 202 Main Street	Bayboro	NC	28515
Town of Merritt	Pamlico County Building Insector's Office, 202 Main Street	Bayboro	NC	28515
Town of Oriental	Oriental Town Hall, 507 Church Street	Oriental	NC	28571
Town of Minnesott Beach	Minnesott Beach Town Hall, 11758 NC Highway 306 South	Arapahoe	NC	28510
Town of Arapahoe	Minnesott Beach Town Hall, 11758 NC Highway 306 South	Arapahoe	NC	28510
Town of Grantsboro	Pamlico County Building Inspector's Office, 202 Main Street	Bayboro	NC	28515
Town of Alliance	Pamlico County Building Insector's Office, 202 Main Street	Bayboro	NC	28515
Town of Vandemere	Vandemere Town Hall, Pennsylvania and Jones Road	Vandemere	NC	28587
Town of Stonewall	Stonewall Town Hall, Span Farm Road	Stonewall	NC	28583
Town of Mesic	Pamlico County Building Inspector's Office, 202 Main Street	Bayboro	NC	28515
Town of Bayboro	Bayboro Town Hall, 208 North Street	Bayboro	NC	28515

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 Pamlico 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