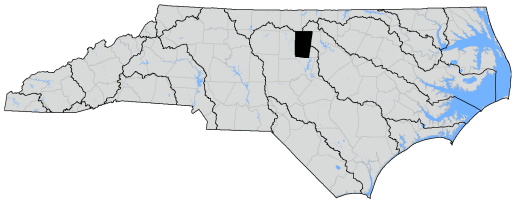
PRELIMINARY FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

A Report of Flood Hazards in

ORANGE COUNTY, NORTH CAROLINA AND INCORPORATED AREAS



Community Name	Community Number
CITY OF DURHAM	370086
ORANGE COUNTY	370342
TOWN OF CARRBORO	370275
TOWN OF CHAPEL HILL	370180
TOWN OF HILLSBOROUGH	370343

NORTH CAROLINA
Cooperating Technical State
FEMA'S COOPERATING TECHNICAL PARTNER

PRELIMINARY: 3/31/2015
REVISED: 3/31/2015
Federal Emergency Management Agency
State of North Carolina
Flood Insurance Study Number
37135CV000
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
2/2/2007	Initial Countywide FIS Report Effective Date

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

FEMA, Federal Insurance and Mitigation Administration
Koger Center - Rutgers Building
3003 Chamblee Tucker Road
Atlanta, Georgia 30341
(770) 220-5400

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

Table 1 - Jurisdictions in Orange County

Community	Included in this FIS	If Not Included, Location of Flood Hazard/Flood Insurance Rate Data
CITY OF DURHAM	Yes	*
ORANGE COUNTY	Yes	*
TOWN OF CARRBORO	Yes	*
TOWN OF CHAPEL HILL	Yes	*
TOWN OF HILLSBOROUGH	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 Orange became Effective on 2/2/2007. 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.

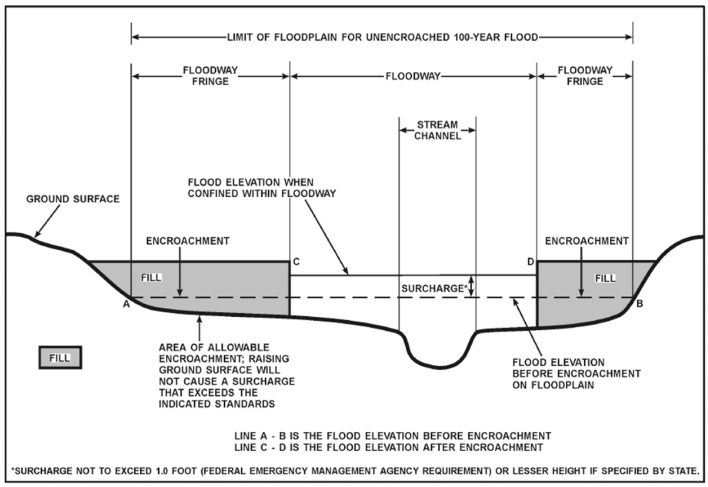

Figure 1- Floodway Schematic

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.

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.

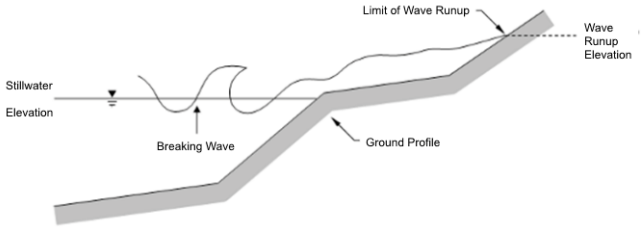

Figure 5: Wave Runup Transect Schematic

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.

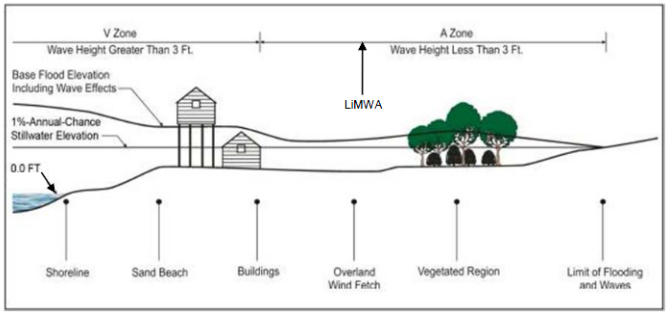

Figure 6: Coastal Transect Schematic

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

This section is not applicable to this FIS project.

4.0 Area Studied

Orange County is found in the Piedmont region of North Carolina. It is surrounded by Person County to the north, Durham County to the east, Chatham County to the south, Alamance 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)
Haw	03030002	Haw River	The Haw River Basin begins in eastern Forsyth County, flowing across low, rolling hills. The basin drains large portions of Guilford, Alamance, and Chatham counties before entering B. Everett Jordan Lake at the headwaters of the Cape Fear River.	1,707
Lower Dan	03010104	Dan River	The Lower Dan Basin begins in eastern Rockingham County and flows northeast into southern Virginia. The basin drains parts of Rockingham, Caswell, and Person counties.	1,284
Upper Neuse	03020201	Neuse River	The Upper Neuse Basin is initially drained by the Eno and Flat Rivers in Orange County. Once they confluence near Falls Lake, the basin is then drained by the Neuse River which flows through Durham, Wake, and Johnston Counties.	2,406

4.2 Principal Flood Problems

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

Table 4 - Principal Flood Problems

Flooding Source	Problem
All Sources	Low-lying areas of Orange County are flooded periodically from Eno River, North and South Forks Little River, New Hope Creek, Morgan Creek, and other streams included in this study. Flooding can result from heavy rains from tropical storms, major weathe

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.

Table 5, “Historic Flood Elevations” is not applicable in Orange 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 Orange County.

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

4.5 Scope of Study

For this map maintenance revision, a scoping meeting was held in Orange 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 Orange 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 Orange 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	
Bolin Creek Tributary	The confluence with Bolin Creek	Approximately 0.5 mile upstream from confluence with Bolin Creek	Orange County Town Of Carrboro
Buckwater Creek	The confluence with Eno River	Approximately 0.2 mile upstream of Walnut Hill Drive	Orange County
Buckwater Creek Tributary 1	The confluence with Buckwater Creek	Approximately 150 feet upstream of Saint Mary's Road	Orange County
Buckwater Creek Tributary 2	The confluence with Buckwater Creek	Approximately 175 feet upstream of St. Mary's Road	Orange County
Cates Creek[1]	The confluence with Eno River	Approximately 200 feet upstream of Elizabeth Brady Rd	Orange County Town Of Hillsborough

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

Source	Riverine Sources		Affected Communties
	From	To	
Cedar Fork	Approximately 240 feet downstream of Cross Creek Drive	Approximately 0.2 mile upstream of Kingston Drive	Town Of Chapel Hill
Collins Creek Tributary 1	At the confluence with Collins Creek	Approximately 700 feet upstream of Gait Way	Orange County
Dry Branch[1]	The confluence with New Hope Creek Tributary 1	Approximately 0.1 mile upstream of the confluence with New Hope Creek	Town Of Chapel Hill
East Fork Eno River	At the confluence with Eno River	Approximately 0.1 mile upstream of Carr Store Road	Orange County
East Price Creek	The confluence with Price Creek	Approximately 0.3 mile upstream of Booth Road	Orange County
Eno River	At the Orange County boundary	Approximately 0.5 miles upstream of Halls Mill Road	Orange County Town Of Hillsborough
Fan Branch	The confluence with Wilson Creek	Approximately 0.4 mile upstream of Dogwood Acres Drive	Town Of Chapel Hill
Fan Branch Tributary	The confluence with Fan Branch	Approximately 0.1 mile upstream of Carlton Drive	Town Of Chapel Hill
Forrest Creek	The confluence with Little River	Approximately 150 feet upstream of State Highway 57	Orange County
Forrest Creek	The confluence with Little River South Fork	Approximately 0.1 mile upstream of Phelps Road	Orange County
Haw River	Jordan Lake	Approximately 0.5 mile upstream of the Guilford/Alamance County boundary	Orange County
Jones Creek	The confluence with Bolin Creek	Approximately 0.5 mile upstream of Turtleback Crossing Drive	Town Of Carrboro
Little Creek	Approximately 800 feet downstream of Pinehurst Drive	The confluence of Bolin Creek and Booker Creek	Town Of Chapel Hill
Little Creek (Near Hillsborough)	The confluence with Eno River	Approximately 0.3 miles upstream of Farm Gate Drive	Orange County
Little River North Fork	At the confluence with Little River	Approximately 1.33 miles upstream of S Lowell Road	Orange County
Little River North Fork	At the Orange County Boundary	Approximately 200 feet upstream of NC 57 HWY	Orange County
Little River South Fork	At the confluence with Little River	At the Durham County boundary	Orange County
McGowan Creek[1]	The confluence with Eno River	Approximately 1,200 feet upstream of the confluence with Eno River	Orange County
Mill Creek	Approximately 50 feet upstream of the confluence of Lake Michael Tributary	Approximately 1.4 miles upstream of Mill Creek Road	City Of Mebane Orange County
Morgan Creek	Approximately 0.7 miles downstream of SW of Friday Center Dr.	Approximately 1.7 miles upstream of Greensboro Street	Orange County Town Of Carrboro Town Of Chapel Hill
Morgan Creek	Approximately 2.2 miles downstream of NC 54 Highway	Approximately 270 feet upstream of Dairyland (US) Road	Orange County Town Of Carrboro
Morgan Creek Tributary	The confluence with Morgan Creek	Approximately 0.3 miles upstream of NC 54 HWY	Town Of Carrboro
Neville Creek	The confluence with Phils Creek	Approximately 190 feet upstream of Bowden Road	Orange County
New Hope Creek	Approximately 0.33 miles downstream of Old Chapel Hill Road	Approximately 2.4 miles upstream of the confluence of New Hope Creek Tributary 1	City Of Durham Orange County Town Of Chapel Hill
New Hope Creek	The Orange County Boundary	Approximately 360 feet upstream of Old NC 86 Highway	Orange County
New Hope Creek Tributary 1	Approximately 350 feet downstream I-40	Approximately 1,800 feet upstream of confluence of Dry Branch	Town Of Chapel Hill
New Hope Creek Tributary 1	The confluence with New Hope Creek	Approximately 0.5 mile upstream of Mount Moriah Road	City Of Durham Town Of Chapel Hill
Old Field Creek	The confluence with New Hope Creek	Approximately 430 feet upstream of Millhouse Road	Orange County Town Of Chapel Hill
Phils Creek	At the confluence with Morgan Creek	Approximately 230 feet upstream of American Stone Quarry Road	Orange County
Piney Mountain Creek	The confluence with New Hope Creek	Approximately 0.1 mile upstream of Friends School Road	Orange County
Rhodes Creek	The confluence with Eno River	Approximately 800 feet downstream of University Station Road	Orange County
Rocky Run	The confluence with Sevenmile Creek	Approximately 200 feet upstream of Moorefield Road	Orange County
Sevenmile Creek	The confluence with Eno River	Approximately 0.2 mile upstream of I-85N I-40E HWY	Orange County
Spring Valley Creek	The confluence of Eno River	Approximately 200 feet upstream of US Highway 70	Orange County
Stony Creek	The confluence with Eno River	Approximately 0.4 miles upstream of Duke Forest Drive	Orange County
Stony Creek Tributary	The confluence with Stony Creek	Approximately 360 feet upstream of Rowan Walk	Orange County

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

Source	Riverine Sources		Affected Communties
	From	To	
Strouds Creek[1]	The confleunce with Eno River	Approximately 1,500 feet upstream of the confluence with Eno River	Orange County Town Of Hillsborough
Strouds Creek Tributary 1	The confluence with Strouds Creek	Approximately 1.4 miles upstream of Governor Burke Road	Orange County Town Of Chapel Hill
Toms Creek	The confluence with Morgan Creek DS	Approximately 0.1 mile upstream of James Street	Town Of Carrboro
Unnamed Urban Creek	The confluence with Morgan Creek	Approximately 0.2 mile upstream of NC 54 HWY	Town Of Carrboro Town Of Chapel Hill
West Fork Eno River	At the confluence with Eno River	Approximately 460 feet upstream of Efland Cedar Grove Road	Orange County
West Price Creek	The confluence with Price Creek	Approximately 0.4 mile upstream of Price Creek Road	Orange County
Wilson Creek	The confluence with Morgan Creek	Approximately 560 feet upstream of Wave Road	Town Of Chapel Hill

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

Table 9P, “Scope of Revisions: Redelineated - Preliminary” is not applicable in Orange County.

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	
Buckhorn Branch[1]	The confluence with Jones Creek	Approximatley 770 feet upstream of Morgan Creek	Town Of Carrboro
Buffalo Creek Tributary 2	The confluence with Buffalo Creek (into North Fork Little River)	Approximately 1,250 feet upstream of the Durham/Orange County boundary	Orange County
Chapel Creek[1]	The confluence with Morgan Creek	Approximatley 2280 feet upstream of Morgan Creek	Town Of Chapel Hill
Dry Creek[1]	The confluence with Eno River	Approximately 760 feet upstream of the confluence with Eno River	Orange County
East Fork Eno River	Approximately 150 feet upstream of Carr Store Road	Approximately 100 feet downstream of State Highway 86	Orange County
East Fork Eno River Tributary 1[1]	The confluence with East Fork Eno River	Approximately 920 feet upstream of the confluence with East Fork Eno River	Orange County
East Fork Eno River Tributary 2[1]	Approximately 0.3 mile upstream of the confluence of East Fork Eno River	Approximately 0.7 mile upstream of the confluence of East Fork Eno River	Orange County
High Rock Creek[1]	The confluence with Eno River	Approximately 800 feet upstream of the confluence with Eno River	Orange County
Jones Creek	Approximately 0.5 mile upstream of confluence with Bolin Creek	Approximately 0.2 mile upstream of Lucy Lane	Town Of Carrboro
Little River North Fork	Approximately 280 feet upstream of State Highway 57	Approximately 0.3 mile upstream of Hester Road	Orange County
Little River North Fork Tributary 3[1]	The confluence with Little River North Fork	Approximately 900 feet upstream of the confluence with Little River North Fork	Orange County
Meeting of the Waters Creek[1]	The confluence with Morgan Creek	Approximatley 620 feet upstream of Morgan Creek	Town Of Chapel Hill
Morgan Creek	The confluence with Jordan Lake	The Durham/Orange County boundary	City Of Durham Orange County Town Of Chapel Hill
Morgan Creek	The University Lake Dam	Approximately 0.2 mile upstream of Jones Ferry Road	Orange County Town Of Carrboro
Mountain Creek	The confluence with New Hope Creek	Approximately 1.9 miles upstream of confluence with New Hope Creek	Orange County
New Hope Creek	Approximately 350 feet upstream of Old NC 86	Approximately 0.4 mile upstream of Union Grove Church Road	Orange County
North Fork Little River Tributary 2	The confluence with North Fork Little River	The Durham/Orange County boundary	Orange County
Sevenmile Creek	Approximately 350 feet upstream of Interstate 85	Approximately 1.6 miles upstream of the confluence of Sevenmile Creek Tributary 2	Orange County
Strouds Creek Tributary 1	Approximately 1.4 miles upstream of the confluence with Strouds Creek	Approximately 0.2 mile upstream of Phelps Road	Orange County
Unnamed Stream	The confluence with Bolin Creek	Approximately 0.2 miles upstream of Cates Farm Road	Town Of Carrboro

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

Source	Riverine Sources		Affected Communties
	From	To	
Unnamed Tributary to Bolin Creek	The confluence with Bolin Creek	Approximately 370 feet upstream of Tallyho Trail	Town Of Carrboro
West Fork Eno River	Approximately 100 feet upstream of N. Efland Cedar Grove Road	Approximately 350 feet upstream of McDade Store Road	Orange County
West Fork Eno River Tributary 1[1]	The confluence with West Fork Eno River	Approximately 430 feet upstream of the confluence with West Fork Eno River	Orange County

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

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

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

Source	Riverine Sources		Affected Communties
	From	To	
Bolin Creek	The confluence with Little Creek (Chapel Hill) and Booker Creek	Approximately 200 feet upstream of Old NC 86	Town Of Carrboro Town Of Chapel Hill
Bolin Creek Tributary	The confluence with Bolin Creek	Approximately 0.5 mile upstream from confluence with Bolin Creek	Orange County Town Of Carrboro
Booker Creek	The confluence with Little Creek (Chapel Hill) and Bolin Creek	Approximately 600 feet upstream of Martin Luther King Jr. Boulevard	Town Of Chapel Hill
Buckwater Creek	The confluence with Eno River	Approximately 0.2 mile upstream of Walnut Hill Drive	Orange County
Buckwater Creek Tributary 1	The confluence with Buckwater Creek	Approximately 150 feet upstream of Saint Mary's Road	Orange County
Buckwater Creek Tributary 2	The confluence with Buckwater Creek	Approximately 175 feet upstream of St. Mary's Road	Orange County
Cates Creek	The confluence with Eno River	Approximately 1.0 mile upstream of Interstate 40	Orange County Town Of Hillsborough
Cates Creek Tributary	The confluence with Cates Creek	Approximately 0.6 mile upstream of Davis Road	Orange County
Cedar Fork	Approximately 240 feet downstream of Cross Creek Drive	Approximately 0.2 mile upstream of Kingston Drive	Town Of Chapel Hill
Cedar Fork	The confluence with Booker Creek	Approximately 600 feet upstream of Cedar Hills Drive	Town Of Chapel Hill
Collins Creek Tributary 1	At the confluence with Collins Creek	Approximately 700 feet upstream of Gait Way	Orange County
Dry Branch	The confluence with New Hope Creek Tributary 1	Approximately 840 feet upstream of Silver Creek Trail	Town Of Chapel Hill
East Fork Eno River	At the confluence with Eno River	Approximately 0.1 mile upstream of Carr Store Road	Orange County
East Price Creek	The confluence with Price Creek	Approximately 0.3 mile upstream of Booth Road	Orange County
Eno River	At the Orange County boundary	Approximately 0.5 miles upstream of Halls Mill Road	Orange County Town Of Hillsborough
Eno River	Just upstream of Old Oxford Road	Approximately 2.2 miles upstream of Cole Mill Road	City Of Durham Orange County
Fan Branch	The confluence with Wilson Creek	Approximately 0.4 mile upstream of Dogwood Acres Drive	Town Of Chapel Hill
Fan Branch Tributary	The confluence with Fan Branch	Approximately 0.1 mile upstream of Carlton Drive	Town Of Chapel Hill
Forrest Creek	The confluence with Little River South Fork	Approximately 0.1 mile upstream of Phelps Road	Orange County
Jones Creek	The confluence with Bolin Creek	Approximately 0.5 mile upstream of Turtleback Crossing Drive	Town Of Carrboro
Lake Michael Tributary	Confluence with Mill Creek	Approximately 0.2 mile upstream of Lancaster Road	City Of Mebane Orange County
Lake Michael Tributary 2	The confluence with Lake Michael Tributary	Approximately 1.2 miles upstream of confluence with Lake Michael Tributary	Orange County
Little Creek	Approximately 800 feet downstream of Pinehurst Drive	The confluence of Bolin Creek and Booker Creek	Town Of Chapel Hill
Little Creek (Near Hillsborough)	The confluence with Eno River	Approximately 0.3 miles upstream of Farm Gate Drive	Orange County
Little River North Fork	At the confluence with Little River	Approximately 1.33 miles upstream of S Lowell Road	Orange County
Little River North Fork	At the Orange County Boundary	Approximately 200 feet upstream of NC 57 HWY	Orange County
Little River South Fork	At the confluence with Little River	At the Durham County boundary	Orange County

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

Source	Riverine Sources		Affected Communties
	From	To	
Little River South Fork	The confluence with Little River	Approximately 150 feet upstream of State Highway 57	Orange County
McGowan Creek	The confluence with Eno River	Approximately 300 feet upstream of Frazier Road	Orange County
Mill Creek	Approximately 50 feet upstream of the confluence of Lake Michael Tributary	Approximately 1.4 miles upstream of Mill Creek Road	City Of Mebane Orange County
Morgan Creek	Approximately 0.7 miles downstream of SW of Friday Center Dr.	Approximately 1.7 miles upstream of Greensboro Street	Orange County Town Of Carrboro Town Of Chapel Hill
Morgan Creek	Approximately 2.2 miles downstream of NC 54 Highway	Approximately 270 feet upstream of Dairyland (US) Road	Orange County Town Of Carrboro
Morgan Creek Tributary	The confluence with Morgan Creek	Approximately 0.3 miles upstream of NC 54 HWY	Town Of Carrboro
Neville Creek	The confluence with Phils Creek	Approximately 190 feet upstream of Bowden Road	Orange County
New Hope Creek	Approximately 0.33 miles downstream of Old Chapel Hill Road	Approximately 2.4 miles upstream of the confluence of New Hope Creek Tributary 1	City Of Durham Orange County Town Of Chapel Hill
New Hope Creek	The Orange County Boundary	Approximately 360 feet upstream of Old NC 86 Highway	Orange County
New Hope Creek Tributary 1	Approximately 350 feet downstream I-40	Approximately 1,800 feet upstream of confluence of Dry Branch	Town Of Chapel Hill
New Hope Creek Tributary 1	The confluence with New Hope Creek	Approximately 0.5 mile upstream of Mount Moriah Road	City Of Durham Town Of Chapel Hill
Old Field Creek	The confluence with New Hope Creek	Approximately 430 feet upstream of Millhouse Road	Orange County Town Of Chapel Hill
Phils Creek	At the confluence with Morgan Creek	Approximately 230 feet upstream of American Stone Quarry Road	Orange County
Piney Mountain Creek	The confluence with New Hope Creek	Approximately 0.1 mile upstream of Friends School Road	Orange County
Rhodes Creek	The confluence with Eno River	Approximately 800 feet downstream of University Station Road	Orange County
Rocky Run	The confluence with Sevenmile Creek	Approximately 200 feet upstream of Moorefield Road	Orange County
Sevenmile Creek	The confluence with Eno River	Approximately 0.2 mile upstream of I-85N I-40E HWY	Orange County
Spring Valley Creek	The confluence of Eno River	Approximately 200 feet upstream of US Highway 70	Orange County
Stony Creek	The confluence with Eno River	Approximately 0.4 miles upstream of Duke Forest Drive	Orange County
Stony Creek Tributary	The confluence with Stony Creek	Approximately 360 feet upstream of Rowan Walk	Orange County
Strouds Creek	The confluence with Eno River	Approximately 0.6 mile upstream State Highway 57	Orange County Town Of Hillsborough
Strouds Creek Tributary 1	The confluence with Strouds Creek	Approximately 1.4 miles upstream of Governor Burke Road	Orange County Town Of Chapel Hill
Toms Creek	The confluence with Morgan Creek DS	Approximately 0.1 mile upstream of James Street	Town Of Carrboro
Unnamed Urban Creek	The confluence with Morgan Creek	Approximately 0.2 mile upstream of NC 54 HWY	Town Of Carrboro Town Of Chapel Hill
West Fork Eno River	At the confluence with Eno River	Approximately 460 feet upstream of Efland Cedar Grove Road	Orange County
West Price Creek	The confluence with Price Creek	Approximately 0.4 mile upstream of Price Creek Road	Orange County
Wilson Creek	The confluence with Morgan Creek	Approximately 560 feet upstream of Wave Road	Town Of Chapel Hill

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	
Little River South Fork	The confluence with Little River	Approximately 230 feet upstream of State Highway 57	Orange County

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

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

Source	Riverine Sources		Affected Communties
	From	To	
Back Creek Tributary 3	The confluence with Back Creek	Approximately 2.2 miles upstream of confluence with Back Creek	Orange County
Battle Branch	The confluence with Bolin Creek	Approximately 1.5 miles upstream of confluence with Bolin Creek	Town Of Chapel Hill
Bolin Creek	Approximately 200 feet upstream of Old NC 86	Approximately 0.2 mile upstream of Talbryn Way	Town Of Carrboro
Bolin Creek Tributary 2	The confluence with Bolin Creek	Approximately 0.2 miles upstream of Cates Farm Road	Town Of Carrboro
Buckhorn Branch	The confluence with Jones Creek	Approximately 500 feet upstream of Unnamed Road	Town Of Carrboro
Buffalo Creek Tributary 2	The confluence with Buffalo Creek (into North Fork Little River)	Approximately 1,250 feet upstream of the Durham/Orange County boundary	Orange County
Cane Creek (North)	Approximately 1.5 miles upstream of confluence of Well Creek	Alamance County (UNincorporated Areas)	Orange County
Cane Creek (North) Tributary 5	The confluence with Cane Creek	Approximately 0.2 mile upstream of Orange Grove Road	Orange County
Cedar Fork	Approximately 600 feet upstream of Cedar Hills Drive	Approximately 0.1 mile upstream of Kingston Drive	Town Of Chapel Hill
Chapel Creek	Approximately 0.23 mile downstream of South Fordham Boulevard	Approximately 0.3 mile upstream of Purt Near Lane	Town Of Chapel Hill
Collins Creek	Confluence with Haw River	Approximately 0.8 mile upstream of Orange Grove Road	Orange County
Crabtree Creek	The confluence with Sevenmile Creek	Approximately 1.8 miles upstream of confluence with Sevenmile Creek	Orange County
Crow Branch	The confluence with Booker Creek	Approximately 1.1 miles upstream of Airport Road	Town Of Chapel Hill
Dry Creek	The confluence with Eno River	Approximately 0.3 mile upstream of Altman Road	Orange County
East Back Creek	Confluence with Graham-Mebane Lake	Just downstream of Carr Store Road	City Of Mebane Orange County
East Fork Eno River	Approximately 150 feet upstream of Carr Store Road	Approximately 100 feet downstream of State Highway 86	Orange County
East Fork Eno River Tributary 1	The confluence with East Fork Eno River	Approximately 1.1 miles upstream of confluence of East Fork Eno River	Orange County
East Fork Eno River Tributary 2	Approximately 0.3 mile upstream of the confluence of East Fork Eno River	Approximately 0.5 mile upstream of Carr Store Road	Orange County
High Rock Creek	The confluence with Eno River	Approximately 0.3 mile upstream of Efland-Cedar Grove Road	Orange County
Jones Creek	Approximately 0.5 mile upstream of confluence with Bolin Creek	Approximately 0.2 mile upstream of Lucy Lane	Town Of Carrboro
Lick Creek	The Orange/Person County Boundary	Approximately 0.3 mile upstream of Holly Ridge Road	Orange County
Little Creek Tributary 3 (Chapel Hill)	The confluence with Little Creek (Chapel Hill)	Approximately 0.5 mile upstream of Ephesus Church Road	Town Of Chapel Hill
Little River North Fork	Approximately 280 feet upstream of State Highway 57	Approximately 0.3 mile upstream of Hester Road	Orange County
Little River North Fork Tributary 2	The confluence with Little River North Fork	Approximately 1.3 miles upstream of Gates Road	Orange County
Little River North Fork Tributary 3	The confluence with Little River North Fork	Approximately 0.7 mile upstream of Sneed Road	Orange County
Little River South Fork	Approximately 230 feet upstream of State Highway 57	Approximately 100 feet upstream of Hawkins Road	Orange County
Meeting of the Waters Creek	The confluence with Morgan Creek	Approximately 0.7 mile upstream of Fordham Boulevard South	Town Of Chapel Hill
Mill Creek Tributary	The confluence with Mill Creek	Approximately 0.5 mile upstream of	Orange County
Morgan Creek	The confluence with Jordan Lake	The Durham/Orange County boundary	City Of Durham Orange County Town Of Chapel Hill
Morgan Creek	The University Lake Dam	Approximately 0.2 mile upstream of Jones Ferry Road	Orange County Town Of Carrboro
Mountain Creek	The confluence with New Hope Creek	Approximately 1.9 miles upstream of confluence with New Hope Creek	Orange County
New Hope Creek	Approximately 350 feet upstream of Old NC 86	Approximately 0.4 mile upstream of Union Grove Church Road	Orange County
North Fork Little River Tributary 2	The confluence with North Fork Little River	The Durham/Orange County boundary	Orange County
Price Creek	The confluence with University Lake	The confluence with East Branch Price Creek and West Branch Price Creek	Orange County Town Of Carrboro

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

Source	Riverine Sources		Affected Communties
	From	To	
Rays Creek	The confluence with South Fork Little River	Approximately 1.1 miles upstream of Wilkerson Road	Orange County
Rays Creek Tributary	The confluence with Rays Creek	Approximately 1.0 mile upstream of Wilkerson Road	Orange County
Sevenmile Creek	Approximately 350 feet upstream of Interstate 85	Approximately 1.6 miles upstream of the confluence of Sevenmile Creek Tributary 2	Orange County
Sevenmile Creek Tributary 1	The confluence with Sevenmile Creek	Approximately 1.5 miles upstream of confluence of Sevenmile Creek	Orange County
Sevenmile Creek Tributary 2	The confluence with Sevenmile Creek	Approximately 0.3 mile upstream of Bushy Cook Road	Orange County
Stagg Creek	Approximately 1.0 mile downstream of NC 119	Approximately 0.5 mile upstream of Atkins Road	Orange County
Stagg Creek Tributary 2	Confluence with Stagg Creek	Alamance/Orange County boundary	Orange County
Strouds Creek	Approximately 0.6 mile upstream State Highway 57	Approximately 0.4 mile upstream of State Highway 86	Orange County
Strouds Creek Tributary 1	Approximately 1.4 miles upstream of the confluence with Strouds Creek	Approximately 0.2 mile upstream of Phelps Road	Orange County
Strouds Creek Tributary 2	The confluence with Strouds Creek	Approximately 0.7 mile upstream of Miller Road	Orange County
Strouds Creek Tributary 3	The confluence with Strouds Creek	Approximately 0.5 mile State Highway 57	Orange County Town Of Hillsborough
Terrells Creek	The confluence with Haw River	The Chatham/Orange County boundary	Orange County
Toms Creek (Apple Pond)	The confluence with Cane Creek Reservoir	Approximately 1,800 feet upstream of Nicks Road	Orange County
Tributary 1 to Sevenmile Creek Tributary 2	The confluence with Sevenmile Creek Tributary 2	Approximately 0.2 mile upstream of Bushy Cook Road	Orange County
Turkey Hill Creek	The confluence with Cane Creek	Approximately 0.8 mile upstream of an unnamed road	Orange County
Unnamed Tributary to Bolin Creek	The confluence with Bolin Creek	Approximately 370 feet upstream of Tallyho Trail	Town Of Carrboro
Watery Fork	The confluence with Cane Creek Reservoir	Approximately 0.1 mile upstream of Dairyland Road	Orange County
West Fork Eno River	Approximately 100 feet upstream of N. Efland Cedar Grove Road	Approximately 350 feet upstream of McDade Store Road	Orange County
West Fork Eno River Tributary 1	The confluence with West Fork Eno River	Approximately 0.6 mile upstream of Harmony Church Road	Orange County
West Fork Eno River Tributary 2	The confluence with West Fork Eno River	Approximately 1,600 feet upstream of Governor Scott Road	Orange County
West Fork Eno River Tributary 3	The confluence with West Fork Eno River	Approximately 1.7 miles upstream of the confluence of West Fork Eno River	Orange County
West Price Creek	The Chatham/Orange County boundary	Approximately 1,920 feet upstream of Chatham/Orange County boundary	Orange County
Wildcat Branch	The confluence with Collins Creek	Approximately 0.2 mile upstream of Wildcat Creek Road	Orange County

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

This FIS also incorporates the determinations of letters issued by FEMA resulting in map changes (Letters of Map Revision [LOMRs]), as shown in Table 12, “Letters of Map Revision”.

Table 12 - Letters of Map Revision

Case Number	Date Issued	Flooding Source/Description	Communities
09-04-1756P	7/31/2009	Bolin Creek / 09-04-1756P	Town Of Chapel Hill
10-04-0448P	8/23/2010	Meeting of the Waters Creek / 10-04-0448P	Town Of Chapel Hill

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	1% Annual Future Annual Chance	0.2% Annual Chance
Back Creek Tributary 3						
At the confluence with Back Creek	3.00	*	*	1495	*	*
Approximately 0.95 mile upstream of confluence with Back Creek	2.80	*	*	1403	*	*
Approximately 1.01 mile upstream of confluence with Back Creek	1.70	*	*	1028	*	*
Battle Branch						
At the confluence with Bolin Creek	0.70	*	*	584	*	*
Approximately 1.37 miles upstream of confluence with Bolin Creek	0.20	*	*	270	*	*
Bolin Creek						
At the confluence with Little Creek (Chapel Hill) and Booker Creek	11.70	4850	6410	6780	*	7730
Approximately 0.04 mile upstream of Shepard Lane	10.70	4550	6050	6410	*	7330
Approximately 0.28 mile upstream of East Franklin Street	10.20	4370	5840	6190	*	7090
Approximately 0.52 mile upstream of East Franklin Street	9.70	4200	5630	5980	*	6860
Approximately 0.02 mile upstream of Bolinwood Drive	9.10	3810	5190	5530	*	6420
Approximately 0.31 mile upstream of Pritchard Avenue Ext.	7.90	2940	4200	4540	*	5440
Approximately 0.05 mile upstream of Village Drive	7.70	2840	4070	4410	*	5300
Approximately 0.79 mile upstream of Estes Drive Ext.	6.30	2200	3280	3600	*	4430
Approximately 0.86 mile downstream of Homestead Road	5.40	1840	2820	3110	*	3900
Approximately 0.15 mile downstream of Homestead Road	4.80	1620	2520	2790	*	3540
Approximately 0.63 mile upstream of Homestead Road	3.70	1230	2000	2240	*	2900
Approximately 0.96 mile upstream of Homestead Road	2.90	1020	1680	1890	*	2480
Approximately 0.32 mile downstream of Lake Hogan Farm Dam	1.60	924	1470	1630	*	2060
Approximately 0.33 mile upstream of Lake Hogan Farm Road	1.30	529	942	1080	*	1480
Approximately 0.04 mile upstream of Old NC 86	1.00	330	595	736	*	1150
Approximately 0.28 mile downstream of Talbryn Way	0.20	*	*	252	*	*
Bolin Creek Tributary						
At the confluence with Bolin Creek	0.38	218	368	434	*	607
Approximately 820 feet upstream of the confluence with Bolin Creek	0.32	198	335	396	*	554

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)				
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	1% Annual Future Annual Chance	0.2% Annual Chance
Approximately 820 feet upstream of the confluence with Bolin Creek	0.28	181	308	364	*	510
Bolin Creek Tributary 2						
At the confluence with Bolin Creek	0.56	*	*	744	*	*
Approximately 0.2 mile upstream of the confluence with Bolin Creek	0.46	*	*	656	*	*
Approximately 0.4 mile upstream of the confluence with Bolin Creek	0.42	*	*	618	*	*
Approximately 0.5 mile upstream of the confluence with Bolin Creek	0.40	*	*	587	*	*
Booker Creek						
At the confluence with Little Creek (Chapel Hill) and Bolin Creek	6.30	1670	2660	2970	*	3840
Approximately 0.02 mile upstream of South Elliot Road	6.00	1600	2560	2860	*	3710
Approximately 0.17 mile upstream of East Franklin Street	5.50	1470	2380	2670	*	3480
Approximately 0.05 mile upstream of Daley Road	4.60	1210	2010	2280	*	3020
Approximately 0.36 mile upstream of Daley Road	3.10	964	1620	1840	*	2450
Approximately 0.28 mile upstream of North Lakeshore Drive	2.50	833	1420	1610	*	2160
Approximately 0.06 mile downstream of Piney Mountain Road	1.40	622	1070	1210	*	1620
Approximately 0.21 mile downstream of Martin Luther King Jr. Boulevard	1.10	503	886	1010	*	1360
Buckhorn Branch						
At the confluence with Jones Creek	0.50	*	*	453	*	*
Buckwater Creek						
At the confluence with Eno River	9.19	1570	2500	2900	*	3910
Approximately 1,460 feet upstream of the confluence with Eno River	9.09	1550	2490	2880	*	3880
Approximately 0.5 mile upstream of the confluence with Eno River	8.90	1530	2450	2840	*	3840
Approximately 0.7 mile upstream of the confluence with Eno River	8.69	1510	2420	2800	*	3780
Approximately 1 mile upstream of the confluence with Eno River	8.46	1490	2380	2760	*	3720
Approximately 1.3 miles upstream of the confluence with Eno River	7.98	1430	2300	2670	*	3600
Approximately 1.8 miles upstream of the confluence with Eno River	7.64	1400	2240	2600	*	3510
Approximately 830 feet downstream of the confluence of Buckwater Creek Tributary 1	5.74	1170	1890	2190	*	2970
Just upstream of the confluence of Buckwater Creek Tributary 1	4.18	1090	1800	2100	*	2880
Approximately 880 feet upstream of the confluence of Buckwater Creek Tributary 1	4.02	1090	1800	2100	*	2880
Approximately 1,350 feet upstream of the confluence of Buckwater Creek Tributary 1	3.81	1090	1800	2100	*	2880
Approximately 0.4 mile downstream of the confluence of Buckwater Creek Tributary 2	3.68	1090	1800	2100	*	2880
Approximately 780 feet downstream of the confluence of Buckwater Creek Tributary 2	3.48	1090	1800	2100	*	2880
Just upstream of the confluence of Buckwater Creek Tributary 2	1.58	528	870	1020	*	1400
Approximately 330 feet downstream of Walnut Hill Drive	1.24	455	752	882	*	1220
Buckwater Creek Tributary 1						
At the confluence with Buckwater Creek	1.54	519	856	1000	*	1380
Approximately 1,060 feet upstream of the confluence with Buckwater Creek	1.26	459	759	889	*	1230
Approximately 290 feet downstream of Saint Marys Road	1.22	450	745	874	*	1200
Buckwater Creek Tributary 2						
At the confluence with Buckwater Creek	1.88	587	965	1130	*	1550
At the confluence with Buckwater Creek	1.86	584	959	1120	*	1540

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)				
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	1% Annual Future Annual Chance	0.2% Annual Chance
Buffalo Creek Tributary 2						
At Mckee Road	2.54	*	*	3170	3710	*
Cane Creek (North)						
Approximately 0.64 mile downstream of Morrow Mill Road	36.90	*	*	7080	*	*
Approximately 0.61 mile upstream of Morrow Mill Road	35.30	*	*	6900	*	*
Approximately 1.05 mile downstream of Buckhorn Road	13.90	*	*	3860	*	*
Approximately 0.03 mile downstream of Buckhorn Road	7.60	*	*	2810	*	*
Approximately 0.54 mile downstream of Bradshaw Quarry Road	3.90	*	*	1740	*	*
Approximately 0.03 mile upstream of Bradshaw Quarry Road	3.60	*	*	1650	*	*
Approximately 0.78 mile downstream of Borland Road	2.60	*	*	1360	*	*
Approximately 0.69 mile downstream of Borland Road	1.60	*	*	1010	*	*
Approximately 13 feet downstream of Borland Road	1.00	*	*	747	*	*
Cane Creek (North) Tributary 5						
At the confluence with Cane Creek	2.70	*	*	1398	*	*
Approximately 0.30 mile upstream of the confluence with Cane Creek	2.10	*	*	1200	*	*
Cates Creek						
Approximately 0.13 mile downstream of Elizabeth Brady Road	5.09	*	*	2530	*	*
Approximately 0.19 mile upstream of Valley Forge Road	4.44	*	*	2320	*	*
Approximately 0.16 mile upstream of Old NC 86	3.58	*	*	2030	*	*
Approximately 0.16 mile downstream of I-40	1.25	*	*	1060	*	*
Approximately 1.06 miles upstream of I-40	1.00	*	*	916	*	*
Cates Creek Tributary						
Approximately 0.03 mile upstream of I-40	1.46	*	*	1160	*	*
Approximately 0.55 mile upstream of Davis Road	1.00	*	*	916	*	*
Cedar Fork						
At the confluence with Booker Creek	1.40	539	964	1110	*	1520
Approximately 0.05 mile upstream of Brookview Drive	0.90	471	827	940	*	1260
Approximately 0.20 mile downstream of Cedar Hills Drive	0.50	369	646	731	*	971
Approximately 250 feet upstream of Cedar Hills Drive	0.22	299	507	565	*	763
Overland flow section downstream of Weaver Dairy Road	0.12	234	396	438	*	591
Approximately 120 feet downstream of Kingston Drive	0.05	133	235	263	*	361
Chapel Creek						
Approximately 0.25 mile downstream of Carmichael Road	0.60	*	*	567	*	*
Approximately 0.16 mile downstream of Purt Near Lane	0.20	*	*	278	*	*
Collins Creek						
At the Chatham/Orange County boundary	16.20	*	*	4253	*	*
Approximately 0.48 mile upstream of Orange/Chatham County Boundary	15.40	*	*	4117	*	*
Approximately 0.23 mile downstream of Old Greensboro	14.60	*	*	3982	*	*
Approximately 0.34 mile upstream of Old Greensboro	13.60	*	*	3811	*	*
Approximately 1.39 miles upstream of Old Greensboro	11.60	*	*	3440	*	*
Approximately 1.64 miles upstream of Old Greensboro	11.50	*	*	3435	*	*
Approximately 2.06 miles upstream of Old Greensboro	10.50	*	*	3246	*	*
Approximately 1.10 miles downstream of NC 54	4.30	*	*	1854	*	*

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)				
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	1% Annual Future Annual Chance	0.2% Annual Chance
Approximately 0.78 mile downstream of NC 54	3.50	*	*	1626	*	*
Approximately 0.41 mile upstream of NC 54	3.00	*	*	1469	*	*
Approximately 0.70 mile upstream of NC 54	2.00	*	*	1141	*	*
Approximately 0.67 mile upstream of Orange Grove Road	1.40	*	*	900	*	*
Collins Creek Tributary 1						
Immediately upstream of confluence with Collins Creek	5.26	1110	1790	2080	*	2820
Immediately downstream of NC Highway 54	4.26	974	1580	1840	*	2490
Approximately 0.7 mile upstream of NC Highway 54	2.68	731	1190	1390	*	1900
Approximately 0.7 mile downstream of Gait Way	1.96	603	989	1160	*	1590
Approximately 100 feet downstream of Gait Way	1.69	550	905	1060	*	1450
Crabtree Creek						
At confluence with Sevenmile Creek	1.65	*	*	1020	*	*
Approximately 1.79 miles upstream of confluence with Sevenmile Creek	1.00	*	*	745	*	*
Crow Branch						
At the confluence with Booker Creek	0.60	*	*	561	*	*
Approximately 0.89 mile upstream of Airport Road	0.20	*	*	255	*	*
Cub Creek						
Approximately 0.16 mile upstream of Orange-Chatham County boundary	5.80	*	*	2228	*	*
Approximately 0.6 mile upstream of Nature Trial Road	5.00	*	*	2026	*	*
Dry Branch						
At the confluence with New Hope Creek Tributary 1	0.40	259	480	551	*	759
Approximately 70 feet downstream of Perry Creek Drive	0.30	237	443	511	*	708
Approximately 840 feet downstream of Silver Creek Trail	0.20	177	339	393	*	552
Dry Creek						
Approximately 0.29 mile upstream of Altman Road	1.74	*	*	1050	*	*
East Back Creek						
Approximately 0.14 mile upstream of High Rock Road	11.50	*	*	3438	*	*
Approximately 0.79 mile upstream of High Rock Road	8.00	*	*	2732	*	*
Approximately 1.65 miles upstream of High Rock Road	7.60	*	*	2646	*	*
Approximately 1.86 miles upstream of High Rock Road	6.60	*	*	2424	*	*
Approximately 0.56 mile downstream of Harmony Church Road	6.10	*	*	2305	*	*
Approximately 0.41 mile upstream of Harmony Church Road	4.10	*	*	1807	*	*
Approximately 0.07 mile upstream of Pentecost Road	3.20	*	*	1535	*	*
Approximately 0.13 mile upstream of Allie Mae Road	2.80	*	*	1421	*	*
Approximately 0.35 mile upstream of Allie Mae Road	1.80	*	*	1080	*	*
East Fork Eno River						
At the confluence with Eno River	12.23	1870	2970	3430	*	4620
Approximately 1,680 feet upstream of the confluence with Eno River	11.56	1800	2870	3320	*	4470
Approximately 420 feet downstream of Highland Farm Road	11.44	1790	2850	3300	*	4440
Approximately 420 feet downstream of Highland Farm Road	11.36	1780	2840	3290	*	4420
Approximately 0.5 mile upstream of Highland Farm Road	9.63	1610	2570	2980	*	4010
Approximately 260 feet downstream of Lake Orange Road	9.09	1550	2490	2880	*	3880
Approximately 0.6 mile upstream of Lake Orange Road	6.39	1250	2010	2330	*	3160

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)				
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	1% Annual Future Annual Chance	0.2% Annual Chance
Approximately 1 mile upstream of Lake Orange Road	5.86	1190	1910	2220	*	3010
Approximately 0.9 mile downstream of Carr Store Road	5.77	1170	1890	2200	*	2980
Approximately 0.6 mile downstream of Carr Store Road	5.52	1140	1840	2140	*	2900
Approximately 0.4 mile downstream of Carr Store Road	5.22	1100	1780	2070	*	2810
Approximately 360 feet downstream of Carr Store Road	5.12	1090	1760	2050	*	2780
Approximately 90 feet upstream of Compton Road	4.14	*	*	1810	*	*
Approximately 0.54 mile upstream of Compton Road	3.26	*	*	1560	*	*
Approximately 1.29 miles upstream of Compton Road	2.48	*	*	1310	*	*
East Fork Eno River Tributary 1						
Approximately 1.18 miles upstream of confluence with East Fork Eno River	1.64	*	*	1010	*	*
Approximately 0.98 mile upstream of confluence with East Fork Eno River	1.28	*	*	870	*	*
East Fork Eno River Tributary 2						
Approximately 0.60 mile downstream of Carr Store Road	1.08	*	*	783	*	*
Approximately 0.56 mile upstream of Carr Store Road	1.01	*	*	747	*	*
East Price Creek						
At the confluence with Price Creek	2.25	708	1240	1420	*	1940
Approximately 0.35 miles upstream of the confluence with Price Creek	1.95	680	1180	1350	*	1840
Approximately 430 feet downstream of Brandywine Road	1.88	672	1170	1340	*	1820
Just downstream of Yorktown Drive	1.55	528	954	1100	*	1520
Just downstream of Booth Road	1.43	512	923	1060	*	1470
Eno River						
Approximately 0.40 miles upstream of the Orange County-Durham County border	119.55	7620	11700	13300	*	17400
Approximately 0.70 miles upstream of the Orange County-Durham County border	119.43	7610	11700	13300	*	17400
Approximately 0.60 miles downstream of the confluence of Rhodes Creek	118.85	7590	11600	13300	*	17400
Approximately 1,830 feet downstream of the confluence of Rhodes Creek	118.61	7580	11600	13200	*	17400
Just upstream of the confluence of Rhodes Creek	114.41	7410	11400	13000	*	17000
Approximately 1,400 feet downstream from Pleasant Green Road	113.84	7390	11300	12900	*	16900
Approximately 1,400 feet downstream from Pleasant Green Road	113.78	7390	11300	12900	*	16900
Just upstream of the confluence of Stony Creek	104.72	7020	10800	12300	*	16100
Approximately 1,800 feet upstream of the confluence of Stony Creek	104.39	7010	10800	12300	*	16100
Approximately 0.70 miles upstream of the confluence of Stony Creek	103.65	6970	10700	12200	*	16000
Approximately 1.10 miles upstream of the confluence of Stony Creek	103.15	6950	10700	12200	*	16000
Approximately 1.40 miles upstream of the confluence of Stony Creek	102.52	6930	10600	12100	*	15900
Approximately 1.60 miles upstream of the confluence of Stony Creek	101.22	6870	10600	12100	*	15800
Approximately 1.80 miles upstream of the confluence of Stony Creek	100.41	6840	10500	12000	*	15700
Approximately 1.20 miles downstream of the confluence of Buckwater Creek	100.17	6830	10500	12000	*	15700
Approximately 0.90 miles downstream of the confluence of Stony Creek	100.13	6830	10500	12000	*	15700
Approximately 0.70 miles downstream of the confluence of Buckwater Creek	99.92	6820	10500	12000	*	15700
Approximately 0.50 miles downstream of the confluence of Buckwater Creek	99.83	6810	10500	12000	*	15700
Just upstream of the confluence of Buckwater Creek	90.47	6450	9840	11300	*	14800
Approximately 1,550 feet upstream of the confluence of Buckwater Creek	90.36	6450	9830	11200	*	14800
Approximately 0.70 miles upstream of the confluence of Buckwater Creek	89.86	6430	9800	11200	*	14800

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)				
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	1% Annual Future Annual Chance	0.2% Annual Chance
Approximately 1.00 miles upstream of the confluence of Buckwater Creek	89.57	6410	9780	11200	*	14700
Approximately 1.30 miles downstream of the confluence of Spring Valley Creek	89.32	6400	9760	11200	*	14700
Approximately 0.80 miles downstream of the confluence of Spring Valley Creek	88.83	6390	9720	11100	*	14700
Approximately 0.60 miles downstream of the confluence of Spring Valley Creek	88.24	6360	9680	11100	*	14600
Just upstream of the confluence of Spring Valley Creek	85.87	6270	9520	10900	*	14400
Approximately 1,300 feet upstream of the confluence of Spring Valley Creek	85.79	6260	9510	10900	*	14400
Approximately 1,700 feet downstream of the confluence of Little Creek (Near Hillsborough)	85.68	6260	9510	10900	*	14300
Upstream of the confluence of Little Creek (Near Hillsborough)	83.02	6150	9320	10700	*	14100
Approximately 900 feet downstream of Lawrence Road	82.92	6140	9310	10700	*	14100
Approximately 1,400 feet upstream of Lawrence Road	73.85	5760	8660	9940	*	13200
Approximately 1,400 feet upstream of Lawrence Road	73.76	5750	8650	9940	*	13100
Approximately 0.40 miles downstream of US Highway 70	73.54	5740	8640	9920	*	13100
Approximately 260 feet downstream of US Highway 70	73.42	5740	8630	9910	*	13100
Approximately 200 feet upstream of US Highway 70	73.12	5720	8610	9880	*	13100
Approximately 1,500 feet upstream of US Highway 70	72.85	5710	8590	9860	*	13000
Approximately 0.70 miles upstream of US Highway 70	67.63	5470	8200	9430	*	12500
Approximately 1.10 miles upstream of US Highway 70	67.52	5470	8190	9420	*	12500
Approximately 1.40 miles upstream of US Highway 70	67.42	5460	8180	9410	*	12500
Approximately 1.2 miles downstream of Churton Street	66.45	5420	8110	9330	*	12400
Approximately 1.2 miles downstream of Churton Street	66.39	5420	8100	9320	*	12400
Approximately 1 mile downstream of Churton Street	66.32	5410	8100	9320	*	12300
Approximately 0.6 mile downstream of Churton Street	66.23	5410	8090	9310	*	12300
Approximately 1,790 feet downstream of Churton Street	66.05	5400	8080	9290	*	12300
Approximately 1,790 feet downstream of Churton Street	66.02	5400	8080	9290	*	12300
Approximately 100 feet downstream of Churton Street	65.77	5390	8060	9270	*	12300
Approximately 360 feet upstream of Exchange Park Lane	64.23	5300	7950	9140	*	12100
Approximately 1,560 feet upstream of Exchange Park Lane	64.04	5290	7940	9130	*	12100
Approximately 0.6 mile upstream of Exchange Park Lane	63.84	5280	7920	9110	*	12100
Approximately 1,690 feet downstream of Eno Mountain Road	62.65	5220	7830	9010	*	11900
Approximately 300 feet downstream of Eno Mountain Road	62.52	5210	7830	9000	*	11900
Approximately 1,210 feet upstream of Eno Mountain Road	62.24	5190	7810	8980	*	11900
Approximately 1,210 feet upstream of Eno Mountain Road	62.17	5190	7800	8970	*	11900
Approximately 1,930 feet downstream of Dimmocks Mill Road	60.59	5100	7690	8840	*	11700
Approximately 730 feet downstream of Dimmocks Mill Road	60.48	5100	7680	8830	*	11700
Approximately 1,090 feet downstream of the confluence of Sevenmile Creek	60.08	5070	7650	8790	*	11700
Just upstream of the confluence of Sevenmile Creek	43.02	4080	6290	7240	*	9600
Just upstream of the confluence of Sevenmile Creek	42.98	4080	6290	7230	*	9600
Approximately 0.5 mile upstream of Ben Johnston Road	42.86	4070	6280	7220	*	9580
Approximately 0.66 mile downstream of US 70 HWY	42.66	4060	6260	7200	*	9560
Approximately 1,890 feet downstream of US 70 HWY	42.26	4030	6230	7160	*	9500
Approximately 430 feet downstream of US 70 HWY	42.13	4030	6220	7150	*	9490
Approximately 390 feet upstream of US 70 HWY	41.47	3990	6160	7080	*	9400

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)				
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	1% Annual Future Annual Chance	0.2% Annual Chance
Approximately 2,000 feet upstream of US 70 HWY	35.18	3590	5590	6430	*	8540
Approximately 0.7 mile upstream of US 70 HWY	35.08	3580	5580	6420	*	8530
Approximately 0.9 mile upstream of US 70 HWY	33.92	3500	5470	6290	*	8360
Approximately 1.3 miles upstream of US 70 HWY	33.77	3490	5460	6280	*	8340
Approximately 1.8 miles downstream of Clark Farm Road	33.67	3490	5450	6270	*	8330
Approximately 1.4 miles downstream of Clark Farm Road	31.74	3360	5260	6050	*	8050
Approximately 1.1 miles downstream of Clark Farm Road	31.53	3350	5240	6030	*	8020
Approximately 0.9 mile downstream of Clark Farm Road	28.43	3140	4930	5670	*	7550
Approximately 0.9 mile downstream of Clark Farm Road	28.36	3130	4920	5660	*	7540
Approximately 790 feet downstream of Clark Farm Road	27.88	3100	4870	5600	*	7460
Approximately 170 feet downstream of Clark Farm Road	27.72	3090	4850	5580	*	7440
Approximately 1,490 feet downstream of Halls Mill Road	27.48	3070	4830	5550	*	7400
Approximately 370 feet downstream of Halls Mill Road	26.82	3030	4760	5480	*	7290
Approximately 1,170 feet upstream of Halls Mill Road	26.72	3020	4750	5460	*	7280
Fan Branch						
At the confluence with Wilson Creek	1.41	728	1310	1490	*	2060
Approximately 150 feet downstream of Parkview Cresent Drive	1.29	728	1310	1490	*	2060
Just upstream of the confluence of Fan Branch Tributary	0.61	364	653	746	*	1030
Just upstream of the confluence of Fan Branch Tributary	0.58	332	605	695	*	960
Just downstream of Dogwood Acres Drive	0.41	229	386	456	*	636
Approximately 1100 feet upstream of Dogwood Acres Drive	0.27	178	302	358	*	501
Fan Branch Tributary						
At the confluence with Fan Branch	0.60	428	814	940	*	1310
Approximately 300 feet downstream of Carlton drive	0.30	255	464	529	*	731
Approximately 300 feet downstream of Carlton drive	0.17	168	319	367	*	513
Forrest Creek						
At the confluence with Little River South Fork	8.17	871	1370	1700	*	2650
At Schley Road	7.18	668	1310	1630	*	2550
Just downstream of Canter Drive	6.11	644	1260	1570	*	2440
Approximately 1,790 feet upstream of Ericka Drive	5.05	626	1210	1510	*	2360
Approximately 0.9 mile downstream of NC 57 HWY	4.09	606	1200	1490	*	2320
Just downstream of NC 57 HWY	3.48	549	1060	1340	*	2130
Approximately 1,400 feet downstream of Edmund Latta Road	2.98	525	1050	1320	*	2120
Approximately 0.9 mile downstream of Brooks Road	2.15	476	984	1250	*	2020
Approximately 610 feet downstream of Oma Lane	1.17	497	974	1210	*	1810
Approximately 110 feet downstream of Phelphs Road	0.70	396	794	985	*	1490
High Rock Creek						
Approximately 0.80 mile upstream of confluence with Eno River	3.05	*	*	1500	*	*
Approximately 0.34 mile upstream of Brookhollow Road	2.91	*	*	1450	*	*
Approximately 0.29 mile upstream of N. Efland Cedar Grove Road	1.91	*	*	1120	*	*
Jones Creek						
At Mouth	1.20	345	695	905	*	1610
Approximately 320 feet downstream of Turtleback Crossing Drive	1.19	443	734	860	*	1190

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)				
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	1% Annual Future Annual Chance	0.2% Annual Chance
Approximately 1250 feet upstream of Turtleback Crossing Drive	1.11	423	702	823	*	1140
Below confluence of Buckhorn Creek	1.10	325	655	850	*	1515
Approximately 0.46 mile upstream of confluence with Bolin Creek	0.60	*	*	548	*	*
Approximately 0.07 mile upstream of Old NC 86	0.20	*	*	297	*	*
Lake Michael Tributary						
Confluence with Mill Creek	3.30	730	1270	1560	*	2370
Approximately 25 feet upstream of confluence of Lake Michael Tributary 2	1.30	398	712	878	*	1360
Approximately 0.03 mile downstream of Lancaster Road	0.10	89	169	213	*	346
Lake Michael Tributary 2						
At the confluence with Lake Michael Tributary	0.60	238	435	542	*	852
Lick Creek						
Approximately 0.58 mile downstream of Holly Ridge Road	3.59	*	*	1660	*	*
Approximately 0.39 mile downstream of Holly Ridge Road	2.71	*	*	1388	*	*
Approximately 0.17 mile upstream of Holly Ridge Road	1.72	*	*	1045	*	*
Approximately 0.32 mile upstream of Holly Ridge Road	1.46	*	*	945	*	*
Little Creek						
Approximately 0.02 mile upstream of Pinehurst Drive	20.00	5750	7710	8220	*	9540
Little Creek (Near Hillsborough)						
At the confluence with Eno River	2.51	703	1150	1340	*	1830
Approximately 410 feet downstream of Saint Marys Road	2.04	618	1010	1190	*	1620
Approximately 1,290 feet upstream of Saint Marys Road	1.84	580	953	1120	*	1530
Approximately 0.5 miles upstream of Saint Marys Road	1.69	549	904	1060	*	1450
Approximately 265 feet downstream of Farm Gate Road	1.29	466	770	902	*	1240
Approximately 1,250 feet upstream of Farm Gate Road	1.12	428	709	832	*	1150
Little Creek Tributary 3 (Chapel Hill)						
At the confluence with Little Creek (Chapel Hill)	1.00	*	*	766	*	*
Approximately 0.10 mile downstream of Boxwood Place	0.60	*	*	524	*	*
Little River North Fork						
Approximately 0.6 mile downstream of New Sharon Church Road	21.30	2630	4140	4780	*	6380
Approximately 0.5 mile downstream of New Sharon Church Road	20.50	2570	4050	4670	*	6240
Approximately 1,160 feet downstream of New Sharon Church Road	20.40	2560	4040	4650	*	6220
Approximately 650 feet downstream of New Sharon Church Road	20.29	2550	4020	4640	*	6200
Approximately 800 feet upstream of New Sharon Church Road	19.57	2490	3940	4540	*	6070
Approximately 0.5 mile upstream of New Sharon Church Road	19.49	2490	3930	4530	*	6060
Approximately 0.8 mile upstream of New Sharon Church Road	19.31	2470	3910	4500	*	6020
Approximately 1 mile upstream of New Sharon Church Road	19.21	2470	3890	4490	*	6010
Approximately 1.3 miles upstream of New Sharon Church Road	18.16	2380	3760	4340	*	5810
Approximately 1.3 miles upstream of New Sharon Church Road	18.15	2380	3760	4340	*	5810
Approximately 1.4 miles upstream of New Sharon Church Road	18.07	2370	3750	4330	*	5790
Approximately 1.43 miles upstream of New Sharon Church Road	18.03	2370	3750	4330	*	5790
Approximately 1.43 miles upstream of New Sharon Church Road	17.98	2370	3740	4320	*	5780
Approximately 1.6 miles downstream of Guess Road	14.74	2090	3310	3830	*	5130
Approximately 1.7 miles downstream of Guess Road	14.74	2090	3320	3840	*	5150

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)				
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	1% Annual Future Annual Chance	0.2% Annual Chance
Approximately 1.7 miles downstream of Guess Road	14.68	2090	3310	3830	*	5130
Approximately 1.2 miles downstream of Guess Road	14.59	2080	3300	3810	*	5110
Approximately 1 mile downstream of Guess Road	14.51	2070	3290	3800	*	5100
Approximately 0.5 mile downstream of Guess Road	14.25	2050	3260	3760	*	5050
Approximately 0.5 mile downstream of Guess Road	14.24	2050	3250	3760	*	5040
Approximately 840 feet downstream of Guess Road	13.99	2030	3220	3720	*	4990
Approximately 930 feet upstream of Guess Road	13.83	2010	3200	3690	*	4960
Approximately 0.5 mile upstream of Guess Road	13.58	1990	3160	3660	*	4910
Approximately 0.6 mile upstream of Guess Road	13.53	1990	3160	3650	*	4900
Approximately 0.9 mile downstream of NC 57 HWY	13.43	1980	3140	3630	*	4870
Approximately 0.9 mile downstream of NC 57 HWY	13.36	1970	3130	3620	*	4860
Approximately 270 feet downstream of NC 57 HWY	13.29	1960	3120	3610	*	4840
Approximately 1.13 miles downstream of Gates Road	11.80	*	*	3480	*	*
Approximately 0.11 mile downstream of Gates Road	7.84	*	*	2700	*	*
Approximately 0.12 mile downstream of Laws Store Road	7.04	*	*	2520	*	*
Approximately 0.15 mile downstream of Brown Road	6.05	*	*	2290	*	*
Approximately 0.67 mile downstream of Tapp Road	3.50	*	*	1630	*	*
Approximately 0.33 mile downstream of Tapp Road	2.50	*	*	1320	*	*
Approximately 0.06 mile downstream of Hester Road	1.63	*	*	1010	*	*
Approximately 0.39 mile upstream of Hester Road	1.03	*	*	759	*	*
Little River North Fork Tributary 2						
Approximately 0.15 mile upstream of confluence with Little River North Fork	2.97	*	*	1470	*	*
Approximately 1.13 miles upstream of Gates Road	2.87	*	*	1441	*	*
Little River North Fork Tributary 3						
Approximately 0.10 mile upstream of Sneed Road	3.22	*	*	1550	*	*
Approximately 0.58 mile upstream of Sneed Road	2.99	*	*	1480	*	*
Approximately 0.69 mile upstream of Sneed Road	1.97	*	*	1139	*	*
Little River South Fork						
At Durham County Limits	38.70	*	*	8500	*	*
At North Carolina Secondary Road 1538	33.50	*	*	7950	*	*
Just upstream of the confluence of Forrest Creek	22.85	2390	4530	5630	*	8580
Approximately 0.8 mile upstream of Hunt Road	21.44	2360	4490	5580	*	8540
Approximately 2.7 miles downstream of NC 57 HWY	18.43	2310	4400	5490	*	8420
Approximately 1.2 miles downstream of NC 57 HWY	17.45	2360	4560	5730	*	8870
Approximately 130 feet downstream of NC 57 HWY	16.28	2530	4850	6100	*	9410
Approximately 0.86 mile upstream of Brock Drive	15.67	*	*	4159	*	*
Approximately 0.03 mile downstream of Pearson Road	14.79	*	*	4010	*	*
McGowan Creek						
Approximately 1.74 miles downstream of Brookhollow Road	6.22	*	*	2870	*	*
Approximately 0.53 mile downstream of Brookhollow Road	5.48	*	*	2650	*	*
Approximately 0.26 miles downstream of S. Efland Cedar Grove Road	4.86	*	*	2460	*	*
Approximately 0.49 mile downstream of Richmond Road	3.90	*	*	2140	*	*
Approximately 0.13 mile downstream of Richmond Road	2.95	*	*	1800	*	*
Approximately 0.79 mile upstream of Richmond Road	1.95	*	*	1390	*	*

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)				
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	1% Annual Future Annual Chance	0.2% Annual Chance
Approximately 0.07 mile upstream of Frazier Road	1.15	*	*	999	*	*
Meeting of the Waters Creek						
At the confluence with Morgan Creek	1.00	*	*	767	*	*
Approximately 0.38 mile upstream of Fordham Boulevard South	0.40	*	*	418	*	*
Mill Creek						
Approximately 30 feet upstream of confluence of Mill Creek Tributary	2.70	759	1330	1530	*	2090
Mill Creek Tributary						
At the confluence with Mill Creek	0.70	*	*	709	*	*
Approximately 0.36 mile upstream of Lee Street	0.10	*	*	289	*	*
Morgan Creek						
Approximately 1.8 miles downstream of US 15 501 HWY	38.16	4560	6860	7650	*	9890
Approximately 1.3 miles downstream of US 15 501 HWY	37.93	4530	6810	7610	*	9840
Approximately 1.1 mile downstream of US 15 501 HWY	37.79	4500	6780	7580	*	9800
Approximately 0.5 mile downstream of US 15 501 HWY	37.51	4480	6750	7540	*	9750
Approximately 870 feet downstream of US 15 501 HWY	36.96	4380	6630	7410	*	9600
Approximately 600 feet upstream of the confluence of Wilson Creek	33.32	3980	6090	6830	*	8900
Approximately 600 feet upstream of the confluence of Wilson Creek	33.29	3970	6090	6830	*	8890
Approximately 0.6 mile upstream of the confluence of Wilson Creek	33.10	3930	6030	6770	*	8820
Approximately 0.7 mile downstream of Smith Level Road	32.76	3860	5950	6680	*	8710
Approximately 900 feet downstream of Smith Level Road	32.49	3810	5880	6610	*	8630
Just upstream of the confluence of Unnamed Urban Creek	31.89	3370	5280	6070	*	8070
Approximately 1,300 feet upstream of the confluence of Unnamed Urban Creek	31.80	3360	5270	6060	*	8060
Approximately 0.5 mile upstream of the confluence of Unnamed Urban Creek	31.62	3350	5250	6040	*	8030
Approximately 0.5 mile downstream of the confluence of Toms Creek	31.54	3350	5240	6030	*	8020
Approximately 1,500 feet downstream of the confluence of Toms Creek	31.43	3340	5230	6020	*	8000
Just upstream of the confluence of Toms Creek	30.04	3250	5090	5860	*	7790
Approximately 0.5 mile upstream of the confluence of Toms Creek	29.79	3230	5070	5830	*	7760
Approximately 600 feet upstream of Jones Ferry Road	9.93	1810	2980	3490	*	4760
Approximately 600 feet upstream of Jones Ferry Road	9.86	1800	2980	3490	*	4760
Approximately 0.6 mile upstream of Jones Ferry Road	9.62	1790	2970	3480	*	4760
Approximately 1,200 feet downstream of the confluence of Morgan Creek Tributary	9.49	1790	2970	3480	*	4760
Just upstream of the confluence of Morgan Creek Tributary	8.93	1760	2940	3450	*	4740
Approximately 0.9 mile downstream of NC 54 HWY	8.84	1750	2930	3440	*	4730
Approximately 0.6 mile downstream of NC 54 HWY	8.69	1740	2920	3430	*	4720
Approximately 1,400 feet downstream of NC 54 HWY	8.62	1740	2920	3430	*	4720
At Orange/Durham County boundary	8.40	1890	3750	4600	*	8400
Just downstream of NC 54 Highway	8.26	1710	2890	3400	*	4690
Approximately 1,570 feet upstream of NC 54 HWY	8.10	1690	2840	3340	*	4600
At NC 54	7.80	1750	3500	4200	*	7800
Approximately 0.5 mile upstream of NC 54 HWY	7.61	1590	2670	3140	*	4320
At Cheekie Boy Lane	7.48	1570	2630	3090	*	4250

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)				
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	1% Annual Future Annual Chance	0.2% Annual Chance
Approximately 1.2 miles downstream of the intersection of Dairyland Road and Yorkshire Lane	6.76	1430	2390	2800	*	3840
Approximately 0.8 mile downstream of the intersection of Dairyland Road and Yorkshire Lane	6.33	1360	2250	2630	*	3610
At NC Secondary Road 1105	6.30	1480	3000	3600	*	6700
Approximately 670 feet downstream of the intersection of Dairyland Road and Yorkshire Lane	5.65	1230	2030	2370	*	3240
At Dairyland Road downstream	5.20	1270	2550	3150	*	5800
Approximately 1.2 mile downstream of the intersection of Dairyland Road and Marison Road	3.23	820	1340	1560	*	2120
Approximately 0.7 mile downstream of the intersection of Dairyland Road and Marison Road	2.98	780	1270	1480	*	2030
Approximately 1,200 feet upstream of Dairyland Road	2.80	795	1600	1980	*	3650
Approximately 1,150 feet downstream of the intersection of Dairyland Road and Marison Road	2.53	706	1150	1350	*	1840
Just upstream of the intersection of Dairyland Road and Marison Road	2.16	640	1050	1230	*	1680
Approximately 850 feet upstream of the intersection of Dairyland Road and Marison Road	2.02	614	1010	1180	*	1610
Approximately 1,630 feet upstream of the intersection of Dairyland Road and Marison Road	1.93	598	982	1150	*	1570
At Dairyland Road	1.80	560	1120	1420	*	2600
Approximately 0.6 mile upstream of the intersection of Dairyland Road and Marison Road	1.72	556	915	1070	*	1470
Approximately 1.0 mile downstream of Dairyland Road	1.55	522	861	1010	*	1390
Approximately 0.71 mile downstream of Dairyland Road	1.22	450	745	874	*	1210
Approximately 0.43 mile downstream of Dairyland Road	0.90	372	619	727	*	1010
At Dairyland Road upstream crossing	0.60	220	450	580	*	1050
Approximately 1010 feet downstream of Dairyland Road	0.58	284	476	561	*	780
Morgan Creek Tributary						
At the confluence with Morgan Creek	0.53	287	537	622	*	865
Approximately 1,050 feet downstream of NC 54 HWY	0.42	260	487	562	*	781
Approximately 140 feet downstream of NC 54 Highway	0.24	170	332	387	*	544
Mountain Creek						
At the confluence with New Hope Creek	2.60	*	*	1354	*	*
Approximately 0.85 mile upstream of confluence with New Hope Creek	2.20	*	*	1220	*	*
Neville Creek						
At the confluence with Phils Creek	3.94	927	1510	1750	*	2380
Approximately 840 feet upstream of the confluence with Phils Creek	3.08	796	1300	1510	*	2060
Approximately 0.4 mile upstream of the confluence with Phils Creek	2.95	776	1270	1480	*	2020
Approximately 0.7 mile upstream of the confluence with Phils Creek	2.91	770	1260	1470	*	2000
Approximately 1.1 miles upstream of the confluence with Phils Creek	2.79	750	1220	1430	*	1950
Approximately 1,340 feet downstream of Stansbury Road	2.41	685	1120	1310	*	1790
Approximately 270 feet downstream of Stansbury Road	2.34	672	1100	1290	*	1760
Approximately 270 feet downstream of Stansbury Road	2.27	660	1080	1260	*	1730
Approximately 1,500 feet downstream of Bowden Road	2.17	641	1050	1230	*	1680
Approximately 130 feet downstream of Bowden Road	1.87	587	964	1130	*	1550

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)				
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	1% Annual Future Annual Chance	0.2% Annual Chance
New Hope Creek						
Approximately 0.6 mile downstream of Erwin Road	31.34	3960	7320	8680	*	12200
At Erwin Road	26.46	3270	5160	6080	*	8640
Just upstream of the confluence of Piney Mountain Creek	25.87	3230	5100	6010	*	8540
Approximately 0.8 mile upstream of the confluence of Piney Mountain Creek	25.49	3200	5050	5960	*	8470
Approximately 1.2 miles upstream of the confluence of Piney Mountain Creek	24.02	3070	4870	5740	*	8160
Approximately 1.8 miles upstream of the confluence of Piney Mountain Creek	23.71	3050	4840	5710	*	8140
Approximately 1.1 mile downstream of Turkey Farm Road	22.92	2990	4740	5600	*	7970
Just downstream of Turkey Farm Road	22.41	2960	4750	5600	*	7950
Just upstream of the confluence of Old Field Creek	17.82	1760	3140	3880	*	5650
Approximately 150 feet downstream of Mt Sinai Road	17.48	1750	2940	3690	*	5530
Approximately 0.7 mile upstream of Mt Sinai Road	16.34	1690	2840	3430	*	5160
Approximately 0.6 mile downstream of NC 86 HWY	15.96	1670	2810	3390	*	5110
Approximately 400 feet downstream of I-40 HWY	15.17	1710	2810	3370	*	5060
Approximately 0.6 mile upstream of I-40 HWY	12.24	1580	2510	2970	*	4350
Approximately 650 feet downstream of New Hope Church Road	11.31	1600	2650	3190	*	4590
Approximately 200 feet downstream of Foxlair Road	9.02	*	*	2910	*	*
At Old NC 86 HWY	8.12	*	*	2860	*	*
New Hope Creek Tributary 1						
Approximately 350 feet downstream of Interstate 40	1.60	1050	1620	1780	*	2210
Approximately 0.5 mile upstream of Interstate 40	1.10	827	1310	1440	*	1800
Approximately 1,140 feet upstream of Erwin Road	0.70	599	973	1080	*	1360
Old Field Creek						
At the confluence with New Hope Creek	4.20	1490	2600	3150	*	4590
Approximately 0.6 mile downstream of NC 86 HWY	3.30	1330	2340	2810	*	4010
Approximately 0.6 mile downstream of NC 86 HWY	3.25	1330	2340	2810	*	4010
Approximately 380 feet downstream of NC 86 HWY	2.33	1080	1850	2220	*	3160
Approximately 310 feet downstream of I-40 HWY	1.90	907	1580	1900	*	2740
Approximately 220 feet downstream of Mill House Road	1.30	589	1070	1300	*	1910
Phils Creek						
Approximately 620 feet downstream of Jones Ferry Road	11.17	1760	2810	3250	*	4380
Approximately 620 feet downstream of Jones Ferry Road	11.16	1760	2810	3250	*	4370
Just upstream of the confluence of Neville Creek	7.11	1330	2140	2490	*	3360
Approximately 670 feet downstream of Old Greensboro Road	6.86	1310	2100	2440	*	3290
Approximately 1,000 feet upstream of Old Greensboro Road	6.75	1290	2080	2410	*	3260
Approximately 0.6 mile upstream of Old Greensboro Road	6.22	1230	1980	2300	*	3110
Approximately 2,000 feet downstream of Neville Road	5.53	1140	1840	2140	*	2910
Approximately 1,100 feet downstream of Neville Road	5.16	1100	1770	2060	*	2790
Just downstream of Neville Road	5.03	1080	1740	2030	*	2750
Approximately 1,370 feet upstream of Neville Road	4.86	1060	1710	1980	*	2690
Approximately 1.2 mile downstream of NC 54 HWY	3.96	930	1510	1760	*	2390
Approximately 1.0 mile downstream of NC 54 HWY	3.87	917	1490	1730	*	2360
Approximately 0.9 mile downstream of NC 54 HWY	2.08	721	1250	1420	*	1930
Approximately 0.8 mile downstream of NC 54 HWY	1.80	687	1180	1350	*	1830

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)				
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	1% Annual Future Annual Chance	0.2% Annual Chance
Approximately 0.5 mile downstream of NC 54 HWY	1.74	684	1180	1340	*	1820
Approximately 300 feet downstream of NC 54 HWY	1.59	674	1150	1310	*	1770
Approximately 100 feet upstream of NC 54 HWY	1.27	616	1050	1190	*	1610
Approximately 680 feet downstream of Bethel Hickory Grove Church Road	1.21	583	1000	1140	*	1550
Piney Mountain Creek						
At Mouth	4.40	740	1470	1905	*	3350
At the confluence with New Hope Creek	4.40	1520	2770	3390	*	5020
At Mineral Springs Road	4.20	715	1425	1850	*	3250
At Mt Sinai Road	4.18	1530	2800	3430	*	5080
Approximately 0.4 mile upstream of Mt Sinai Road	3.89	1510	2800	3420	*	5080
Below Tributary near station 8000	3.00	585	1170	1520	*	2685
Approximately 1.1 mile upstream of Mt Sinai Road	2.43	872	1620	2010	*	3000
Above Tributary near station 8000	2.40	520	1040	1355	*	2400
Approximately 1.1 mile downstream of Friends School Road	1.38	580	1020	1240	*	1810
Approximately 0.6 mile downstream of Friends School Road	1.03	478	858	1040	*	1500
At SR 1719	0.90	280	570	750	*	1335
Approximately 240 feet upstream of Friends School Road	0.80	417	746	902	*	1300
Price Creek						
Approximately 0.34 mile downstream of Damascus Church Road	3.90	*	*	1860	*	*
Rays Creek						
Approximately 1.13 miles upstream of Wilkerson Road	1.27	*	*	867	*	*
Rhodes Creek						
At the confluence with Eno River	4.12	1230	2020	2270	*	3030
Approximately 1,350 feet upstream of the confluence with Eno River	3.99	1210	1980	2230	*	2980
Approximately 0.5 feet upstream of the confluence with Eno River	3.58	1090	1810	2040	*	2740
Approximately 720 feet downstream of Highway I-85	3.52	1090	1800	2030	*	2730
Approximately 140 feet downstream of Groucho Road	3.40	987	1670	1890	*	2550
Approximately 880 feet upstream of Groucho Road	2.10	709	1230	1410	*	1920
Approximately 1,030 feet upstream of Groucho Road	1.95	664	1160	1330	*	1820
Approximately 150feet downstream of a rail road crossing	1.90	656	1150	1320	*	1800
Approximately 150feet downstream of a rail road crossing	1.87	630	1110	1280	*	1750
Approximately 50 feet downstream of Old NC 10 Highway	1.57	526	866	1010	*	1390
Approximately 880 feet downstream of Mount Hermon Church Road	1.36	482	796	933	*	1290
Approximately 200 feet downstream of Mount Hermon Church Road	1.31	469	776	910	*	1250
Approximately 830 feet upstream of Mount Hermon Church Road	0.73	328	548	645	*	894
Approximately 830 feet upstream of Mount Hermon Church Road	0.68	314	525	618	*	857
Approximately 1,000 feet upstream of Yonder Trail	0.48	254	435	509	*	702
Approximately 1,720 feet downstream to the N. of High Meadow Road	0.44	224	435	509	*	715
Approximately 1,720 feet downstream to the N. of High Meadow Road	0.41	221	428	500	*	702
Approximately 120 feet downstream to the N. of High Meadow Road	0.04	85	164	189	*	266
Rocky Run						
At the confluence with Sevenmile Creek	2.60	718	1170	1370	*	1870
At the confluence with Sevenmile Creek	2.55	710	1160	1360	*	1850

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)				
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	1% Annual Future Annual Chance	0.2% Annual Chance
Approximately 0.5 miles upstream of Interstate 40 Highway	2.45	691	1130	1320	*	1810
Approximately 0.5 miles upstream of Interstate 40 Highway	2.38	679	1110	1300	*	1780
Approximately 250 feet upstream of Moorefields Road	2.14	636	1040	1220	*	1670
Approximately 100 feet downstream of 1825 Dimmock's Mill Road	2.01	613	1010	1180	*	1610
Approximately 730 feet upstream of 1825 Dimmock's Mill Road	1.90	592	973	1140	*	1560
Approximately 0.42 miles downstream of Moorefields Road	1.73	558	917	1070	*	1470
Approximately 0.42 miles downstream of Moorefields Road	1.68	548	902	1060	*	1450
Sevenmile Creek						
At the confluence with Eno River	17.03	2300	3550	4100	*	5500
Approximately 1,710 feet downstream of the confluence of Rocky Run	16.91	2290	3530	4080	*	5470
Just upstream of the confluence of Rocky Run	14.23	2070	3140	3630	*	4890
Approximately 830 feet downstream of I-40 HWY	14.05	2060	3110	3600	*	4850
Approximately 830 feet downstream of I-40 HWY	13.98	2050	3100	3590	*	4830
Approximately 0.38 mile downstream of Mt Willing Road	10.22	*	*	3180	*	*
Approximately 20 feet downstream of confluence of Sevenmile Creek Tributary 2	9.26	*	*	3000	*	*
Approximately 1.25 miles upstream of confluence of Sevenmile Creek Tributary 2	3.10	*	*	1510	*	*
Approximately 1.64 miles upstream of confluence of Sevenmile Creek Tributary 2	1.04	*	*	764	*	*
Sevenmile Creek Tributary 1						
Approximately 1.52 miles upstream of confluence with Sevenmile Creek	1.79	*	*	1070	*	*
Sevenmile Creek Tributary 2						
Approximately 0.06 mile downstream of confluence of Tributary 1 to Sevenmile Creek Tributary 2	3.77	*	*	1710	*	*
Approximately 0.27 mile upstream of Bushy Cook Road	1.01	*	*	749	*	*
Spring Valley Creek						
At the confluence with Eno River	2.21	649	1060	1240	*	1700
Approximately 0.60 miles upstream of the confluence with Eno River	2.01	612	1010	1180	*	1610
Approximately 1,290 feet downstream of the first crossing with Jack Franklin Road	1.73	558	918	1080	*	1480
Approximately 1,290 feet downstream of the first crossing with Jack Franklin Road	1.70	552	908	1060	*	1460
Approximately 540 downstream of the second crossing with Jack Franklin Road	1.63	538	886	1040	*	1420
Approximately 700 feet downstream of Palmers Grove Church Road	1.47	504	831	974	*	1340
Approximately 150 feet upstream of Palmers Grove Church Road	1.41	492	812	952	*	1310
Approximately 150 feet upstream of Palmers Grove Church Road	1.36	481	794	931	*	1280
Approximately 0.40 miles upstream of Palmers Grove Church Road	1.21	448	741	869	*	1200
Approximately 1,560 feet downstream of US Highway 70	0.97	389	647	760	*	1050
Approximately 100 feet downstream of US Highway 70	0.89	370	615	723	*	999
Stagg Creek						
At the Alamance/Orange County boundary	2.60	*	*	1354	*	*
At confluence of Stagg Creek Tributary 2	2.10	*	*	1171	*	*
Stony Creek						

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)				
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	1% Annual Future Annual Chance	0.2% Annual Chance
At the confluence with Eno River	9.00	1760	2860	3240	*	4310
Approximately 0.40 miles upstream of the confluence with Eno River	8.89	1730	2820	3200	*	4260
Approximately 130 feet downstream from US Highway 70	8.74	1700	2780	3150	*	4200
Approximately 400 feet upstream from the confluence with Stony Creek Tributary	7.33	1550	2540	2880	*	3840
Approximately 400 feet upstream from the confluence with Stony Creek Tributary	7.27	1540	2530	2860	*	3830
Approximately 780 feet upstream of Interstate 85	7.04	1480	2440	2770	*	3710
Approximately 620 feet downstream of University Station Road	6.73	1420	2360	2680	*	3590
Approximately 620 feet downstream of University Station Road	6.70	1410	2350	2670	*	3570
Approximately 1,740 feet upstream of a railroad crossing	6.48	1360	2270	2590	*	3480
Approximately 0.51 miles upstream of a railroad crossing	6.32	1340	2240	2550	*	3430
Approximately 70 feet downstream of Old NC 10 Highway	5.66	1280	2140	2440	*	3280
Approximately 1,190 feet upstream from Old NC 10 Highway	5.59	1280	2130	2420	*	3260
Approximately 0.40 miles upstream of Old NC 10 Highway	5.38	1240	2080	2370	*	3180
Approximately 1,520 feet downstream of New Hope Church Road	4.19	1140	1900	2150	*	2890
Approximately 300 feet downstream of new Hope Church Road	4.13	1140	1890	2140	*	2880
Approximately 1,280 feet upstream of New Hope Church Road	2.71	936	1560	1770	*	2380
Approximately 1,280 feet upstream of New Hope Church Road	2.67	934	1560	1760	*	2370
Approximately 0.65 miles upstream of New Hope Church Road	2.62	929	1550	1750	*	2350
Approximately 990 feet downstream of Duke Forest Drive	2.44	918	1530	1720	*	2310
Approximately 990 feet downstream of Duke Forest Drive	2.42	917	1520	1720	*	2300
Approximately 150 feet upstream of Duke Forest Drive	1.57	684	1170	1320	*	1790
Approximately 500 feet upstream of Duke Forest Drive	1.53	682	1160	1310	*	1770
Approximately 500 feet upstream of Duke Forest Drive	1.51	681	1160	1310	*	1770
Stony Creek Tributary						
At the confluence with Stony Creek	1.32	473	782	917	*	1260
At the confluence with Stony Creek	1.29	466	771	904	*	1250
Approximately 650 feet upstream of University Station Road	1.20	446	738	865	*	1190
Approximately 650 feet upstream of University Station Road	1.17	438	725	850	*	1170
Strouds Creek						
Approximately 160 feet upstream of St. Marys Road	9.03	*	*	3620	*	*
Approximately 20 feet upstream of confluence of Strouds Creek Tributary 2	8.89	*	*	3591	*	*
Approximately 0.19 mile upstream of Miller Road	6.56	*	*	2970	*	*
Approximately 50 feet upstream of Governor Burke Road	4.32	*	*	2290	*	*
Approximately 0.49 mile upstream of State HWY 57	2.85	*	*	1760	*	*
Approximately 0.39 mile downstream of State HWY 86	2.02	*	*	1156	*	*
Approximately 0.64 mile upstream of State HWY 57	2.02	*	*	1420	*	*
Approximately 0.38 mile upstream of State HWY 86	1.02	*	*	927	*	*
Strouds Creek Tributary 1						
Approximately 540 feet downstream of Governor Burke Road	2.09	628	1030	1200	*	1650
Approximately 0.5 miles upstream of Governor Burke Road	1.80	573	941	1100	*	1510
Approximately 0.9 miles upstream of Governor Burke Road	1.71	555	913	1070	*	1470
Approximately 1.3 miles upstream of Governor Burke Road	1.60	532	876	1030	*	1410

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)				
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	1% Annual Future Annual Chance	0.2% Annual Chance
Approximately 0.21 mile upstream of Phelps Road	1.46	*	*	942	*	*
Strouds Creek Tributary 2						
Approximately 0.24 mile upstream of Farmview Road	1.35	*	*	897	*	*
Approximately 0.71 mile upstream of Miller Road	1.08	*	*	783	*	*
Strouds Creek Tributary 3						
Approximately 0.49 mile upstream of State HWY 57	0.70	*	*	598	*	*
Terrells Creek						
At the Chatham/Orange County boundary	5.60	*	*	2193	*	*
Approximately 0.50 mile upstream of Orange/Chatham County Boundary	4.60	*	*	1943	*	*
Approximately 0.52 mile upstream of Orange/Chatham County Boundary	1.90	*	*	1121	*	*
Approximately 2.30 miles upstream of Orange/Chatham County Boundary	1.30	*	*	882	*	*
Toms Creek						
At the confluence with Morgan Creek	1.21	864	1360	1500	*	1970
At the confluence with Morgan Creek	1.19	856	1350	1480	*	1950
Approximately 700 feet downstream of Jones Ferry Road	1.10	807	1280	1410	*	1860
Just upstream of Jones Ferry Road	1.02	749	1200	1330	*	1750
Approximately 300 feet downstream of NC 54 HWY	0.90	677	1090	1210	*	1610
Just downstream of Poplar Avenue	0.72	577	947	1050	*	1410
Approximately 200 feet downstream of Main Street	0.43	359	625	705	*	961
Approximately 200 feet downstream of Main Street	0.40	336	591	668	*	913
Approximately 150 feet downstream of Carol Street	0.21	214	390	445	*	615
Approximately 200 feet upstream of Rainbow Drive	0.08	111	214	247	*	346
Toms Creek (Apple Pond)						
Approximately 0.91 mile downstream of Bradshaw Quarry Road	7.50	*	*	2629	*	*
Approximately 0.17 mile downstream of Bradshaw Quarry Road	6.60	*	*	2413	*	*
Approximately 0.55 mile upstream of Bradshaw Quarry Road	5.70	*	*	2214	*	*
Approximately 0.58 mile downstream of Nicks Road	5.10	*	*	2051	*	*
Approximately 0.13 mile upstream of Nicks Road	2.20	*	*	1208	*	*
Tributary 1 to Sevenmile Creek Tributary 2						
Approximately 0.18 mile upstream of Bushy Cook Road	2.11	*	*	1190	*	*
Turkey Hill Creek						
At the confluence with Cane Creek	5.70	*	*	2209	*	*
Approximately 0.09 mile upstream of Bradshaw Quarry Road	4.90	*	*	2009	*	*
Approximately 1.60 miles upstream of Bradshaw Quarry Road	2.80	*	*	1408	*	*
Approximately 3.00 miles upstream of Bradshaw Quarry Road	2.00	*	*	1147	*	*
Unnamed Tributary to Bolin Creek						
Approximately 0.7 mile downstream of Tallyho Trail	0.75	334	558	656	*	909
Approximately 0.5 mile downstream of Tallyho Trail	0.72	325	542	638	*	884
Approximately 1,300 feet downstream of Tallyho Trail	0.44	241	406	480	*	668
Approximately 1,300 feet downstream of Tallyho Trail	0.40	226	381	450	*	628
Unnamed Urban Creek						
At the confluence with Morgan Creek	0.55	572	915	1010	*	1330
Approximately 0.2 mile upstream of the confluence with Morgan Creek	0.50	529	854	943	*	1250

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)				
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	1% Annual Future Annual Chance	0.2% Annual Chance
Watery Fork						
At the confluence with Cane Creek	2.60	*	*	1362	*	*
Approximately 0.05 mile upstream of Orange Grove Road	1.90	*	*	1111	*	*
Approximately 0.06 mile downstream of Dairyland Road	1.00	*	*	745	*	*
West Fork Eno River						
Approximately 140 feet upstream of the confluence with Eno River	14.47	2070	3280	3790	*	5090
Approximately 0.40 miles upstream of the confluence with Eno River	11.52	1800	2870	3320	*	4460
Approximately 0.70 miles downstream of Efland Cedar Grove Road	11.45	1790	2850	3300	*	4440
Approximately 1,400 feet downstream of Efland Cedar Grove Road	11.30	1780	2830	3280	*	4410
Approximately 550 feet downstream of Efland Cedar Grove Road	11.05	1750	2790	3230	*	4350
Approximately 1.31 miles downstream of Carr Store Road	8.78	*	*	2900	*	*
Approximately 1.06 miles downstream of Carr Store Road	7.78	*	*	2690	*	*
Approximately 0.88 mile downstream of Carr Store Road	7.00	*	*	2510	*	*
Approximately 150 feet upstream of Carr Store Road	6.49	*	*	2400	*	*
Approximately 35 feet downstream of confluence of West Fork Eno River Tributary 3	5.53	*	*	2170	*	*
Approximately 0.27 mile upstream of confluence of West Fork Eno River Tributary 3	3.05	*	*	1500	*	*
Approximately 40 feet downstream of McDade Store Road	3.01	*	*	1480	*	*
Approximately 0.06 mile upstream of McDade Store Road	1.46	*	*	942	*	*
West Fork Eno River Tributary 1						
Approximately 0.07 mile downstream of N. Efland Cedar Grove Road	2.83	*	*	1430	*	*
Approximately 0.02 mile upstream of Harmony Church Road	2.41	*	*	1290	*	*
Approximately 0.50 mile upstream of Harmony Church Road	1.44	*	*	934	*	*
West Fork Eno River Tributary 2						
Approximately 110 feet upstream of Governor Scott Road	1.24	*	*	853	*	*
Approximately 0.35 mile upstream of Governor Scott Road	1.00	*	*	745	*	*
West Fork Eno River Tributary 3						
Approximately 0.92 mile upstream of confluence with West Fork Eno River	1.59	*	*	997	*	*
Approximately 1.70 miles upstream of confluence with West Fork Eno River	1.02	*	*	756	*	*
West Price Creek						
At the confluence with Price Creek	1.36	481	795	931	*	1280
Approximately 1,350 feet downstream of Price Creek Road	1.25	457	757	887	*	1220
Approximately 1,350 feet downstream of Price Creek Road	1.20	444	736	863	*	1190
Approximately 330 feet downstream of Price Creek Road	1.06	412	683	802	*	1110
The Chatham/Orange County boundary	0.90	*	*	903	*	*
At Chatham County limits	0.80	280	570	745	*	1325
Wildcat Branch						
At the confluence with Collins Creek	1.50	*	*	945	*	*
Approximately 0.23 mile downstream of Wildcat Creek Road	1.00	*	*	747	*	*
Wilson Creek						
At the confluence with Morgan Creek	3.54	1120	1850	2080	*	2780
At the confluence with Morgan Creek	3.50	1110	1820	2060	*	2750

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)				
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	1% Annual Future Annual Chance	0.2% Annual Chance
Just upstream of the confluence of Fan Branch	2.04	659	1160	1330	*	1820
Approximately 200 feet downstream of US 15 501 HWY	1.80	571	939	1100	*	1510
Approximately 600 feet upstream of US 15 501 HWY	1.71	553	911	1070	*	1460
Approximately 0.5 mile upstream of US 15 501 HWY	1.41	492	812	951	*	1310
Approximately 1,500 feet downstream of Wave Road	1.24	454	751	881	*	1210
Approximately 1,500 feet downstream of Wave Road	1.16	436	722	847	*	1170

The stillwater elevations have been determined for the 1% [add 10%, 2%, and 0.2% here if that data is available] annual chance flood for the flooding sources studied by detailed methods and are summarized in Table 14, “Summary of Stillwater Elevations.”

Table 14 - Summary of Non-Coastal Stillwater Elevations

Flooding Source	FIRM Panel Number(s)	Elevations (feet NAVD)			
		10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Cane Creek (North) Reservoir	3710982000	*	*	501	*

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

Table 15 - Gage Information

Gage Number	Flooding Source	Site Name	Drainage Area (square miles)	Period of Record	
				From	To
02096846	Cane Creek (North)	CANE CREEK NEAR ORANGE GROVE, NC	7.54	1989	2002
02096850	Cane Creek (North)	CANE CREEK NEAR TEER, NC	33.70	1960	1973
02085000	Eno River	USGS 02085000	66.00	1928	2012
02097464	Morgan Creek	USGS 02097464	8.35	1989	2012
02097517	Morgan Creek	MORGAN CREEK NEAR CHAPEL HILL, NC	41.00	1983	2003
02084909	Sevenmile Creek	USGS 02084909	14.10	1988	2012

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"
Back Creek Tributary 3	0.045 to 0.050	0.120 to 0.150
Battle Branch	0.040 to 0.045	0.130 to 0.140
Bolin Creek	0.040 to 0.050	0.100 to 0.200
Bolin Creek Tributary	0.035 to 0.060	0.060 to 0.130
Bolin Creek Tributary 2	0.037 to 0.048	0.100 to 0.140
Booker Creek	0.040 to 0.055	0.100 to 0.200
Buckhorn Branch	0.040 to 0.045	0.120 to 0.150
Buckwater Creek	0.035 to 0.040	0.037 to 0.130
Buckwater Creek Tributary 1	0.037 to 0.120	0.037 to 0.120
Buckwater Creek Tributary 2	0.037 to 0.110	0.060 to 0.120
Buffalo Creek Tributary 2	0.050	0.150
Cane Creek (North)	0.040 to 0.050	0.100 to 0.150
Cane Creek (North) Tributary 5	0.045	0.100 to 0.140
Cates Creek	0.035 to 0.050	0.110 to 0.150
Cates Creek Tributary	0.040 to 0.050	0.140 to 0.150
Cedar Fork	0.037 to 0.055	0.035 to 0.190
Chapel Creek	0.040 to 0.045	0.100 to 0.150
Collins Creek	0.040 to 0.050	0.100 to 0.150
Collins Creek Tributary 1	0.045 to 0.060	0.050 to 0.200
Crabtree Creek	0.040 to 0.045	0.140 to 0.150
Crow Branch	0.040 to 0.045	0.120 to 0.150
Dry Branch	0.055 to 0.060	0.080 to 0.160
Dry Creek	0.045	0.140 to 0.150
East Back Creek	0.040 to 0.055	0.050 to 0.190
East Fork Eno River	0.015 to 0.060	0.050 to 0.140
East Fork Eno River Tributary 1	0.045 to 0.050	0.150
East Fork Eno River Tributary 2	0.040 to 0.045	0.110 to 0.150
East Price Creek	0.034 to 0.060	0.050 to 0.150
Eno River	0.038 to 0.065	0.040 to 0.200
Fan Branch	0.030 to 0.042	0.045 to 0.130
Fan Branch Tributary	0.034 to 0.035	0.100 to 0.120
Forrest Creek	0.030 to 0.060	0.050 to 0.150
High Rock Creek	0.040 to 0.050	0.110 to 0.140
Jones Creek	0.037 to 0.055	0.060 to 0.150
Lake Michael Tributary	0.040 to 0.055	0.100 to 0.150
Lake Michael Tributary 2	0.045 to 0.050	0.140 to 0.150
Lick Creek	0.045 to 0.050	0.110 to 0.150
Little Creek	0.040 to 0.050	0.070 to 0.140
Little Creek (Near Hillsborough)	0.045	0.050 to 0.130
Little Creek Tributary 3 (Chapel Hill)	0.040 to 0.045	0.130 to 0.150
Little River North Fork	0.034 to 0.075	0.035 to 0.155
Little River North Fork Tributary 2	0.045 to 0.050	0.140 to 0.150
Little River North Fork Tributary 3	0.045 to 0.050	0.110 to 0.140
Little River South Fork	0.040 to 0.060	0.040 to 0.150
Lynch Creek	0.039 to 0.040	0.045 to 0.120
McGowan Creek	0.035 to 0.045	0.100 to 0.150
Meeting of the Waters Creek	0.040 to 0.045	0.140

Table 16 - Roughness Coefficients

Stream	Channel "n"	Overbank "n"
Mill Creek	0.044 to 0.055	0.050 to 0.200
Mill Creek Tributary	0.050	0.130 to 0.150
Morgan Creek	0.037 to 0.061	0.045 to 0.910
Morgan Creek Tributary	0.035 to 0.052	0.060 to 0.130
Mountain Creek	0.040 to 0.050	0.100 to 0.150
Neville Creek	0.045 to 0.060	0.060 to 0.130
New Hope Creek	0.035 to 0.060	0.040 to 0.180
New Hope Creek Tributary 1	0.040 to 0.059	0.050 to 0.180
North Fork Little River Tributary 2	0.045 to 0.075	0.035 to 0.150
Old Field Creek	0.035 to 0.060	0.050 to 0.130
Phils Creek	0.045 to 0.060	0.050 to 0.130
Piney Mountain Creek	0.035 to 0.060	0.100 to 0.140
Price Creek	0.045	0.130 to 0.140
Rays Creek	0.045 to 0.050	0.110 to 0.150
Rays Creek Tributary	0.050	0.120 to 0.140
Rhodes Creek	0.040 to 0.060	0.060 to 0.150
Rocky Run	0.050 to 0.060	0.060 to 0.120
Sevenmile Creek	0.040 to 0.060	0.100 to 0.150
Sevenmile Creek Tributary 1	0.040 to 0.050	0.130 to 0.150
Sevenmile Creek Tributary 2	0.040 to 0.045	0.110 to 0.140
South Hyco Creek	0.040 to 0.050	0.110 to 0.150
South Hyco Creek Tributary 8	0.050	0.120 to 0.150
Spring Valley Creek	0.040 to 0.043	0.060 to 0.120
Stagg Creek	0.040 to 0.050	0.110 to 0.150
Stagg Creek Tributary 2	0.040	0.100
Stony Creek	0.032 to 0.050	0.044 to 0.130
Stony Creek Tributary	0.054	0.100 to 0.130
Strouds Creek	0.040 to 0.050	0.100 to 0.150
Strouds Creek Tributary 1	0.040 to 0.057	0.040 to 0.150
Strouds Creek Tributary 2	0.040 to 0.060	0.100 to 0.150
Strouds Creek Tributary 3	0.040 to 0.045	0.120 to 0.150
Terrells Creek	0.040 to 0.050	0.100 to 0.150
Toms Creek	0.037 to 0.055	0.050 to 0.130
Toms Creek (Apple Pond)	0.045 to 0.050	0.110 to 0.150
Tributary 1 to Sevenmile Creek Tributary 2	0.040	0.110
Turkey Hill Creek	0.040 to 0.050	0.100 to 0.150
Unnamed Tributary to Bolin Creek	0.045 to 0.046	0.050 to 0.120
Unnamed Urban Creek	0.045	0.060 to 0.130
Watery Fork	0.040 to 0.050	0.110 to 0.150
West Fork Eno River	0.040 to 0.060	0.100 to 0.150
West Fork Eno River Tributary 1	0.040 to 0.050	0.110 to 0.150
West Fork Eno River Tributary 2	0.040 to 0.045	0.110 to 0.150
West Fork Eno River Tributary 3	0.040 to 0.045	0.100 to 0.150
West Price Creek	0.046 to 0.060	0.060 to 0.140
Wildcat Branch	0.045 to 0.050	0.100 to 0.150
Wilson Creek	0.034 to 0.050	0.050 to 0.130

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
Back Creek Tributary 3				
005	500	1,495	575.0[1]	14 / 110
010	1,000	1,495	576.2	98 / 14
015	1,500	1,495	578.3	40 / 63
020	1,987	1,495	580.6	25 / 25
025	2,500	1,495	588.6	70 / 70
029	2,902	1,495	591.9	84 / 133
036	3,551	1,495	593.8	110 / 37
041	4,115	1,495	595.9	59 / 42
047	4,661	1,495	598.7	69 / 15
052	5,161	1,403	601.3	23 / 46
057	5,661	1,028	604.2	41 / 34
062	6,161	1,028	608.1	21 / 24
066	6,596	1,028	613.1	7 / 52
072	7,161	1,028	617.3	94 / 20
077	7,661	1,028	621.2	29 / 45
082	8,161	1,028	624.1	103 / 34
087	8,661	1,028	627.0	37 / 27
092	9,161	888	630.9	17 / 95
097	9,661	888	633.7	5 / 139
102	10,161	888	637.4	72 / 71
107	10,661	888	640.6	73 / 81
112	11,161	648	643.2	101 / 51
117	11,661	648	645.6	70 / 24
Battle Branch				
014	1,412	948	266.0	13 / 67
020	2,000	872	270.4	60 / 12
025	2,454	872	272.9	17 / 83

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
030	3,000	872	276.3	52 / 69
034	3,376	872	279.2	113 / 11
039	3,889	777	283.8	16 / 45
045	4,457	777	292.7	16 / 35
050	5,000	777	301.6	21 / 26
055	5,500	777	311.8	44 / 4
060	6,050	777	327.9	53 / 7
065	6,505	627	338.8	9 / 16
071	7,112	627	359.7	19 / 10
077	7,720	574	386.5	22 / 4
Bolin Creek				
433	43,350	736	495.8	40 / 50
440	43,951	736	499.0	80 / 70
440	44,011	736	509.1	80 / 70
446	44,554	736	509.1	70 / 90
453	45,256	736	509.3	75 / 118
458	45,801	555	509.8	55 / 52
465	46,521	555	512.1	65 / 65
466	46,571	555	518.8	65 / 65
471	47,085	555	518.9	50 / 80
478	47,790	492	521.4	58 / 20
484	48,357	492	525.7	15 / 20
490	48,970	492	532.3	42 / 22
497	49,742	492	541.1	23 / 10
504	50,398	252	556.7	30 / 30
504	50,448	252	558.8	30 / 30
509	50,929	252	560.8	17 / 17
513	51,255	252	563.4	10 / 15
513	51,295	252	565.0	10 / 15
516	51,619	252	567.0	2 / 15
520	52,000	252	572.1	14 / 10
525	52,500	252	578.0	11 / 11
Bolin Creek Tributary 2				
000	36	744	430.8[1]	98 / 77
003	301	744	431.6	80 / 14
007	661	744	434.8	65 / 60
009	889	744	438.6	15 / 25
010	1,027	656	442.6	35 / 25
013	1,264	656	447.0	19 / 19
014	1,355	656	454.1	40 / 40
015	1,509	656	454.1	25 / 15
017	1,723	656	454.1	15 / 12
019	1,910	656	456.5	25 / 25
022	2,239	618	459.8	13 / 35
025	2,464	618	463.0	30 / 30

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
026	2,572	618	464.0	15 / 14
027	2,687	618	475.1	50 / 23
029	2,899	618	475.1	45 / 30
031	3,092	587	475.1	45 / 35
034	3,407	587	475.2	45 / 35
Buckhorn Branch				
002	247	453	483.1	20 / 20
008	769	453	487.8	10 / 52
014	1,401	453	491.3	24 / 12
021	2,076	288	495.8	20 / 20
021	2,126	288	500.7	20 / 20
025	2,515	288	503.6	30 / 24
026	2,555	288	508.9	20 / 20
029	2,870	288	509.0	21 / 30
Buffalo Creek Tributary 2				
013	1,329	3,200	530.0	70 / 90
015	1,526	3,200	530.9	50 / 60
017	1,720	3,200	531.9	90 / 70
019	1,888	3,200	532.6	50 / 117
021	2,088	3,200	533.2	75 / 105
023	2,254	3,200	533.7	130 / 40
025	2,503	3,170	534.3	105 / 175
028	2,789	3,170	535.6	27 / 65
Cane Creek (North)				
009	938	7,360	427.6[1]	35 / 50
014	1,404	7,360	427.6[1]	40 / 35
020	2,000	7,360	427.6[1]	44 / 40
025	2,523	7,360	427.6[1]	40 / 70
031	3,072	7,360	427.6[1]	55 / 56
036	3,622	7,360	427.6[1]	33 / 65
041	4,113	7,360	427.6[1]	33 / 37
046	4,614	7,360	427.6[1]	27 / 39
051	5,079	7,360	427.6[1]	37 / 40
056	5,589	7,360	427.6[1]	67 / 47
061	6,053	7,360	427.6[1]	36 / 50
065	6,521	7,360	427.6[1]	36 / 55
070	7,040	7,360	427.6[1]	42 / 35
075	7,540	7,080	427.6[1]	36 / 53
081	8,092	7,080	427.6[1]	35 / 35
087	8,653	7,080	427.6[1]	40 / 40
091	9,098	7,080	427.6[1]	35 / 35
096	9,644	7,080	427.6[1]	40 / 50
101	10,141	7,080	427.6[1]	35 / 44
108	10,803	7,080	427.6	75 / 75
108	10,839	7,080	428.0	75 / 75
116	11,580	7,080	429.2	40 / 40

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
120	12,019	7,080	431.0	37 / 57
121	12,054	7,080	439.3	85 / 57
126	12,612	7,080	440.7	53 / 50
132	13,173	7,080	441.4	87 / 122
137	13,679	7,080	442.0	211 / 45
142	14,206	6,900	442.4	99 / 34
148	14,769	6,900	442.9	115 / 33
154	15,353	6,900	443.5	45 / 249
158	15,849	6,900	444.7	300 / 57
164	16,406	6,900	444.0	380 / 50
169	16,948	6,900	444.3	284 / 35
174	17,427	6,900	445.3	34 / 44
179	17,928	6,900	445.0	60 / 30
185	18,512	6,900	445.8	33 / 50
191	19,056	6,900	446.5	32 / 65
197	19,653	6,900	447.3	75 / 47
203	20,310	6,900	447.9	37 / 136
208	20,775	6,900	448.3	40 / 60
213	21,333	6,900	449.3	139 / 40
219	21,882	6,900	450.0	71 / 64
223	22,263	6,900	450.5	54 / 90
223	22,328	6,900	451.0	54 / 90
230	22,960	6,900	452.1	211 / 69
235	23,490	6,900	452.5	68 / 162
240	24,028	6,900	452.7	35 / 36
245	24,460	6,900	454.6	94 / 85
247	24,709	6,900	454.2	73 / 113
444	44,398	3,860	501.1	40 / 325
450	45,020	3,860	501.7	132 / 78
455	45,463	3,860	502.5	64 / 48
459	45,899	3,860	503.5	25 / 46
464	46,394	3,860	504.9	19 / 43
480	47,963	2,810	516.4	29 / 28
490	49,033	2,810	523.6	50 / 100
495	49,547	2,810	526.9	20 / 127
507	50,730	2,810	531.2	32 / 16
512	51,243	2,810	534.7	127 / 15
519	51,882	2,810	537.5	70 / 20
524	52,356	2,810	539.2	31 / 115
529	52,864	2,810	540.3	138 / 108
533	53,333	2,810	540.7	75 / 30
539	53,857	2,810	542.5	20 / 161
543	54,263	1,740	543.5	25 / 189
548	54,766	1,740	544.4	9 / 148
553	55,271	1,740	546.8	12 / 182

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
558	55,769	1,740	548.6	25 / 101
563	56,271	1,740	551.3	53 / 19
567	56,701	1,740	553.5	18 / 85
570	56,961	1,740	554.4	40 / 35
570	57,007	1,740	555.4	40 / 35
573	57,334	1,650	555.6	47 / 9
578	57,842	1,650	558.8	25 / 26
583	58,345	1,650	560.8	56 / 13
588	58,776	1,650	561.9	108 / 17
593	59,262	1,650	562.4	16 / 113
598	59,832	1,650	563.5	56 / 18
603	60,322	1,650	565.5	24 / 48
608	60,822	1,650	567.5	16 / 70
613	61,284	1,650	569.1	15 / 82
618	61,770	1,650	571.1	64 / 45
623	62,264	1,650	573.4	10 / 83
628	62,770	1,650	576.1	95 / 23
633	63,255	1,650	577.5	60 / 153
638	63,765	1,650	579.1	30 / 102
643	64,281	1,650	581.4	96 / 53
647	64,731	1,360	582.5	41 / 22
652	65,232	1,010	585.2	46 / 78
657	65,678	1,010	586.6	47 / 84
662	66,155	1,010	588.8	140 / 25
667	66,735	1,010	591.9	66 / 29
673	67,274	1,010	594.5	14 / 93
678	67,787	1,010	597.0	75 / 29
684	68,378	747	600.0	30 / 20
685	68,464	747	606.2	30 / 20
685	68,531	747	606.2	76 / 98
Cane Creek (North) Tributary 5				
001	81	1,398	543.1[1]	30 / 35
005	476	1,398	545.9	20 / 25
010	1,011	1,398	549.9	34 / 11
016	1,600	1,200	553.6	87 / 61
022	2,172	1,200	555.8	17 / 28
028	2,845	1,200	563.4	74 / 8
035	3,458	1,200	567.8	13 / 43
043	4,307	1,200	571.2	19 / 84
048	4,790	1,200	571.9	25 / 20
048	4,850	1,200	574.0	25 / 20
054	5,374	1,200	574.3	55 / 120
060	6,001	1,200	575.1	40 / 100
Chapel Creek				
023	2,282	567	258.8	22 / 8

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
023	2,312	567	259.6	29 / 16
023	2,326	567	261.0	13 / 33
024	2,380	567	261.2	10 / 36
025	2,480	567	261.8	17 / 33
027	2,728	567	262.5	32 / 18
029	2,933	567	264.1	30 / 20
030	3,043	567	265.9	25 / 25
031	3,135	390	266.6	21 / 24
032	3,192	390	267.4	58 / 17
032	3,212	390	267.9	60 / 21
032	3,242	390	268.3	33 / 21
033	3,280	390	269.1	17 / 17
033	3,294	390	270.3	19 / 20
034	3,350	390	270.9	22 / 46
034	3,397	390	271.4	4 / 7
036	3,591	390	277.2	6 / 13
041	4,068	390	278.2	8 / 10
046	4,582	390	285.0	25 / 10
050	4,992	390	289.7	50 / 20
055	5,463	278	298.0	5 / 30
059	5,936	141	309.5	13 / 15
061	6,139	141	321.6	5 / 5
062	6,219	141	336.5	10 / 10
065	6,479	141	345.9	12 / 8
070	6,962	141	387.4	9 / 5
075	7,544	141	418.4	13 / 7
Collins Creek				
137	13,737	4,253	450.9	53 / 48
145	14,464	4,253	451.9	43 / 247
153	15,339	4,253	452.4	206 / 66
158	15,783	4,253	452.7	128 / 160
163	16,325	4,253	453.1	77 / 341
168	16,850	4,117	453.3	360 / 56
175	17,450	4,117	453.8	331 / 14
180	17,988	4,117	454.4	150 / 107
186	18,593	4,117	455.5	20 / 141
192	19,220	4,117	456.4	109 / 612
199	19,894	4,117	456.6	201 / 50
205	20,464	4,117	457.6	13 / 108
210	20,990	4,117	458.8	128 / 57
215	21,513	4,117	459.7	224 / 20
220	21,957	4,117	460.3	271 / 41
224	22,374	4,117	460.8	415 / 13
229	22,874	4,117	461.2	417 / 51
234	23,366	4,117	461.5	124 / 93

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
240	24,008	4,117	462.4	29 / 557
245	24,537	4,117	462.7	35 / 162
252	25,163	3,982	463.6	42 / 250
257	25,710	3,982	464.2	89 / 93
260	26,031	3,982	464.8	55 / 55
261	26,079	3,982	465.6	55 / 55
267	26,692	3,982	467.4	219 / 116
272	27,172	3,982	467.6	509 / 38
278	27,787	3,982	467.9	294 / 354
283	28,336	3,811	468.1	300 / 30
290	28,966	3,811	468.8	350 / 50
297	29,661	3,811	469.9	30 / 298
303	30,281	3,811	470.6	39 / 414
308	30,801	3,811	471.1	40 / 258
314	31,388	3,811	471.7	264 / 48
320	31,969	3,811	472.4	99 / 53
324	32,398	3,811	473.4	55 / 60
325	32,468	3,811	473.3	55 / 60
331	33,083	3,811	474.7	25 / 243
337	33,660	3,440	475.4	36 / 146
343	34,319	3,440	476.4	20 / 263
350	34,963	3,435	477.0	309 / 35
356	35,587	3,435	477.5	176 / 328
362	36,160	3,435	477.8	441 / 37
367	36,719	3,435	478.1	231 / 144
372	37,216	3,246	478.5	224 / 159
378	37,792	3,246	479.0	271 / 227
384	38,421	3,246	479.4	20 / 284
390	39,041	3,246	480.6	66 / 151
395	39,533	3,246	481.6	42 / 201
403	40,343	3,246	483.2	201 / 96
411	41,090	3,246	484.1	169 / 103
416	41,629	3,246	484.7	221 / 23
425	42,474	3,246	485.8	30 / 304
430	43,016	3,246	486.4	114 / 52
436	43,569	3,246	487.2	260 / 59
442	44,158	1,854	487.7	212 / 8
447	44,702	1,854	488.2	226 / 26
453	45,323	1,854	488.9	26 / 227
461	46,053	1,626	490.4	33 / 210
466	46,556	1,626	491.4	140 / 20
472	47,194	1,626	493.4	34 / 98
478	47,802	1,626	495.3	138 / 20
486	48,554	1,626	497.0	20 / 229
492	49,231	1,626	498.3	42 / 111

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
496	49,556	1,626	499.1	20 / 18
497	49,671	1,626	502.8	20 / 18
503	50,286	1,626	503.8	164 / 80
507	50,669	1,626	504.0	15 / 121
512	51,236	1,626	505.1	51 / 115
518	51,788	1,626	506.4	10 / 107
523	52,336	1,469	508.3	140 / 20
529	52,915	1,469	509.5	15 / 119
536	53,569	1,141	510.7	13 / 287
542	54,176	1,141	511.4	6 / 256
547	54,730	1,141	512.9	84 / 50
554	55,362	1,141	515.1	105 / 20
559	55,919	1,141	516.7	48 / 23
565	56,510	1,141	519.2	15 / 99
570	57,018	1,141	521.0	15 / 15
571	57,074	1,141	523.3	15 / 15
576	57,607	1,141	524.7	48 / 134
580	58,011	1,141	525.0	65 / 69
581	58,053	1,141	524.9	65 / 69
586	58,577	1,141	525.9	97 / 51
590	58,993	1,141	527.8	129 / 20
593	59,314	1,141	528.6	114 / 20
593	59,348	1,141	528.6	114 / 20
600	60,048	1,141	530.2	21 / 55
608	60,759	900	533.4	41 / 109
614	61,432	900	535.7	12 / 86
Crabtree Creek				
001	125	1,017	539.0[1]	20 / 20
005	531	1,017	541.5	15 / 20
010	1,000	1,017	548.8	10 / 29
015	1,481	1,017	553.4	5 / 67
019	1,878	1,017	556.4	25 / 86
026	2,572	1,017	561.8	75 / 56
030	2,986	1,017	563.9	10 / 90
035	3,500	1,017	567.6	15 / 75
042	4,161	1,017	571.4	10 / 60
049	4,888	1,017	576.0	8 / 38
053	5,258	1,017	577.8	12 / 111
059	5,895	1,017	581.3	80 / 6
064	6,422	1,017	585.3	79 / 8
068	6,799	1,017	587.4	105 / 5
073	7,254	1,017	590.0	8 / 111
078	7,756	1,017	592.9	10 / 110
082	8,220	1,017	595.3	29 / 22
089	8,859	745	598.7	38 / 6

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
095	9,459	745	602.0	10 / 48
Crow Branch				
002	205	561	399.9[1]	5 / 7
008	754	561	417.5	6 / 5
014	1,355	561	433.4	20 / 10
018	1,799	561	438.0	12 / 30
023	2,286	561	442.9	15 / 9
026	2,573	561	445.3	9 / 9
027	2,693	561	447.5	9 / 9
030	2,961	561	448.0	6 / 8
034	3,385	561	452.0	44 / 10
040	4,000	561	457.4	9 / 59
045	4,500	446	461.3	50 / 15
050	5,000	446	468.7	10 / 20
057	5,697	446	474.4	10 / 117
057	5,742	446	480.9	10 / 117
062	6,200	446	480.9	125 / 140
067	6,677	446	481.0	100 / 50
071	7,122	446	481.7	15 / 20
077	7,714	255	489.9	15 / 5
083	8,317	255	499.8	14 / 21
Cub Creek				
211	21,065	2,228	257.1	209 / 13
214	21,443	2,228	259.3	263 / 13
218	21,809	2,228	260.6	15 / 100
224	22,432	2,026	263.4	31 / 161
229	22,855	2,026	265.0	18 / 229
Dry Creek				
001	75	1,052	552.4[1]	20 / 10
003	257	1,052	552.4[1]	92 / 37
005	500	1,052	552.4[1]	34 / 53
008	846	1,052	556.4	21 / 12
013	1,319	1,052	560.7	20 / 71
018	1,796	1,052	562.6	9 / 79
023	2,251	1,052	565.7	11 / 17
028	2,798	1,052	570.5	21 / 26
035	3,513	1,052	575.9	30 / 20
039	3,910	1,052	578.2	81 / 5
044	4,362	1,052	583.2	65 / 12
050	5,000	1,052	588.6	17 / 23
East Back Creek				
690	69,000	3,795	558.6	26 / 88
695	69,500	3,620	559.8	47 / 53
700	70,000	3,620	560.6	15 / 62
705	70,500	3,620	561.7	101 / 67
710	71,000	3,620	562.3	34 / 24

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
715	71,500	3,620	563.7	34 / 62
717	71,694	3,620	564.1	47 / 47
717	71,740	3,620	565.6	47 / 47
725	72,500	3,438	566.5	24 / 20
730	73,000	3,438	569.8	24 / 14
735	73,464	3,438	571.6	28 / 49
740	74,000	3,438	572.6	25 / 77
745	74,500	3,438	573.4	74 / 62
750	75,000	3,438	573.6	26 / 36
755	75,500	3,438	574.6	88 / 48
765	76,500	2,732	576.1	118 / 60
770	77,000	2,732	576.2	11 / 20
775	77,500	2,732	580.0	70 / 19
780	78,000	2,732	581.1	37 / 49
785	78,500	2,732	581.9	64 / 22
790	79,000	2,732	582.9	11 / 118
795	79,500	2,732	583.6	32 / 72
800	80,000	2,732	584.3	27 / 42
805	80,500	2,646	586.0	65 / 30
810	81,000	2,646	587.3	81 / 209
814	81,401	2,646	587.8	47 / 291
820	82,000	2,424	589.0	21 / 52
825	82,500	2,424	591.0	50 / 17
831	83,072	2,424	593.7	44 / 88
835	83,500	2,424	594.7	39 / 124
840	84,000	2,424	595.9	25 / 62
845	84,500	2,305	597.3	78 / 22
849	84,930	2,305	598.2	59 / 20
855	85,500	2,305	599.4	37 / 41
860	86,000	2,305	600.5	17 / 57
865	86,546	2,305	601.7	29 / 50
866	86,594	2,305	601.9	29 / 50
870	87,000	2,305	603.0	63 / 54
875	87,500	2,305	604.0	18 / 49
880	88,000	2,305	606.1	84 / 32
885	88,500	2,305	607.6	32 / 59
890	89,000	1,807	608.7	137 / 60
895	89,500	1,807	609.4	65 / 92
900	90,000	1,807	610.1	184 / 47
905	90,500	1,807	610.6	53 / 82
908	90,808	1,807	611.4	33 / 33
909	90,890	1,807	617.1	33 / 33
915	91,500	1,535	617.3	213 / 40
920	92,000	1,535	617.4	72 / 175
925	92,500	1,535	617.5	134 / 134

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
928	92,783	1,535	617.6	116 / 25
929	92,859	1,535	617.8	116 / 25
935	93,500	1,421	618.2	72 / 80
940	94,000	1,421	619.6	150 / 61
945	94,500	1,421	620.5	247 / 20
950	95,000	1,080	622.2	90 / 36
955	95,485	1,080	625.6	60 / 38
960	96,000	1,080	627.9	49 / 44
965	96,500	1,080	629.6	22 / 113
970	97,000	1,080	631.0	60 / 119
975	97,500	1,080	633.5	65 / 51
980	98,000	1,080	638.0	14 / 80
985	98,500	1,080	641.2	57 / 13
990	99,000	1,080	643.5	111 / 17
995	99,500	1,080	645.0	15 / 199
1000	100,000	1,080	647.5	71 / 13
East Fork Eno River				
213	21,332	2,072	626.5	207 / 107
220	22,000	2,072	627.1	90 / 20
224	22,430	2,072	629.7	95 / 30
229	22,890	2,072	631.1	140 / 27
233	23,302	2,072	639.8	10 / 11
234	23,372	2,072	651.4	10 / 11
241	24,082	2,072	651.7	280 / 300
246	24,617	2,072	651.7	200 / 300
250	25,036	2,072	651.7	200 / 200
256	25,613	2,072	651.7	224 / 144
262	26,199	2,072	651.7	200 / 277
267	26,681	2,072	651.8	315 / 123
270	27,039	2,072	651.8	287 / 148
278	27,798	1,811	651.8	173 / 255
285	28,481	1,811	651.9	166 / 310
290	29,028	1,811	651.9	98 / 55
297	29,685	1,811	652.2	135 / 35
297	29,726	1,811	652.4	135 / 35
304	30,390	1,560	652.6	39 / 108
309	30,879	1,560	653.0	30 / 93
318	31,752	1,560	654.5	90 / 20
325	32,535	1,560	657.2	105 / 20
330	33,037	1,315	658.6	125 / 20
335	33,537	1,315	660.0	83 / 99
341	34,063	1,315	661.3	152 / 85
346	34,550	1,315	662.8	19 / 61
350	35,000	1,315	664.8	102 / 59
355	35,540	1,315	666.4	10 / 140

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
360	35,966	1,315	667.4	82 / 174
364	36,376	1,315	668.2	43 / 79
East Fork Eno River Tributary 1				
003	274	1,014	590.0[1]	31 / 20
006	621	1,014	590.0[1]	27 / 17
010	1,043	1,014	592.2	85 / 10
014	1,446	1,014	594.6	16 / 38
017	1,719	1,014	596.4	114 / 6
022	2,188	1,014	599.5	14 / 24
028	2,777	1,014	603.6	76 / 11
032	3,203	1,014	605.7	54 / 20
039	3,947	1,014	611.0	16 / 55
044	4,426	1,014	614.2	108 / 36
049	4,949	1,014	617.2	25 / 45
055	5,463	870	622.4	84 / 7
061	6,070	870	627.2	17 / 60
East Fork Eno River Tributary 2				
025	2,521	783	618.6[1]	50 / 50
028	2,849	783	618.6[1]	99 / 61
031	3,141	783	618.6[1]	75 / 2
035	3,500	783	619.6	60 / 67
039	3,947	783	621.8	59 / 15
045	4,494	747	624.4	41 / 17
050	4,952	747	626.3	15 / 46
054	5,393	721	628.6	20 / 8
060	6,000	721	631.8	32 / 10
064	6,432	721	633.6	20 / 20
073	7,344	655	640.8	110 / 6
078	7,842	655	641.2	15 / 25
084	8,352	655	646.2	30 / 25
090	8,954	582	649.1	35 / 50
095	9,473	582	650.5	10 / 60
100	10,000	582	654.3	10 / 10
High Rock Creek				
005	500	1,497	560.6	21 / 20
009	902	1,497	563.3	90 / 16
019	1,887	1,497	566.0	350 / 11
030	2,959	1,497	569.9	200 / 25
035	3,469	1,497	574.2	24 / 37
040	3,962	1,497	577.9	20 / 20
046	4,551	1,452	584.0	22 / 35
052	5,169	1,452	589.0	15 / 32
055	5,539	1,452	593.5	45 / 43
060	6,000	1,452	595.4	57 / 20
066	6,565	1,452	597.6	68 / 44
069	6,937	1,452	598.6	127 / 76

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
077	7,680	1,452	601.8	30 / 68
081	8,097	1,452	609.5	19 / 60
085	8,527	1,452	609.7	71 / 36
090	9,032	1,452	610.2	72 / 68
094	9,417	1,452	610.7	53 / 65
101	10,145	1,118	612.7	102 / 6
105	10,509	1,118	615.6	55 / 30
111	11,104	1,118	619.2	60 / 50
117	11,662	1,118	621.1	12 / 44
119	11,900	1,118	623.3	14 / 98
125	12,500	1,118	624.6	66 / 149
130	13,000	1,118	626.2	41 / 45
135	13,477	1,118	629.8	18 / 18
139	13,924	1,118	631.4	26 / 37
150	14,965	1,118	639.8	112 / 15
Jones Creek				
027	2,722	548	484.0	47 / 40
034	3,381	548	488.6	10 / 25
040	4,000	548	495.0	18 / 15
045	4,500	548	499.8	45 / 14
050	5,000	484	503.7	47 / 26
055	5,544	484	508.3	10 / 50
061	6,116	484	517.7	16 / 11
066	6,616	484	523.8	50 / 43
071	7,121	484	529.5	27 / 15
074	7,429	484	532.9	21 / 30
075	7,503	484	536.0	21 / 30
078	7,822	484	536.4	65 / 20
083	8,251	297	541.1	13 / 4
085	8,500	1,182	589.0	43 / 80
086	8,649	297	547.9	9 / 30
090	9,000	297	551.9	9 / 12
090	9,041	739	591.6	7 / 80
093	9,331	297	554.2	20 / 20
094	9,371	297	554.8	20 / 20
096	9,587	739	593.4	25 / 7
097	9,697	297	557.1	30 / 15
100	10,049	297	562.6	6 / 33
101	10,145	739	599.0	14 / 22
102	10,245	739	611.2	14 / 22
105	10,500	297	571.4	11 / 17
107	10,735	739	611.2	32 / 75
115	11,477	739	611.3	9 / 98
121	12,053	739	611.4	62 / 39
128	12,779	454	612.6	7 / 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
135	13,500	454	619.5	8 / 51
139	13,929	454	622.1	45 / 7
144	14,402	333	625.7	13 / 12
150	15,000	333	630.2	43 / 7
157	15,657	333	638.1	27 / 7
159	15,910	194	642.1	35 / 25
160	15,994	194	649.0	90 / 25
164	16,417	194	650.6	18 / 11
170	17,048	194	655.6	5 / 2
Lick Creek				
089	8,918	1,657	544.7	59 / 40
096	9,621	1,657	547.1	44 / 47
103	10,311	1,657	548.1	25 / 116
107	10,710	1,657	550.3	118 / 16
114	11,350	1,657	552.8	58 / 56
118	11,838	1,657	554.2	15 / 233
124	12,364	1,657	555.4	45 / 29
129	12,911	1,388	557.6	132 / 12
135	13,460	1,388	559.0	87 / 61
139	13,911	1,045	560.8	44 / 41
144	14,378	1,045	563.1	113 / 10
151	15,071	1,045	565.7	150 / 32
158	15,770	1,045	569.9	15 / 15
162	16,227	1,045	570.9	27 / 94
170	16,981	945	574.0	21 / 55
174	17,395	945	576.4	97 / 9
Little Creek Tributary 3 (Chapel Hill)				
010	1,000	1,180	253.0[1]	35 / 395
015	1,500	1,180	253.0[1]	15 / 184
020	2,000	1,180	253.0[1]	117 / 29
025	2,500	1,060	253.2	83 / 11
028	2,844	1,060	253.7	30 / 35
029	2,926	1,060	255.1	30 / 35
032	3,214	1,060	255.2	5 / 50
036	3,563	1,060	257.0	78 / 20
040	4,000	1,060	259.1	15 / 54
045	4,500	840	261.2	61 / 28
049	4,864	840	261.4	22 / 22
050	4,960	840	262.3	22 / 22
052	5,202	414	262.3	16 / 12
056	5,611	414	268.0	2 / 28
060	6,031	414	276.1	18 / 27
063	6,346	414	277.1	15 / 40
064	6,367	414	279.2	15 / 40
066	6,596	414	279.2	40 / 30

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
070	7,000	414	279.2	10 / 15
075	7,500	285	287.6	20 / 12
080	7,977	285	296.6	17 / 8
084	8,369	285	304.2	17 / 17
084	8,422	285	306.0	17 / 17
088	8,766	285	308.9	10 / 25
Little River North Fork				
544	54,351	3,804	579.0	239 / 38
549	54,887	3,645	579.7	56 / 70
556	55,579	3,645	580.4	174 / 390
563	56,254	3,645	580.6	101 / 408
568	56,825	3,645	580.9	652 / 43
572	57,208	3,645	581.0	660 / 24
580	58,014	3,645	581.2	860 / 99
587	58,663	3,645	581.4	467 / 193
590	59,029	3,645	581.6	28 / 293
591	59,069	3,645	582.0	28 / 293
596	59,611	3,645	582.4	224 / 480
602	60,192	3,645	582.8	67 / 177
608	60,810	3,484	583.7	410 / 171
614	61,440	3,484	584.1	11 / 589
619	61,909	3,484	584.4	27 / 316
624	62,369	3,484	585.2	133 / 40
630	62,979	3,484	586.7	160 / 20
636	63,566	3,484	587.7	41 / 246
642	64,178	3,484	588.3	25 / 457
647	64,690	3,484	589.1	63 / 248
653	65,310	3,484	589.9	83 / 35
658	65,810	3,484	590.6	134 / 30
664	66,399	3,484	591.4	76 / 137
669	66,933	2,699	591.8	138 / 88
675	67,542	2,699	592.2	25 / 93
685	68,528	2,699	593.4	144 / 31
692	69,215	2,699	594.0	56 / 29
697	69,694	2,699	595.0	77 / 30
702	70,250	2,699	596.0	36 / 102
708	70,843	2,699	596.7	20 / 150
714	71,377	2,699	597.3	259 / 78
719	71,941	2,524	597.7	166 / 104
725	72,459	2,524	598.0	48 / 45
725	72,507	2,524	598.4	48 / 45
732	73,161	2,524	599.0	197 / 20
738	73,810	2,524	599.8	25 / 378
744	74,358	2,524	600.4	138 / 217
748	74,828	2,524	601.0	99 / 274

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
752	75,245	2,524	601.5	160 / 133
758	75,810	2,524	602.4	30 / 198
763	76,310	2,295	603.4	89 / 143
768	76,764	2,295	604.1	155 / 51
768	76,805	2,295	604.7	155 / 51
773	77,342	2,295	605.5	172 / 20
778	77,753	2,295	606.2	56 / 235
783	78,310	2,295	606.7	465 / 25
788	78,771	2,295	607.2	290 / 30
794	79,443	2,295	608.0	17 / 194
798	79,810	2,295	608.5	48 / 147
803	80,283	2,295	609.8	93 / 155
808	80,756	2,295	610.7	160 / 16
813	81,272	2,295	612.0	112 / 46
818	81,810	2,295	613.1	20 / 116
824	82,363	2,295	614.1	116 / 31
832	83,237	2,295	615.8	59 / 65
838	83,810	2,073	616.8	78 / 21
843	84,341	2,073	617.7	38 / 38
844	84,382	2,073	617.9	38 / 38
848	84,831	2,073	618.4	55 / 81
853	85,310	2,073	619.3	49 / 46
859	85,923	2,073	620.9	39 / 65
864	86,352	2,073	621.9	44 / 61
868	86,763	1,855	622.8	104 / 29
875	87,461	1,855	623.9	135 / 114
880	88,000	1,855	624.4	25 / 150
884	88,440	1,855	625.2	83 / 160
889	88,897	1,855	625.8	89 / 123
893	89,310	1,855	626.6	135 / 48
899	89,887	1,855	627.7	30 / 223
903	90,314	1,855	628.1	27 / 28
904	90,355	1,855	628.7	27 / 28
912	91,165	1,855	630.6	88 / 28
918	91,810	1,855	631.7	43 / 36
924	92,408	1,855	633.1	110 / 37
928	92,810	1,855	633.5	137 / 78
933	93,297	1,855	634.2	11 / 172
943	94,250	1,630	635.6	93 / 128
949	94,919	1,630	636.3	162 / 152
953	95,310	1,630	636.7	276 / 52
962	96,197	1,630	637.6	267 / 40
967	96,745	1,630	638.2	161 / 181
973	97,339	1,321	638.9	58 / 203
979	97,898	1,321	640.0	224 / 102

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
987	98,672	1,321	641.6	230 / 15
993	99,257	1,010	643.2	25 / 240
998	99,810	1,010	644.6	161 / 29
1003	100,260	1,010	646.4	44 / 42
1007	100,740	1,010	648.3	16 / 135
1008	100,800	1,010	650.0	16 / 135
1013	101,261	1,010	650.8	18 / 84
1018	101,763	1,010	651.8	66 / 48
1024	102,439	1,010	653.0	55 / 60
1032	103,215	917	655.0	70 / 12
1038	103,759	917	656.5	75 / 50
1043	104,310	917	657.9	15 / 95
1048	104,777	784	660.2	40 / 25
1052	105,245	784	661.7	15 / 100
1058	105,767	784	663.1	40 / 25
1062	106,171	644	664.6	11 / 13
1062	106,231	644	667.5	35 / 18
1067	106,724	644	668.3	40 / 40
1074	107,425	644	669.1	50 / 14
1079	107,886	644	670.8	10 / 10
Little River North Fork Tributary 2				
000	44	1,471	591.3[1]	60 / 120
004	416	1,471	591.3[1]	55 / 40
007	699	1,471	593.5	56 / 18
013	1,250	1,441	593.8	165 / 71
017	1,670	1,441	594.1	111 / 40
021	2,060	1,441	594.7	190 / 10
025	2,455	1,441	595.2	27 / 162
029	2,867	1,441	596.3	20 / 150
034	3,446	1,441	597.8	152 / 42
040	4,000	1,441	599.3	178 / 85
046	4,578	1,441	601.2	103 / 43
050	5,000	1,441	602.4	36 / 124
055	5,500	1,441	604.0	106 / 108
061	6,053	1,441	605.6	30 / 260
066	6,620	1,441	607.2	39 / 164
Little River North Fork Tributary 3				
001	145	1,547	543.0[1]	10 / 95
005	500	1,547	543.0[1]	7 / 95
010	1,000	1,547	545.0	100 / 8
015	1,504	1,547	546.5	25 / 32
020	1,979	1,547	548.8	68 / 12
024	2,353	1,547	550.2	25 / 25
029	2,882	1,547	551.4	62 / 19
035	3,533	1,478	554.6	11 / 53

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
041	4,095	1,478	557.8	46 / 28
046	4,628	1,478	559.6	53 / 67
054	5,419	1,478	561.7	51 / 77
060	5,979	1,139	563.9	42 / 95
Little River South Fork				
553	55,299	4,282	551.8	33 / 62
560	55,966	4,282	553.0	17 / 61
567	56,679	4,282	554.9	31 / 30
567	56,697	4,282	554.9	31 / 30
574	57,380	4,159	555.5	24 / 31
580	58,000	4,159	557.8	32 / 37
585	58,500	4,159	559.2	46 / 39
590	59,033	4,159	560.1	19 / 87
595	59,500	4,159	561.0	89 / 26
600	60,000	4,159	562.4	42 / 36
605	60,500	4,159	563.7	57 / 25
609	60,934	4,159	564.7	24 / 250
615	61,500	4,012	565.1	14 / 72
620	62,000	4,012	565.2	20 / 30
624	62,447	4,012	568.9	35 / 40
630	62,959	4,012	572.0	17 / 24
634	63,396	4,012	574.5	73 / 19
640	63,955	4,012	576.2	164 / 27
644	64,372	4,012	577.0	88 / 27
650	65,000	4,012	578.5	123 / 31
654	65,393	4,012	578.5	34 / 17
660	66,000	4,012	581.6	69 / 29
667	66,668	4,012	584.1	251 / 31
674	67,427	4,012	585.0	504 / 39
680	68,000	4,012	585.3	265 / 30
686	68,558	4,012	586.3	323 / 30
694	69,369	4,012	587.4	30 / 135
700	70,000	4,012	588.3	18 / 89
705	70,500	4,012	589.4	19 / 91
709	70,855	4,012	590.2	25 / 68
713	71,319	4,012	591.3	64 / 37
717	71,732	2,487	592.8	125 / 50
718	71,752	2,487	592.8	125 / 50
724	72,408	2,487	593.2	180 / 50
729	72,925	2,487	593.6	201 / 173
734	73,433	2,296	593.8	233 / 15
740	74,000	2,296	594.3	294 / 30
744	74,399	2,296	594.6	401 / 16
751	75,097	2,296	595.4	342 / 84
755	75,500	2,296	596.1	230 / 83

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
761	76,117	2,296	598.1	19 / 391
765	76,474	2,296	599.2	31 / 30
770	77,000	2,296	600.5	13 / 263
775	77,500	2,296	601.6	65 / 70
780	78,000	2,296	603.3	39 / 132
785	78,500	2,296	604.0	18 / 257
791	79,079	2,296	604.8	158 / 153
794	79,449	2,296	605.2	161 / 168
803	80,303	2,296	606.5	101 / 38
810	81,000	1,688	609.1	85 / 87
815	81,500	1,688	610.0	185 / 8
819	81,858	1,688	611.2	28 / 27
825	82,500	1,688	612.4	183 / 32
831	83,112	1,688	613.2	29 / 185
835	83,500	1,688	613.8	58 / 11
841	84,105	1,688	616.9	16 / 27
846	84,552	1,688	619.8	10 / 16
850	85,041	1,688	624.0	50 / 45
856	85,568	1,410	625.8	38 / 28
860	86,000	1,410	627.0	30 / 25
866	86,554	1,410	628.9	5 / 59
872	87,155	1,410	631.9	42 / 68
875	87,500	1,410	632.6	145 / 15
880	88,000	1,410	633.5	101 / 55
885	88,500	1,410	634.4	147 / 49
891	89,107	1,410	635.6	121 / 24
897	89,671	1,075	636.6	31 / 23
897	89,691	1,075	636.6	31 / 23
898	89,760	1,075	637.4	20 / 41
Lynch Creek Tributary 2				
071	7,080	288	621.0	20 / 14
Meeting of the Waters Creek				
006	622	1,350	261.6	13 / 37
012	1,152	1,350	265.9	10 / 147
017	1,690	1,350	269.8	2 / 82
023	2,311	1,350	274.0	220 / 5
028	2,772	1,350	275.4	20 / 15
028	2,847	1,350	277.8	20 / 15
032	3,151	1,350	278.5	41 / 74
034	3,437	1,290	281.5	9 / 20
036	3,619	1,290	299.1	9 / 20
040	4,040	1,290	299.1	60 / 70
045	4,500	1,290	299.2	32 / 55
056	5,637	838	311.3	20 / 40
060	6,007	838	316.6	30 / 8

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
065	6,499	838	327.4	10 / 22
072	7,220	838	342.5	16 / 37
Mill Creek Tributary				
003	318	709	612.8[1]	27 / 79
010	1,000	709	617.5	32 / 55
015	1,500	709	621.3	26 / 39
018	1,844	709	624.3	18 / 61
023	2,277	709	627.4	18 / 30
023	2,319	709	627.0	18 / 30
030	3,000	709	634.3	25 / 44
034	3,402	709	637.0	70 / 12
040	4,000	709	643.6	12 / 35
041	4,148	709	651.0	10 / 122
042	4,228	709	656.2	10 / 122
045	4,500	289	656.2	72 / 54
050	5,000	289	656.4	25 / 25
Morgan Creek				
270	27,000	11,700	237.8[1]	560 / 531
290	29,044	11,700	237.8[1]	551 / 551
306	30,622	11,700	238.8	534 / 535
310	31,026	11,700	239.3	247 / 544
315	31,500	11,700	239.9	527 / 535
323	32,256	11,700	240.7	544 / 539
340	34,000	11,800	242.6	192 / 590
351	35,064	11,800	243.8	164 / 671
365	36,500	11,800	245.0	461 / 593
380	38,000	11,800	246.1	554 / 559
395	39,500	11,800	247.7	523 / 558
407	40,663	11,800	249.2	531 / 537
791	79,125	6,210	328.2	26 / 44
793	79,252	6,210	328.2	105 / 85
793	79,342	6,210	358.0	105 / 85
797	79,679	6,210	358.0	447 / 319
802	80,245	5,180	358.0	342 / 364
808	80,778	3,790	358.0	373 / 486
814	81,389	3,790	358.1	394 / 280
822	82,200	3,790	358.1	288 / 368
822	82,248	3,790	358.1	288 / 368
827	82,703	3,790	358.1	142 / 206
831	83,098	3,790	358.1	44 / 152
835	83,494	3,790	358.2	50 / 130
Mountain Creek				
003	299	1,354	475.8[1]	35 / 90
010	1,026	1,354	475.8[1]	141 / 34
016	1,626	1,354	479.3	15 / 59
020	2,000	1,354	480.8	153 / 154

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
025	2,500	1,354	481.1	156 / 23
030	3,000	1,354	481.7	81 / 65
034	3,417	1,354	482.5	31 / 62
040	4,000	1,354	485.3	20 / 43
045	4,500	1,220	487.2	102 / 46
051	5,120	1,220	489.1	6 / 70
055	5,500	1,220	491.5	51 / 17
060	6,000	1,220	493.3	83 / 37
065	6,500	1,220	494.6	49 / 36
068	6,823	1,220	495.7	104 / 53
075	7,500	1,220	497.2	53 / 121
080	8,000	1,220	498.7	30 / 95
085	8,500	1,220	501.1	85 / 61
089	8,856	1,220	501.9	66 / 52
094	9,351	1,220	503.0	20 / 94
100	10,000	1,220	505.5	30 / 74
New Hope Creek				
1330	133,000	2,864	500.5	141 / 42
1335	133,500	2,864	501.0	14 / 48
1343	134,348	2,864	503.0	284 / 20
1350	135,048	2,864	504.0	22 / 280
1355	135,549	2,864	504.7	21 / 313
1365	136,500	2,864	506.0	175 / 20
1370	136,970	2,864	506.7	116 / 64
1376	137,578	2,864	507.6	212 / 33
1377	137,682	2,864	508.2	90 / 24
1377	137,726	2,864	507.6	90 / 44
1380	138,000	2,864	508.4	253 / 50
1385	138,500	2,864	508.8	322 / 20
1390	139,000	2,864	509.3	178 / 121
1395	139,500	2,864	509.8	30 / 162
1404	140,362	2,508	511.2	156 / 57
1410	141,000	1,317	512.6	24 / 137
1415	141,500	1,317	513.8	146 / 20
1420	142,000	1,317	515.5	129 / 20
1425	142,527	1,317	517.0	74 / 69
1430	143,000	1,317	517.8	69 / 101
1436	143,562	1,317	519.1	106 / 20
1439	143,939	1,317	520.8	25 / 30
1440	143,999	1,317	522.0	25 / 30
1445	144,500	1,317	523.6	140 / 4
1451	145,101	504	525.2	10 / 123
1455	145,500	504	526.1	42 / 15
1461	146,094	504	529.1	22 / 91
North Fork Little River Tributary 2				

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
024	2,419	578	500.8	40 / 10
027	2,701	578	504.1	44 / 17
031	3,121	578	509.4	35 / 33
Price Creek				
073	7,296	1,860	358.0[1]	110 / 45
078	7,831	1,860	358.0[1]	60 / 120
081	8,142	1,860	358.0[1]	30 / 30
082	8,220	1,860	358.6	30 / 30
085	8,533	1,860	359.1	40 / 40
Rays Creek				
001	70	1,994	592.7[1]	100 / 7
005	500	1,994	592.9	26 / 99
010	952	1,994	593.3	140 / 14
015	1,525	1,994	593.7	106 / 50
020	1,962	1,994	594.3	200 / 39
025	2,500	1,952	595.0	172 / 51
030	3,000	1,952	595.9	118 / 157
035	3,532	1,952	596.8	154 / 28
040	4,035	1,952	598.3	62 / 55
045	4,542	1,952	600.4	17 / 113
050	5,037	1,952	601.8	106 / 27
054	5,418	1,952	602.6	162 / 18
058	5,827	1,952	603.4	209 / 25
064	6,415	1,952	604.8	47 / 49
069	6,933	1,952	606.2	194 / 15
074	7,418	1,071	607.3	194 / 13
082	8,166	1,071	610.0	31 / 74
088	8,793	1,071	614.9	18 / 19
093	9,266	1,071	615.1	113 / 17
098	9,835	1,071	616.8	78 / 37
105	10,500	1,071	618.8	11 / 142
109	10,946	1,071	620.1	19 / 17
115	11,500	1,071	622.6	14 / 63
120	12,000	1,071	624.3	105 / 13
126	12,621	867	626.6	10 / 184
131	13,094	867	627.6	12 / 8
135	13,455	867	630.0	10 / 13
142	14,155	867	631.6	3 / 27
146	14,564	867	632.4	17 / 21
Rays Creek Tributary				
005	500	1,138	606.6[1]	100 / 100
011	1,082	1,138	610.0	200 / 20
015	1,478	1,138	610.3	204 / 108
020	2,000	1,138	611.0	195 / 20
025	2,500	1,138	613.0	199 / 25
030	3,004	1,138	614.6	205 / 20

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
036	3,556	1,138	617.0	141 / 15
041	4,075	1,138	618.9	130 / 10
045	4,500	1,138	620.7	146 / 7
049	4,928	1,138	623.0	127 / 7
054	5,408	772	624.7	175 / 20
059	5,945	772	625.9	105 / 10
065	6,500	772	628.3	128 / 8
Sevenmile Creek				
084	8,443	3,920	531.8	85 / 37
088	8,840	3,920	532.5	47 / 90
092	9,207	3,920	533.4	29 / 75
099	9,897	3,920	535.0	102 / 35
105	10,504	3,920	536.0	25 / 39
110	10,966	3,920	537.1	17 / 40
114	11,410	3,920	538.2	54 / 33
119	11,924	3,184	539.3	81 / 13
126	12,590	3,184	540.7	20 / 152
129	12,949	3,184	541.4	22 / 35
134	13,425	3,184	542.9	54 / 36
141	14,098	3,184	544.3	155 / 20
145	14,540	3,184	545.8	20 / 55
149	14,887	3,184	547.7	119 / 80
156	15,619	3,184	549.0	25 / 358
164	16,385	3,184	550.2	270 / 23
167	16,710	3,184	550.9	27 / 25
170	17,000	3,184	552.8	15 / 53
176	17,606	3,184	555.1	20 / 145
181	18,066	3,184	556.8	20 / 83
184	18,437	3,184	558.8	12 / 51
189	18,870	3,184	560.4	66 / 19
194	19,408	2,995	562.4	286 / 33
200	19,999	2,995	563.0	37 / 17
207	20,701	2,995	566.7	55 / 31
211	21,090	2,995	567.8	55 / 45
211	21,136	2,995	569.2	55 / 45
217	21,679	2,995	572.8	95 / 18
225	22,529	2,995	579.8	40 / 47
230	23,000	2,995	581.6	55 / 20
237	23,749	2,995	584.0	30 / 75
241	24,132	2,995	584.7	61 / 62
246	24,555	2,995	585.4	27 / 53
254	25,413	2,995	586.8	165 / 20
257	25,717	2,995	587.0	113 / 10
267	26,669	2,995	588.6	92 / 37
272	27,150	2,995	589.4	60 / 90

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
275	27,500	2,995	589.9	118 / 25
280	28,012	1,510	591.1	89 / 82
284	28,389	1,510	591.5	119 / 54
290	29,000	1,510	592.5	59 / 126
295	29,500	1,510	594.1	62 / 99
299	29,931	1,510	595.5	31 / 82
304	30,409	1,510	597.0	174 / 24
311	31,050	1,510	598.8	71 / 15
320	31,976	1,510	603.2	176 / 12
327	32,676	1,510	605.1	49 / 71
332	33,203	1,510	608.6	72 / 41
338	33,791	1,510	611.3	61 / 85
341	34,121	1,510	612.7	80 / 123
348	34,756	764	614.6	15 / 40
357	35,684	764	618.2	42 / 84
359	35,935	764	618.4	11 / 9
365	36,464	764	622.1	129 / 13
Sevenmile Creek Tributary 1				
079	7,887	297	596.1	16 / 24
Sevenmile Creek Tributary 1				
001	112	1,070	539.2[1]	18 / 60
005	546	1,070	543.8	29 / 15
011	1,130	1,070	548.9	17 / 96
015	1,479	1,070	551.0	28 / 9
020	2,000	1,070	555.8	43 / 18
024	2,425	1,070	558.0	10 / 52
030	3,029	1,070	562.8	5 / 49
036	3,628	1,070	567.6	41 / 51
041	4,102	1,070	570.1	27 / 66
044	4,383	1,070	572.0	12 / 60
048	4,841	1,070	576.2	50 / 70
054	5,439	885	579.4	30 / 39
060	6,011	885	583.3	25 / 65
066	6,606	885	586.4	13 / 35
070	6,986	885	589.5	65 / 7
075	7,529	885	593.8	35 / 10
080	8,000	885	597.0	16 / 8
Sevenmile Creek Tributary 2				
004	388	1,710	590.6[1]	30 / 50
009	870	1,710	592.5	30 / 25
015	1,500	1,710	598.5	40 / 25
019	1,896	1,710	603.2	50 / 11
025	2,498	1,710	613.0	52 / 15
029	2,936	1,710	616.3	40 / 95
033	3,260	1,710	617.3	16 / 16
039	3,869	1,710	622.8	15 / 16

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
046	4,580	1,710	626.6	150 / 50
053	5,311	749	627.7	99 / 20
060	5,967	749	630.4	35 / 50
065	6,471	749	631.1	35 / 45
069	6,867	749	632.1	50 / 7
074	7,438	749	633.9	75 / 12
078	7,846	749	635.8	80 / 20
086	8,603	689	640.4	15 / 60
094	9,433	689	641.1	61 / 43
100	10,000	689	642.1	85 / 9
South Hyco Creek				
1215	121,529	1,390	589.7	36 / 15
Stagg Creek				
395	39,500	1,171	613.4	70 / 65
400	40,000	1,171	613.5	20 / 140
405	40,517	1,171	613.6	110 / 25
409	40,935	1,171	614.2	25 / 50
415	41,500	1,171	616.6	65 / 50
420	42,000	1,171	618.1	99 / 30
425	42,500	1,171	619.7	51 / 81
430	43,000	1,171	621.4	100 / 15
437	43,688	1,171	623.3	28 / 28
437	43,729	1,171	623.8	33 / 33
440	44,000	1,171	623.9	30 / 45
445	44,500	935	627.4	55 / 80
450	45,000	809	628.6	30 / 10
455	45,512	809	631.3	8 / 30
460	46,000	809	634.0	35 / 10
465	46,500	809	638.2	16 / 13
Stagg Creek Tributary 2				
002	185	1,678	607.3	61 / 22
005	450	1,678	608.0	28 / 56
Strouds Creek				
216	21,570	1,420	597.0	19 / 20
220	22,037	1,420	601.6	12 / 95
225	22,475	1,420	603.7	16 / 29
229	22,922	1,420	606.7	15 / 85
236	23,635	1,420	609.9	15 / 135
240	23,993	1,420	611.8	10 / 120
246	24,623	1,420	617.4	45 / 40
250	24,964	1,420	620.4	25 / 65
255	25,500	1,420	624.4	15 / 50
261	26,057	927	627.4	55 / 50
265	26,500	927	628.3	12 / 35
269	26,871	927	635.7	20 / 50
272	27,159	737	635.8	30 / 50

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
276	27,597	737	641.1	49 / 22
279	27,900	737	641.3	27 / 30
282	28,154	401	644.0	41 / 17
285	28,500	401	646.1	45 / 9
289	28,913	229	649.4	9 / 9
296	29,569	229	659.2	4 / 30
Strouds Creek Tributary 2				
003	340	897	519.2	10 / 50
010	1,000	897	525.4	13 / 44
015	1,500	897	530.0	45 / 13
020	2,015	897	538.3	12 / 10
025	2,500	897	539.0	8 / 67
029	2,945	897	541.4	78 / 58
036	3,607	783	545.4	57 / 14
040	4,009	783	553.9	50 / 44
044	4,370	783	554.1	5 / 61
049	4,942	783	556.7	107 / 10
054	5,432	547	559.7	20 / 50
060	5,963	547	563.5	30 / 20
065	6,500	547	567.2	25 / 12
071	7,085	547	571.0	55 / 20
076	7,570	547	574.0	20 / 25
Strouds Creek Tributary 3				
001	146	598	550.5[1]	8 / 7
003	253	598	553.2	7 / 20
004	355	598	553.7	32 / 30
004	366	598	553.7	32 / 30
006	591	598	553.8	65 / 64
010	1,000	598	554.5	7 / 50
015	1,500	598	559.6	23 / 13
020	2,000	549	562.1	9 / 27
025	2,500	549	565.6	9 / 8
030	3,000	549	571.1	9 / 20
035	3,500	488	573.2	9 / 9
040	4,000	488	577.6	9 / 9
045	4,500	488	580.6	9 / 9
050	5,000	488	583.8	9 / 9
055	5,536	297	589.0	9 / 9
060	5,969	297	602.1	13 / 12
065	6,500	297	602.1	9 / 8
070	7,000	167	606.0	9 / 9
075	7,500	167	615.4	4 / 4
080	8,000	167	626.5	9 / 6
085	8,500	167	636.2	4 / 5
Terrells Creek				
235	23,460	2,193	419.5	15 / 16

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
239	23,943	2,193	425.8	21 / 18
243	24,314	2,193	427.2	17 / 10
248	24,768	2,193	429.6	18 / 21
253	25,285	2,193	432.2	23 / 55
258	25,790	2,193	435.6	28 / 24
260	26,001	2,193	437.0	31 / 33
261	26,050	2,193	437.0	31 / 33
263	26,258	1,943	437.7	106 / 21
268	26,782	1,121	440.3	16 / 12
274	27,350	1,121	445.8	23 / 15
280	27,967	1,121	450.2	23 / 18
285	28,505	1,121	454.0	24 / 15
291	29,106	1,121	460.3	14 / 11
297	29,685	1,121	465.2	23 / 14
302	30,220	1,121	469.6	12 / 16
310	30,981	1,121	475.4	54 / 24
316	31,586	1,121	478.4	16 / 44
321	32,084	1,121	481.9	24 / 19
326	32,646	1,121	485.8	18 / 45
332	33,219	1,121	488.1	46 / 17
338	33,797	1,121	490.2	35 / 55
343	34,278	1,121	491.5	19 / 20
353	35,320	1,121	495.6	65 / 25
358	35,838	882	497.6	19 / 40
Toms Creek (Apple Pond)				
050	5,022	2,629	501.3	8 / 69
056	5,624	2,629	508.7	32 / 54
066	6,582	2,629	514.0	171 / 94
071	7,079	2,629	515.1	47 / 175
074	7,406	2,629	515.7	156 / 43
079	7,880	2,629	516.4	220 / 36
084	8,424	2,629	516.9	312 / 79
091	9,119	2,413	517.4	41 / 50
095	9,508	2,413	518.8	70 / 50
097	9,704	2,413	519.2	23 / 20
098	9,752	2,413	519.6	23 / 20
102	10,174	2,413	520.0	23 / 120
107	10,693	2,413	520.8	47 / 27
112	11,235	2,413	522.1	66 / 73
119	11,939	2,413	523.2	19 / 75
123	12,347	2,214	524.4	57 / 29
129	12,850	2,214	526.1	15 / 66
132	13,205	2,214	527.9	15 / 174
136	13,557	2,214	529.1	21 / 38
141	14,094	2,214	531.9	182 / 10

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
149	14,889	2,214	533.7	66 / 138
153	15,329	2,214	534.6	23 / 133
161	16,055	2,214	536.4	34 / 53
167	16,738	2,214	538.6	68 / 15
175	17,465	2,051	540.7	122 / 102
179	17,940	2,051	541.5	121 / 56
185	18,542	2,051	543.0	21 / 70
192	19,181	2,051	544.9	127 / 32
195	19,475	2,051	545.7	213 / 10
199	19,945	2,051	546.9	124 / 80
201	20,139	2,051	547.1	50 / 77
202	20,231	2,051	552.1	50 / 77
214	21,355	1,208	553.0	34 / 77
215	21,476	1,208	554.2	15 / 14
216	21,568	1,208	556.7	16 / 18
220	22,011	1,208	557.5	106 / 85
Tributary 1 to Sevenmile Creek Tributary 2				
000	25	1,188	627.1[1]	150 / 80
002	190	1,188	627.1[1]	29 / 29
007	707	1,188	628.3	70 / 15
011	1,068	1,188	630.7	125 / 15
Tributary A to Haw Creek				
109	10,887	1,570	571.7	27 / 48
Turkey Hill Creek				
003	261	2,209	511.3	9 / 9
008	784	2,209	517.8	9 / 9
010	1,047	2,209	531.0	56 / 80
011	1,117	2,209	536.8	56 / 80
012	1,244	2,209	536.8	45 / 33
019	1,899	2,209	538.4	41 / 73
024	2,447	2,209	541.2	17 / 109
032	3,166	2,209	542.0	86 / 75
035	3,487	2,209	542.3	47 / 48
035	3,534	2,209	542.4	47 / 48
042	4,201	2,009	543.4	20 / 27
048	4,762	2,009	545.4	38 / 10
053	5,271	2,009	549.0	37 / 21
058	5,759	2,009	551.2	16 / 20
063	6,315	2,009	555.6	42 / 71
069	6,862	2,009	556.9	19 / 134
074	7,355	2,009	558.1	206 / 19
080	8,048	2,009	559.7	29 / 73
092	9,165	2,009	563.2	159 / 19
096	9,630	2,009	564.2	88 / 146
106	10,615	2,009	566.9	127 / 185
114	11,440	2,009	570.4	59 / 147

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
122	12,188	1,408	572.5	61 / 141
130	12,968	1,408	575.0	17 / 73
135	13,509	1,408	577.2	131 / 20
142	14,237	1,408	580.0	116 / 19
152	15,195	1,408	583.7	47 / 187
161	16,070	1,408	586.9	35 / 39
166	16,594	1,408	588.4	47 / 26
166	16,641	1,408	588.8	47 / 26
169	16,882	1,408	589.9	18 / 11
175	17,497	1,408	595.2	60 / 94
182	18,178	1,408	598.3	60 / 40
187	18,725	1,408	601.5	18 / 62
196	19,613	1,147	605.6	66 / 61
208	20,751	1,147	609.8	74 / 17
Unnamed Tributary to Bolin Creek				
002	165	656	458.3[1]	30 / 23
006	636	656	461.6	40 / 50
010	985	656	463.7	45 / 12
012	1,248	656	466.0	12 / 40
016	1,579	638	468.3	28 / 16
020	1,960	638	471.5	35 / 25
023	2,312	638	473.7	40 / 14
027	2,670	480	475.9	20 / 15
029	2,904	480	476.8	11 / 54
029	2,941	480	478.6	21 / 55
031	3,074	480	478.6	20 / 50
034	3,381	480	479.8	40 / 14
036	3,639	450	481.6	30 / 20
039	3,935	450	482.6	70 / 9
040	4,021	450	485.2	90 / 20
041	4,144	450	485.4	25 / 35
043	4,344	450	486.7	25 / 16
Watery Fork				
016	1,593	1,362	501.2[1]	77 / 14
020	1,984	1,362	501.4	48 / 72
024	2,433	1,362	502.4	15 / 94
031	3,130	1,362	507.2	63 / 46
042	4,175	1,362	510.4	19 / 156
051	5,070	1,362	513.4	27 / 75
056	5,580	1,362	516.2	23 / 114
061	6,086	1,362	517.6	15 / 15
061	6,143	1,362	518.4	15 / 15
066	6,649	1,111	521.9	37 / 11
073	7,316	1,111	525.7	16 / 114
079	7,931	1,111	527.6	106 / 11

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
083	8,347	1,111	529.5	64 / 55
093	9,269	1,111	533.7	96 / 43
097	9,680	1,111	536.8	52 / 33
103	10,308	1,111	540.0	16 / 129
110	11,002	1,111	543.8	14 / 42
114	11,381	1,111	547.7	48 / 37
120	11,983	1,111	550.3	12 / 12
120	12,040	745	550.7	12 / 12
124	12,355	745	552.6	14 / 12
West Fork Eno River				
085	8,481	3,434	593.1	390 / 20
090	8,969	3,434	593.3	36 / 77
094	9,418	3,434	594.0	110 / 20
100	9,991	3,083	595.0	126 / 15
110	10,980	3,083	596.8	141 / 37
115	11,500	3,083	597.6	218 / 162
120	12,000	3,083	597.9	266 / 157
124	12,361	3,083	598.3	44 / 320
128	12,759	3,083	598.7	13 / 65
140	14,022	3,083	608.4	122 / 53
142	14,162	3,083	633.8	130 / 130
156	15,558	3,083	633.8	259 / 136
160	15,972	3,083	633.8	265 / 245
164	16,430	2,897	633.9	266 / 231
170	17,024	2,897	633.9	160 / 81
177	17,677	2,897	633.9	84 / 126
185	18,466	2,897	633.9	195 / 159
190	19,024	2,897	633.9	133 / 261
194	19,432	2,897	633.9	340 / 262
199	19,871	2,897	633.9	147 / 311
209	20,867	2,897	633.9	164 / 57
215	21,491	2,686	633.9	97 / 129
218	21,848	2,686	633.9	74 / 112
223	22,270	2,686	634.0	285 / 57
231	23,083	2,515	634.0	137 / 195
239	23,871	2,398	634.0	78 / 171
246	24,646	2,398	634.1	182 / 60
251	25,121	2,398	634.2	149 / 246
256	25,649	2,398	634.2	94 / 32
262	26,174	2,398	634.4	47 / 73
267	26,744	2,398	634.7	108 / 40
273	27,330	2,398	635.0	123 / 20
281	28,068	2,398	635.5	28 / 28
281	28,124	2,398	636.3	28 / 28
288	28,837	2,170	637.0	15 / 75

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
291	29,149	2,170	638.2	42 / 43
295	29,461	2,170	639.3	75 / 12
300	30,024	2,170	640.9	75 / 19
305	30,512	2,170	641.8	103 / 131
310	30,990	2,170	642.3	163 / 24
314	31,423	2,170	643.0	16 / 192
321	32,144	1,496	644.8	94 / 84
326	32,615	1,496	645.9	79 / 12
330	33,024	1,483	647.2	47 / 99
335	33,524	1,483	648.2	99 / 21
340	33,992	1,483	649.2	84 / 63
345	34,451	1,483	650.2	52 / 63
350	35,001	1,483	651.7	93 / 65
356	35,562	1,483	653.2	63 / 51
361	36,094	1,483	654.7	110 / 87
361	36,139	1,483	659.4	110 / 87
367	36,719	1,483	659.5	153 / 80
371	37,129	1,483	659.6	259 / 10
375	37,451	1,483	659.8	186 / 10
379	37,926	1,483	660.2	129 / 70
385	38,524	1,483	661.0	120 / 35
390	39,024	1,483	662.8	91 / 76
398	39,767	1,483	664.7	123 / 77
404	40,387	1,483	665.9	80 / 25
404	40,447	1,483	667.9	80 / 25
410	40,970	1,483	668.6	40 / 185
415	41,493	1,483	670.5	88 / 83
420	41,985	942	672.3	149 / 7
420	42,045	942	671.3	135 / 51
423	42,346	942	671.8	135 / 51
West Fork Eno River Tributary 1				
006	556	1,427	578.9[1]	17 / 17
010	1,022	1,427	579.3	12 / 29
015	1,461	1,427	581.8	29 / 58
021	2,149	1,427	584.0	40 / 100
024	2,403	1,427	584.9	10 / 23
027	2,733	1,427	587.3	13 / 67
033	3,308	1,427	589.1	22 / 142
038	3,799	1,427	590.2	8 / 26
045	4,517	1,427	594.4	133 / 12
052	5,162	1,427	596.2	13 / 16
054	5,396	1,427	598.5	19 / 14
059	5,942	1,427	601.9	30 / 30
066	6,557	1,290	603.8	15 / 20
070	7,033	1,290	610.0	27 / 6

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
075	7,468	1,290	615.4	57 / 34
079	7,942	1,290	617.2	127 / 5
083	8,257	1,290	617.9	19 / 20
088	8,842	1,290	624.1	16 / 48
095	9,526	1,290	626.6	20 / 20
100	10,000	1,290	629.0	15 / 20
106	10,638	1,290	633.3	10 / 166
112	11,195	1,290	634.6	121 / 10
115	11,489	1,290	635.4	47 / 51
121	12,133	1,290	636.8	50 / 115
125	12,520	1,290	637.8	10 / 79
129	12,885	934	643.1	100 / 35
137	13,685	934	643.4	173 / 13
143	14,347	934	644.3	39 / 170
151	15,071	934	646.0	140 / 9
155	15,477	934	647.8	120 / 10
160	16,000	934	650.1	87 / 39
West Fork Eno River Tributary 2				
000	46	853	594.6[1]	7 / 131
004	399	853	594.6[1]	54 / 27
009	856	853	595.3	10 / 14
013	1,271	853	601.1	13 / 18
016	1,643	853	603.4	6 / 12
026	2,578	853	607.9	8 / 16
032	3,199	853	622.4	60 / 9
038	3,824	745	622.4	10 / 18
048	4,757	745	622.5	22 / 5
West Fork Eno River Tributary 3				
005	500	997	643.4	123 / 20
010	1,027	997	645.6	100 / 6
014	1,362	997	647.3	71 / 22
020	2,034	997	649.8	44 / 89
024	2,416	997	650.9	120 / 10
030	2,984	997	653.0	46 / 45
034	3,420	997	654.6	30 / 48
040	4,000	997	656.9	17 / 86
044	4,425	997	658.9	14 / 65
050	5,020	756	661.0	22 / 70
059	5,895	756	663.6	10 / 90
066	6,574	756	668.2	43 / 92
070	7,012	756	670.3	35 / 45
079	7,885	756	675.5	40 / 58
086	8,589	756	678.6	12 / 77
090	9,000	756	681.1	10 / 64
West Price Creek				
070	7,037	903	466.5	6 / 88

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
Wildcat Branch				
005	485	945	475.1[1]	50 / 20
012	1,170	945	477.6	110 / 15
017	1,709	945	479.5	35 / 15
024	2,427	945	483.5	50 / 15
030	3,028	767	486.7	20 / 15
037	3,667	767	490.6	29 / 11
042	4,238	747	493.3	10 / 60
049	4,928	747	495.7	12 / 13
050	4,965	747	496.7	12 / 13
052	5,212	747	497.8	15 / 15
053	5,297	747	500.8	15 / 15
060	5,971	747	501.8	15 / 20
065	6,539	607	506.0	25 / 35

[1]Elevation includes backwater effects

5.3 Coastal Analyses

This section is not applicable to this FIS project. Table 18 “Summary of Coastal Analyses” does not apply to Orange County.

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 Orange 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 Orange 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)
36.13	-79.25	-0.81
36.13	-79.00	-0.79
36.00	-79.25	-0.79
36.00	-79.00	-0.80
36.12	-79.12	-0.78
36.00	-79.12	-0.78

Table 21 - Datum Conversion Locations and Values

Latitude	Longitude	Conversion from NGVD29 to NAVD88 (feet)
35.87	-79.12	-0.80
Average conversion in Orange County from NGVD 29 to NAVD 88 = -0.79 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 Orange 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.

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	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
Battle Branch									
007	709	*	*	*	261.3[1]	*	261.3	*	*
Bolin Creek									
005	500	1,469	15,089	0.5	254.8	*	254.8	255.8	1.0
014	1,383	845	6,753	1.0	254.9	*	254.9	255.9	1.0
025	2,511	643	3,985	1.7	261.1	*	261.1	261.2	0.1
050	4,987	223	1,869	3.4	267.8	*	267.8	268.4	0.6
060	6,000	310	3,706	1.7	273.7	*	273.7	274.7	1.0
070	7,000	302	2,737	2.3	274.2	*	274.2	275.2	1.0
075	7,500	210	2,034	3.0	274.5	*	274.5	275.5	1.0
080	8,000	308	2,356	2.6	275.3	*	275.3	276.1	0.8
091	9,146	260	1,273	4.7	277.9	*	277.9	278.7	0.8
095	9,500	235	1,316	4.6	279.8	*	279.8	280.6	0.8
100	10,000	160	887	6.7	281.6	*	281.6	282.5	0.9
105	10,500	295	1,288	4.6	285.0	*	285.0	285.5	0.5

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	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
115	11,500	200	975	5.7	295.3	*	295.3	295.5	0.2
120	12,000	225	1,073	5.2	305.0	*	305.0	305.0	0.0
136	13,602	75	606	9.1	324.5	*	324.5	324.5	0.0
142	14,152	105	1,015	5.5	330.8	*	330.8	331.4	0.6
150	15,000	180	1,786	3.1	336.2	*	336.2	336.5	0.3
173	17,324	100	732	6.0	347.2	*	347.2	347.2	0.0
180	17,954	68	447	9.9	351.1	*	351.1	351.2	0.1
189	18,939	45	662	6.7	369.9	*	369.9	370.3	0.4
200	20,000	60	477	9.2	377.7	*	377.7	378.6	0.9
205	20,500	85	553	8.0	382.1	*	382.1	382.9	0.8
210	21,000	50	498	8.9	384.8	*	384.8	385.8	1.0
215	21,500	50	521	8.5	388.2	*	388.2	388.6	0.4
220	22,000	50	516	8.5	390.3	*	390.3	391.1	0.8
224	22,434	80	650	6.8	393.1	*	393.1	393.5	0.4
230	23,000	62	447	8.0	395.9	*	395.9	396.8	0.9
235	23,500	90	467	7.7	399.9	*	399.9	400.0	0.1
240	24,000	70	533	6.8	402.7	*	402.7	403.6	0.9
244	24,402	45	340	10.6	405.5	*	405.5	405.5	0.0
247	24,713	45	274	13.1	410.5	*	410.5	410.7	0.2
254	25,370	70	523	6.9	419.2	*	419.2	420.0	0.8
260	26,000	80	616	5.8	424.0	*	424.0	424.8	0.8
265	26,500	95	462	7.8	429.5	*	429.5	429.6	0.1
271	27,124	290	1,829	1.7	433.4	*	433.4	434.4	1.0
275	27,500	160	958	3.3	434.0	*	434.0	434.9	0.9
279	27,904	105	761	4.1	435.3	*	435.3	436.3	1.0
285	28,477	105	804	3.9	437.5	*	437.5	438.3	0.8
290	28,977	145	1,170	2.7	438.8	*	438.8	439.8	1.0
295	29,545	250	1,697	1.8	439.7	*	439.7	440.7	1.0
300	29,977	310	1,637	1.9	440.2	*	440.2	441.1	0.9
305	30,477	440	2,046	1.5	441.1	*	441.1	441.9	0.8
310	30,976	100	491	5.7	442.0	*	442.0	442.2	0.2
315	31,477	160	1,275	2.2	448.4	*	448.4	448.4	0.0
320	31,977	210	1,597	1.8	449.0	*	449.0	449.0	0.0
325	32,477	165	1,330	2.1	449.3	*	449.3	449.4	0.1
330	32,986	160	1,033	2.7	449.6	*	449.6	449.8	0.2
334	33,410	247	1,386	2.0	450.1	*	450.1	450.5	0.4
340	33,954	55	465	6.0	451.0	*	451.0	451.1	0.1
345	34,477	40	390	7.2	452.0	*	452.0	452.8	0.8
350	34,977	32	333	6.7	453.8	*	453.8	454.5	0.7
355	35,477	32	311	7.2	455.1	*	455.1	455.8	0.7
360	35,977	32	273	8.2	457.0	*	457.0	457.5	0.5
365	36,477	70	385	4.9	459.1	*	459.1	459.8	0.7
370	36,977	90	465	4.1	460.7	*	460.7	461.6	0.9
375	37,541	85	334	5.7	463.3	*	463.3	464.1	0.8

Table 22 - Floodway Data

Floodway Source		Floodway			Water Surface Elevation				
Cross Section	Distance (Feet Above Mouth)	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet Per Second)	Regulatory	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
380	37,977	95	499	3.3	466.5	*	466.5	467.2	0.7
385	38,477	80	264	6.2	468.5	*	468.5	469.0	0.5
390	38,977	80	475	3.4	472.4	*	472.4	473.2	0.8
395	39,515	90	669	2.4	476.7	*	476.7	477.4	0.7
400	39,995	263	1,192	1.4	477.4	*	477.4	478.3	0.9
405	40,514	300	1,346	1.2	488.4	*	488.4	488.4	0.0
410	40,977	360	1,673	1.0	488.9	*	488.9	488.9	0.0
415	41,477	330	1,470	0.7	489.2	*	489.2	489.2	0.0
420	41,977	105	540	2.0	489.5	*	489.5	489.5	0.0
424	42,417	100	448	2.4	490.1	*	490.1	490.4	0.3
428	42,821	95	378	2.9	490.9	*	490.9	491.4	0.5
433	43,327	90	607	1.2	495.8	*	495.8	496.7	0.9
Bolin Creek Tributary									
001	72	39	80	5.5	393.5[1]	*	389.7	389.7	0.0
007	659	18	54	8.1	398.6	*	398.6	398.6	0.0
013	1,284	15	45	8.8	422.6	*	422.6	422.7	0.1
018	1,752	14	44	9.1	439.0	*	439.0	439.0	0.0
024	2,388	12	38	9.6	454.9	*	454.9	454.9	0.0
Booker Creek									
009	921	825	6,286	0.5	254.7[1]	*	254.6	255.6	1.0
017	1,662	850	5,065	0.6	254.8	*	254.8	255.7	1.0
024	2,363	615	3,644	0.8	255.0	*	255.0	255.9	0.9
030	2,957	690	4,303	0.7	255.3	*	255.3	256.1	0.8
035	3,500	350	1,965	1.5	257.7	*	257.7	258.2	0.5
040	4,000	375	1,927	1.5	258.0	*	258.0	259.0	1.0
050	5,024	142	1,243	2.3	262.4	*	262.4	262.8	0.4
055	5,455	150	915	3.1	262.7	*	262.7	263.3	0.6
070	7,024	373	3,103	0.9	264.7	*	264.7	265.7	0.9
075	7,524	494	3,503	0.8	264.8	*	264.8	265.8	0.9
080	8,024	318	1,570	1.8	264.9	*	264.9	265.8	0.9
086	8,589	90	527	5.2	265.5	*	265.5	266.2	0.7
090	9,024	68	501	5.3	267.5	*	267.5	268.2	0.7
095	9,524	278	1,218	2.2	269.5	*	269.5	270.2	0.7
100	10,024	392	1,870	1.4	270.6	*	270.6	271.3	0.7
105	10,524	49	212	5.0	270.8	*	270.8	271.0	0.3
110	10,952	37	192	11.9	276.8	*	276.8	277.2	0.5
112	11,228	29	182	12.6	282.6	*	282.6	282.6	0.0
117	11,747	1,069	19,842	0.1	297.4	*	297.4	297.4	0.0
120	12,024	320	14,448	0.1	297.4	*	297.4	297.4	0.0
125	12,524	459	7,708	0.2	297.4	*	297.4	297.5	0.1
130	13,024	386	5,084	0.4	297.5	*	297.5	297.7	0.2
136	13,556	385	3,330	0.6	297.6	*	297.6	298.0	0.3
140	14,035	367	1,578	0.9	297.7	*	297.7	297.4	-0.3
145	14,524	189	612	1.8	297.8	*	297.8	298.2	0.4

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	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
150	15,024	175	587	3.1	299.0	*	299.0	300.0	1.0
155	15,524	140	609	3.0	303.2	*	303.2	304.0	0.7
160	16,024	34	155	11.9	311.0	*	311.0	311.0	0.0
165	16,524	111	253	7.3	321.0	*	321.0	321.0	0.0
170	17,020	42	198	8.2	327.9	*	327.9	328.0	0.2
175	17,524	33	249	6.5	331.5	*	331.5	332.5	0.9
180	18,024	33	154	10.5	335.3	*	335.3	335.3	0.0
185	18,524	33	205	7.9	341.5	*	341.5	341.6	0.0
190	19,024	35	133	12.1	349.4	*	349.4	349.4	0.0
195	19,524	60	195	8.4	363.1	*	363.1	363.2	0.1
200	20,024	29	138	12.5	373.0	*	373.0	372.9	0.0
206	20,583	173	1,503	1.1	387.3	*	387.3	388.0	0.7
210	21,024	220	1,243	1.3	387.4	*	387.4	388.1	0.6
216	21,577	124	285	5.7	390.0	*	390.0	390.0	0.0
221	22,061	24	102	11.8	406.1	*	406.1	406.1	0.0
225	22,524	109	861	1.4	433.9	*	433.9	434.0	0.0
230	23,024	290	1,550	0.8	434.2	*	434.2	434.2	0.0
235	23,524	145	799	1.5	434.4	*	434.4	434.4	0.0
240	23,991	142	603	2.0	434.8	*	434.8	434.9	0.1
Buckwater Creek									
015	1,472	180	751	3.8	428.7[1]	*	426.7	427.5	0.8
032	3,182	100	469	6.1	432.4	*	432.4	433.0	0.6
045	4,529	198	988	2.8	437.8	*	437.8	438.5	0.7
060	5,994	156	485	5.7	440.7	*	440.7	441.5	0.7
072	7,249	151	698	3.8	445.1	*	445.1	445.3	0.2
084	8,379	160	677	3.9	447.9	*	447.9	448.2	0.3
099	9,872	190	870	3.0	451.5	*	451.5	452.4	0.9
110	11,035	135	513	5.1	455.6	*	455.6	456.4	0.8
123	12,253	145	610	3.6	461.7	*	461.7	462.2	0.5
129	12,874	65	297	7.1	465.1	*	465.1	465.4	0.3
136	13,627	44	250	8.4	469.2	*	469.2	469.4	0.2
150	14,978	230	481	4.4	475.0	*	475.0	475.0	0.0
165	16,477	150	536	3.9	481.7	*	481.7	481.8	0.1
180	18,041	128	542	3.9	488.7	*	488.7	489.1	0.4
189	18,929	111	443	2.3	491.2	*	491.2	491.9	0.7
199	19,908	115	537	1.6	496.8	*	496.8	497.2	0.4
208	20,807	102	191	4.6	502.8	*	502.8	502.8	0.0
Buckwater Creek Tributary 1									
006	604	58	167	6.0	465.2	*	465.2	465.6	0.4
012	1,243	54	140	6.4	471.5	*	471.5	471.9	0.4
017	1,657	70	163	5.4	475.3	*	475.3	475.8	0.5
023	2,300	90	557	1.6	483.9	*	483.9	484.2	0.4
025	2,531	75	343	2.6	483.9	*	483.9	484.3	0.4
Buckwater Creek Tributary 2									

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	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
004	431	101	319	3.5	490.5[1]	*	489.9	490.8	0.9
008	842	200	910	1.2	494.7	*	494.7	494.7	0.0
Cates Creek									
004	358	110	596	4.2	499.3[1]	*	489.4	490.4	1.0
009	866	140	653	3.9	499.3[1]	*	492.7	492.9	0.2
015	1,511	210	697	3.3	499.3[1]	*	495.6	496.0	0.4
031	3,051	92	363	6.4	508.0	*	508.0	508.0	0.0
035	3,510	50	369	6.3	511.3	*	511.3	512.2	0.9
047	4,731	60	299	7.8	524.0	*	524.0	524.0	0.0
053	5,292	145	749	3.1	527.9	*	527.9	528.9	1.0
056	5,627	100	392	5.9	530.9	*	530.9	531.3	0.4
070	6,973	52	490	4.7	543.9	*	543.9	544.8	0.9
085	8,542	128	593	3.4	558.2	*	558.2	558.2	0.0
090	8,981	65	236	8.6	559.8	*	559.8	559.8	0.0
101	10,070	49	230	8.8	568.8	*	568.8	568.8	0.1
105	10,528	55	362	5.6	573.6	*	573.6	573.8	0.2
109	10,920	72	407	5.0	575.2	*	575.2	576.2	0.9
114	11,434	80	486	4.2	578.5	*	578.5	578.9	0.5
120	11,973	120	624	3.0	580.7	*	580.7	581.3	0.7
126	12,558	125	658	2.8	582.5	*	582.5	583.4	0.9
130	12,970	65	373	5.0	583.8	*	583.8	584.8	1.0
135	13,488	40	280	6.7	585.9	*	585.9	586.9	1.0
150	15,009	180	1,196	1.6	594.8	*	594.8	595.8	1.0
155	15,466	53	306	3.5	595.0	*	595.0	596.0	1.0
159	15,922	35	126	8.4	596.1	*	596.1	596.2	0.1
165	16,466	27	129	8.2	600.8	*	600.8	600.8	0.0
170	16,966	30	161	6.6	604.4	*	604.4	604.5	0.1
175	17,466	24	119	8.9	608.6	*	608.6	609.0	0.4
180	17,966	24	140	7.6	614.5	*	614.5	614.5	0.0
202	20,219	375	2,750	0.3	637.7	*	637.7	637.7	0.0
205	20,466	255	1,841	0.5	637.7	*	637.7	637.7	0.0
208	20,806	90	601	0.9	637.7	*	637.7	637.7	0.0
215	21,466	40	146	3.6	637.7	*	637.7	637.7	0.0
220	21,966	39	118	4.5	642.0	*	642.0	642.1	0.0
225	22,492	80	249	2.1	645.7	*	645.7	646.7	1.0
229	22,895	30	100	5.3	649.3	*	649.3	649.5	0.2
234	23,360	53	159	3.3	654.8	*	654.8	655.7	1.0
239	23,862	37	134	4.0	658.9	*	658.9	659.9	1.0
Cates Creek Tributary									
001	140	49	211	5.5	595.1[1]	*	591.4	592.4	1.0
005	507	104	389	3.0	595.1[1]	*	593.6	593.9	0.3
010	986	48	200	5.8	595.1[1]	*	594.8	595.1	0.3
015	1,492	75	246	4.7	596.8	*	596.8	597.0	0.2
039	3,907	348	4,932	0.2	630.0	*	630.0	630.4	0.4

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	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
045	4,488	392	3,956	0.2	630.0	*	630.0	630.4	0.4
049	4,945	164	1,108	0.8	630.0	*	630.0	630.4	0.4
055	5,541	65	330	2.8	630.2	*	630.2	630.6	0.4
062	6,172	21	95	9.7	631.9	*	631.9	632.2	0.3
067	6,696	34	186	4.9	635.4	*	635.4	636.3	0.9
070	6,993	20	111	8.2	636.7	*	636.7	637.6	0.9
080	7,994	70	382	1.9	648.0	*	648.0	649.0	1.0
083	8,344	90	369	1.9	649.2	*	649.2	649.9	0.7
087	8,666	115	380	1.9	650.4	*	650.4	651.3	0.9
091	9,101	65	277	2.6	652.5	*	652.5	653.5	1.0
095	9,509	60	216	2.5	654.7	*	654.7	655.6	0.9
100	10,009	30	115	4.7	657.8	*	657.8	658.8	1.0
105	10,504	20	101	5.4	662.9	*	662.9	663.5	0.6
Cedar Fork									
007	668	565	1,115	1.0	293.7[1]	*	293.1	294.1	1.0
013	1,315	49	158	7.0	298.3	*	298.3	298.5	0.1
019	1,882	36	169	6.6	304.4	*	304.4	305.3	0.9
Collins Creek Tributary 1									
013	1,291	177	795	2.6	488.6	*	488.6	489.4	0.8
025	2,485	140	805	2.6	490.9	*	490.9	491.8	0.9
038	3,834	80	499	4.2	493.3	*	493.3	494.2	0.9
047	4,707	215	1,162	1.8	495.3	*	495.3	496.2	1.0
059	5,860	129	483	3.8	497.0	*	497.0	497.9	1.0
065	6,458	78	1,113	1.6	508.2	*	508.2	508.4	0.2
078	7,821	80	872	2.1	508.4	*	508.4	508.8	0.4
091	9,105	170	1,464	1.3	508.5	*	508.5	509.4	0.9
100	10,032	185	1,358	1.0	508.9	*	508.9	509.9	1.0
113	11,269	214	1,146	1.2	509.8	*	509.8	510.6	0.8
125	12,527	114	356	3.9	511.0	*	511.0	511.8	0.7
135	13,485	130	575	2.0	514.2	*	514.2	515.0	0.8
147	14,714	110	489	2.4	516.6	*	516.6	517.4	0.8
159	15,919	170	639	1.8	518.6	*	518.6	519.5	0.8
170	17,008	77	412	2.6	522.0	*	522.0	522.6	0.7
173	17,308	151	682	1.6	522.3	*	522.3	523.2	0.9
177	17,713	54	287	3.7	522.8	*	522.8	523.8	1.0
Dry Branch									
000	37	75	265	2.1	286.7[1]	*	285.1	286.0	1.0
009	898	55	234	2.4	289.8	*	289.8	290.8	1.0
014	1,355	75	347	1.5	294.1	*	294.1	294.1	0.0
023	2,255	22	71	7.2	302.9	*	302.9	303.4	0.5
028	2,769	22	64	6.2	312.4	*	312.4	312.5	0.1
032	3,192	18	51	7.7	323.2	*	323.2	323.5	0.3
036	3,567	19	53	7.5	355.4	*	355.4	356.2	0.8
039	3,946	21	52	7.6	388.2	*	388.2	388.6	0.4

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	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
041	4,140	21	61	6.5	396.6	*	396.6	397.3	0.7
East Fork Eno River									
009	881	168	934	3.7	577.6[1]	*	573.8	574.3	0.5
022	2,188	250	1,441	2.3	577.6[1]	*	576.4	577.4	0.9
035	3,514	180	984	3.4	580.1	*	580.1	580.6	0.6
047	4,694	220	1,550	2.1	583.3	*	583.3	583.8	0.5
051	5,058	92	686	4.8	584.3	*	584.3	585.3	1.0
062	6,205	80	672	4.9	587.1	*	587.1	587.9	0.8
075	7,524	200	1,836	1.6	590.3	*	590.3	591.0	0.7
087	8,701	175	1,078	2.8	591.0	*	591.0	591.8	0.8
118	11,804	737	14,478	0.2	618.6	*	618.6	618.6	0.0
139	13,936	692	13,411	0.2	618.6	*	618.6	618.6	0.0
160	16,004	634	11,626	0.2	618.6	*	618.6	618.6	0.0
180	17,956	465	5,481	0.4	618.6	*	618.6	618.6	0.0
200	19,984	210	984	2.1	621.2	*	621.2	621.3	0.1
East Price Creek									
000	0	80	543	2.6	359.1	*	359.1	359.1	0.0
007	663	306	1,144	1.2	359.5	*	359.5	360.5	1.0
015	1,543	195	587	2.4	364.0	*	364.0	365.0	0.9
024	2,415	50	240	5.6	374.1	*	374.1	375.1	1.0
031	3,141	40	261	5.2	382.8	*	382.8	383.0	0.2
038	3,841	65	282	4.8	389.1	*	389.1	389.3	0.2
042	4,192	98	429	3.1	391.0	*	391.0	391.4	0.5
054	5,380	76	400	2.6	396.7	*	396.7	397.6	0.9
060	5,955	96	702	1.5	403.1	*	403.1	403.4	0.3
Eno River									
832	83,191	145	1,960	8.3	366.2	*	366.2	366.8	0.6
846	84,600	175	2,380	5.6	369.1	*	369.1	369.8	0.8
862	86,248	404	3,754	3.6	371.5	*	371.5	372.2	0.7
876	87,612	123	1,366	9.7	372.5	*	372.5	373.2	0.7
891	89,095	215	1,886	7.0	377.3	*	377.3	377.7	0.4
907	90,679	157	2,094	6.3	383.2	*	383.2	384.2	0.9
916	91,619	99	1,140	11.6	384.7	*	384.7	385.6	0.9
926	92,625	170	1,812	7.2	392.1	*	392.1	392.1	0.0
937	93,711	140	1,744	7.4	394.2	*	394.2	394.6	0.4
951	95,096	180	1,860	6.9	397.3	*	397.3	397.5	0.2
963	96,267	150	2,105	6.1	399.2	*	399.2	399.5	0.2
975	97,538	125	2,012	6.4	401.8	*	401.8	401.9	0.2
987	98,658	195	2,328	5.5	403.1	*	403.1	403.3	0.3
1000	99,962	215	3,159	4.1	405.4	*	405.4	405.8	0.4
1009	100,947	185	2,015	6.1	406.4	*	406.4	406.9	0.5
1026	102,599	215	2,829	4.4	409.0	*	409.0	409.6	0.6
1049	104,877	212	2,694	4.5	411.0	*	411.0	411.7	0.7
1071	107,099	273	3,883	3.1	412.8	*	412.8	413.6	0.8

Table 22 - Floodway Data

Floodway Source		Floodway			Water Surface Elevation				
Cross Section	Distance (Feet Above Mouth)	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet Per Second)	Regulatory	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
1092	109,206	326	3,938	3.1	413.6	*	413.6	414.5	0.9
1112	111,178	290	3,328	3.6	415.2	*	415.2	416.0	0.8
1130	113,050	184	2,427	5.0	416.9	*	416.9	417.7	0.8
1151	115,128	150	2,152	5.6	419.8	*	419.8	420.6	0.9
1172	117,229	345	2,816	4.3	428.2	*	428.2	428.4	0.2
1181	118,072	275	2,277	5.0	429.4	*	429.4	429.8	0.4
1202	120,210	112	945	11.9	436.9	*	436.9	437.0	0.1
1221	122,144	92	1,093	10.2	448.0	*	448.0	448.7	0.7
1242	124,230	185	2,020	5.5	455.6	*	455.6	456.5	0.9
1259	125,910	224	2,947	3.8	459.6	*	459.6	460.3	0.6
1280	128,048	190	2,567	4.3	462.0	*	462.0	462.6	0.6
1300	130,027	140	1,643	6.8	464.2	*	464.2	464.9	0.6
1322	132,191	150	2,011	5.4	468.2	*	468.2	469.1	1.0
1341	134,128	125	1,172	9.3	473.9	*	473.9	474.4	0.4
1361	136,128	165	1,907	5.6	484.0	*	484.0	484.4	0.5
1380	137,953	205	2,474	4.3	487.1	*	487.1	487.8	0.7
1396	139,640	162	1,974	5.0	488.8	*	488.8	489.4	0.6
1416	141,567	110	1,669	5.9	490.9	*	490.9	491.7	0.8
1446	144,599	135	1,660	6.0	495.2	*	495.2	495.8	0.6
1466	146,564	431	4,818	2.0	499.2	*	499.2	499.9	0.7
1485	148,479	225	2,276	4.1	499.5	*	499.5	500.3	0.8
1507	150,746	654	5,499	1.7	501.3	*	501.3	502.2	0.9
1526	152,574	569	4,962	1.9	502.0	*	502.0	503.0	1.0
1567	156,700	1,272	7,401	1.3	504.2	*	504.2	505.1	0.9
1590	158,987	245	2,270	4.1	505.5	*	505.5	506.3	0.8
1598	159,753	192	2,149	4.3	506.7	*	506.7	507.4	0.6
1606	160,590	235	2,548	3.6	508.9	*	508.9	508.9	0.0
1627	162,664	180	2,133	4.3	511.5	*	511.5	511.6	0.1
1632	163,201	158	2,082	4.4	512.2	*	512.2	512.5	0.3
1646	164,633	336	3,414	2.6	513.3	*	513.3	513.8	0.6
1671	167,101	235	2,382	3.8	515.3	*	515.3	515.8	0.4
1692	169,202	260	3,369	2.7	518.4	*	518.4	518.9	0.5
1711	171,134	130	1,933	4.6	519.1	*	519.1	519.7	0.6
1718	171,797	155	2,539	3.5	520.2	*	520.2	520.7	0.5
1723	172,270	175	2,298	3.8	523.0	*	523.0	523.0	0.0
1739	173,881	136	1,382	5.2	525.0	*	525.0	525.0	0.0
1746	174,563	240	2,225	3.2	526.2	*	526.2	526.3	0.0
1753	175,294	135	1,386	5.2	526.8	*	526.8	526.8	0.1
1764	176,436	185	1,982	3.6	528.7	*	528.7	528.9	0.3
1776	177,550	115	1,346	5.4	529.8	*	529.8	530.2	0.4
1790	179,002	120	1,527	4.7	531.4	*	531.4	531.9	0.5
1806	180,628	90	816	8.7	534.1	*	534.1	534.3	0.2
1813	181,285	192	2,521	2.8	547.0	*	547.0	547.0	0.0
1831	183,117	290	2,495	2.6	547.6	*	547.6	547.6	0.0

Table 22 - Floodway Data

Floodway Source		Floodway			Water Surface Elevation				
Cross Section	Distance (Feet Above Mouth)	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet Per Second)	Regulatory	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
1851	185,109	316	2,734	2.4	549.4	*	549.4	549.4	0.0
1872	187,246	245	2,186	2.9	550.6	*	550.6	550.8	0.3
1894	189,351	328	2,864	2.2	552.0	*	552.0	552.6	0.6
1906	190,596	105	883	6.8	552.6	*	552.6	553.4	0.8
1915	191,490	100	882	6.9	558.2	*	558.2	558.2	0.0
1932	193,177	129	1,155	4.9	562.1	*	562.1	562.3	0.2
1948	194,797	200	1,519	3.7	565.2	*	565.2	565.4	0.2
1961	196,126	95	962	5.9	567.0	*	567.0	567.5	0.5
1977	197,698	145	1,580	3.5	569.9	*	569.9	570.4	0.5
1991	199,103	335	2,853	2.0	571.6	*	571.6	572.1	0.5
2007	200,659	305	2,331	2.4	572.5	*	572.5	572.9	0.4
2013	201,292	125	1,355	4.0	573.5	*	573.5	573.6	0.1
2026	202,621	211	1,749	3.1	576.4	*	576.4	576.8	0.3
Fan Branch									
008	801	65	438	3.4	324.0	*	324.0	324.0	0.0
015	1,470	52	186	8.0	330.3	*	330.3	330.3	0.0
023	2,326	33	178	8.4	337.4	*	337.4	337.5	0.2
027	2,709	60	439	3.4	343.3	*	343.3	344.0	0.8
036	3,550	70	412	3.6	346.7	*	346.7	346.8	0.1
044	4,397	45	140	5.3	354.7	*	354.7	354.9	0.2
057	5,726	61	143	4.9	368.2	*	368.2	368.2	0.0
068	6,775	19	61	7.5	378.1	*	378.1	378.1	0.0
073	7,280	75	480	1.0	391.3	*	391.3	391.7	0.4
081	8,083	19	60	7.7	395.8	*	395.8	395.8	0.1
086	8,607	37	72	5.0	405.5	*	405.5	405.5	0.0
092	9,157	16	47	7.7	413.1	*	413.1	413.2	0.1
Fan Branch Tributary									
002	232	41	197	4.8	348.4	*	348.4	348.6	0.2
007	682	27	84	6.3	353.4	*	353.4	353.5	0.2
013	1,283	27	77	4.8	363.9	*	363.9	364.5	0.6
016	1,562	75	253	1.4	375.0	*	375.0	375.3	0.3
017	1,731	26	70	5.3	375.8	*	375.8	375.9	0.1
019	1,915	26	71	5.2	378.0	*	378.0	378.4	0.4
023	2,260	11	44	8.4	386.9	*	386.9	387.0	0.2
Forrest Creek									
009	944	170	843	2.0	505.6[1]	*	500.4	501.0	0.6
020	1,981	117	499	3.4	505.6[1]	*	502.2	502.8	0.6
030	2,987	120	442	3.8	505.9	*	505.9	506.5	0.6
041	4,057	152	518	3.3	509.5	*	509.5	510.5	1.0
050	5,025	135	395	4.3	512.5	*	512.5	513.2	0.7
060	5,995	44	277	6.1	517.3	*	517.3	517.6	0.3
069	6,904	56	321	5.3	523.2	*	523.2	523.5	0.4
077	7,748	80	370	4.6	531.3	*	531.3	531.4	0.1
087	8,721	88	602	2.7	540.6	*	540.6	540.6	0.0

Table 22 - Floodway Data

Floodway Source		Floodway			Water Surface Elevation				
Cross Section	Distance (Feet Above Mouth)	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet Per Second)	Regulatory	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
096	9,588	90	491	3.3	541.6	*	541.6	541.9	0.3
108	10,790	85	478	3.4	547.5	*	547.5	548.1	0.6
117	11,683	115	593	2.8	549.8	*	549.8	550.7	0.9
126	12,629	225	632	2.6	552.0	*	552.0	552.6	0.6
138	13,762	170	699	2.3	554.3	*	554.3	555.1	0.8
147	14,735	215	868	1.9	556.8	*	556.8	557.6	0.8
154	15,381	250	931	1.7	558.8	*	558.8	559.3	0.4
158	15,836	160	599	2.6	559.6	*	559.6	560.0	0.4
170	17,025	260	923	1.7	562.0	*	562.0	562.8	0.9
185	18,504	350	1,012	1.6	564.3	*	564.3	565.0	0.7
191	19,098	260	908	1.7	565.7	*	565.7	566.0	0.3
203	20,254	130	527	3.0	567.7	*	567.7	568.4	0.7
216	21,647	74	436	3.5	571.5	*	571.5	572.1	0.6
231	23,082	193	751	2.0	574.9	*	574.9	575.6	0.8
246	24,645	216	819	1.8	577.0	*	577.0	577.8	0.8
261	26,094	123	492	3.1	579.4	*	579.4	580.1	0.7
275	27,498	130	577	2.6	581.5	*	581.5	582.3	0.8
294	29,443	200	745	2.0	585.2	*	585.2	585.8	0.6
308	30,809	160	665	2.2	588.2	*	588.2	588.9	0.7
324	32,422	100	551	2.4	591.6	*	591.6	592.1	0.5
332	33,235	120	431	3.1	593.0	*	593.0	593.5	0.4
338	33,813	115	441	3.0	595.1	*	595.1	595.5	0.4
351	35,110	160	574	2.3	597.8	*	597.8	598.7	0.9
360	36,023	120	612	2.2	603.2	*	603.2	603.5	0.4
364	36,426	105	469	2.8	603.6	*	603.6	604.0	0.4
373	37,305	120	541	2.4	605.4	*	605.4	606.0	0.6
385	38,473	75	470	2.8	609.2	*	609.2	609.6	0.4
393	39,303	118	396	3.3	612.1	*	612.1	612.7	0.6
403	40,253	85	498	2.6	616.2	*	616.2	616.8	0.7
419	41,926	50	244	5.1	619.4	*	619.4	620.0	0.6
433	43,333	110	484	2.6	623.9	*	623.9	624.5	0.6
445	44,542	160	595	2.1	626.2	*	626.2	627.1	0.9
456	45,606	169	709	1.8	628.3	*	628.3	629.2	0.9
462	46,210	107	399	3.1	628.9	*	628.9	629.9	0.9
476	47,599	135	508	2.5	632.8	*	632.8	633.7	0.9
493	49,316	170	625	2.0	636.7	*	636.7	637.5	0.8
500	50,007	148	636	1.9	638.5	*	638.5	639.1	0.6
503	50,309	91	355	3.4	639.1	*	639.1	639.8	0.7
507	50,660	85	699	1.4	644.4	*	644.4	644.6	0.3
512	51,171	105	849	1.2	644.4	*	644.4	644.8	0.4
Haw River									
1318	131,804	588	12,081	5.3	416.8	*	416.8	417.5	0.7
1365	136,539	763	13,122	4.6	420.2	*	420.2	421.1	0.8
1388	138,837	569	12,335	4.8	422.9	*	422.9	423.7	0.8

Table 22 - Floodway Data

Floodway Source		Floodway			Water Surface Elevation				
Cross Section	Distance (Feet Above Mouth)	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet Per Second)	Regulatory	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
1406	140,649	587	13,191	4.5	424.5	*	424.5	425.3	0.8
1428	142,798	767	16,455	3.6	426.2	*	426.2	427.0	0.8
1455	145,460	658	15,280	3.9	427.5	*	427.5	428.4	1.0
Jones Creek									
001	106	85	204	4.2	464.7[1]	*	462.3	462.7	0.4
011	1,111	47	189	4.6	469.3	*	469.3	469.3	0.0
019	1,931	55	130	6.3	475.6	*	475.6	475.7	0.1
029	2,939	87	261	3.2	484.0	*	484.0	484.3	0.3
Lake Michael Tributary									
114	11,399	171	881	1.0	636.5	*	636.5	636.8	0.2
123	12,291	209	1,410	0.6	643.0	*	643.0	643.1	0.1
128	12,838	80	364	2.4	643.2	*	643.2	643.2	0.1
140	13,979	98	360	2.4	649.4	*	649.4	650.3	1.0
145	14,479	60	201	2.8	651.7	*	651.7	652.7	1.0
150	14,979	40	130	4.3	654.7	*	654.7	655.5	0.8
165	16,479	60	234	2.4	663.9	*	663.9	664.8	1.0
186	18,601	36	40	5.3	685.7	*	685.7	685.7	0.0
191	19,147	20	52	4.1	693.4	*	693.4	693.8	0.4
Lake Michael Tributary 2									
005	475	49	166	3.3	636.5[1]	*	635.7	636.7	1.0
010	1,000	33	136	4.0	640.0	*	640.0	640.9	0.9
016	1,641	45	133	4.1	646.7	*	646.7	647.2	0.4
020	2,000	55	191	2.8	650.0	*	650.0	650.6	0.6
025	2,500	40	138	2.3	652.2	*	652.2	653.1	1.0
030	3,000	24	53	5.9	656.3	*	656.3	656.3	0.0
035	3,500	21	82	3.8	662.7	*	662.7	663.4	0.7
039	3,945	35	120	2.6	666.7	*	666.7	667.7	1.0
045	4,500	35	111	2.8	672.2	*	672.2	673.2	0.9
050	5,000	25	73	4.3	680.3	*	680.3	680.3	0.0
056	5,632	34	128	2.4	686.4	*	686.4	687.4	1.0
063	6,273	14	47	6.7	694.0	*	694.0	694.0	0.0
Little Creek									
285	28,500	890	9,167	1.0	248.7	*	248.7	249.6	0.8
301	30,094	203	1,494	5.5	250.9	*	250.9	251.4	0.5
318	31,783	970	8,239	1.0	253.2	*	253.2	254.1	0.9
330	33,000	1,100	8,614	0.9	254.0	*	254.0	254.8	0.8
330	33,000	1,100	8,616	0.9	254.0	*	254.0	254.8	0.8
Little Creek (Near Hillsborough)									
010	991	113	374	3.5	484.1	*	484.1	484.6	0.5
019	1,887	169	384	3.4	488.7	*	488.7	488.8	0.1
024	2,420	64	383	3.1	494.8	*	494.8	494.8	0.0
035	3,486	60	315	3.8	498.8	*	498.8	499.4	0.6
049	4,878	38	198	5.6	506.4	*	506.4	506.9	0.4
059	5,920	29	153	6.9	517.2	*	517.2	517.2	0.0
069	6,882	35	267	3.4	523.3	*	523.3	523.8	0.5

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	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
080	7,965	52	193	4.7	530.4	*	530.4	530.9	0.5
087	8,707	47	398	2.1	539.4	*	539.4	540.1	0.7
Little River North Fork									
182	18,222	137	681	7.1	491.5	*	491.5	491.5	0.0
193	19,254	75	437	11.0	500.8	*	500.8	500.8	0.0
200	20,041	91	743	6.4	511.5	*	511.5	511.8	0.3
209	20,942	202	1,789	2.7	513.8	*	513.8	514.7	0.9
223	22,320	215	1,825	2.6	515.4	*	515.4	516.2	0.8
240	24,003	165	1,160	4.0	517.8	*	517.8	518.5	0.7
247	24,687	125	1,156	4.0	520.4	*	520.4	520.4	0.0
254	25,448	334	1,660	2.7	521.3	*	521.3	521.4	0.0
270	27,023	195	1,089	4.2	523.5	*	523.5	524.3	0.8
287	28,670	156	1,111	4.1	527.8	*	527.8	528.2	0.4
302	30,185	107	1,106	4.1	530.6	*	530.6	531.3	0.6
317	31,696	89	676	6.4	531.9	*	531.9	532.6	0.7
334	33,398	195	1,161	3.7	538.0	*	538.0	538.7	0.7
353	35,298	300	1,927	2.2	542.2	*	542.2	542.7	0.5
368	36,827	220	1,238	3.1	543.9	*	543.9	544.9	0.9
376	37,635	135	975	3.9	548.2	*	548.2	548.5	0.3
388	38,764	119	908	4.2	552.2	*	552.2	552.4	0.2
404	40,433	115	737	5.2	555.6	*	555.6	556.3	0.7
417	41,745	152	1,356	2.8	557.8	*	557.8	558.7	0.9
434	43,387	257	1,722	2.2	558.8	*	558.8	559.7	0.9
450	45,006	146	1,512	2.5	567.2	*	567.2	567.2	0.0
459	45,859	185	1,703	2.2	567.6	*	567.6	567.6	0.0
477	47,653	188	1,614	2.3	568.4	*	568.4	568.5	0.1
486	48,609	125	1,097	3.3	569.5	*	569.5	570.1	0.6
495	49,467	290	2,337	1.6	571.0	*	571.0	571.6	0.6
506	50,592	160	1,168	3.1	572.1	*	572.1	572.8	0.7
519	51,944	214	2,053	1.8	575.9	*	575.9	576.4	0.4
528	52,777	67	820	4.4	577.2	*	577.2	577.6	0.4
535	53,486	180	1,734	2.1	577.8	*	577.8	578.7	0.9
543	54,322	278	1,817	2.0	579.0	*	579.0	579.7	0.7
Little River South Fork									
097	9,687	250	2,585	3.2	469.2	*	469.2	469.8	0.6
109	10,933	125	1,141	7.2	471.4	*	471.4	471.9	0.5
125	12,528	173	1,612	5.1	477.7	*	477.7	478.0	0.3
139	13,946	300	3,273	2.5	481.2	*	481.2	481.7	0.5
156	15,562	404	3,649	2.2	482.6	*	482.6	483.2	0.6
170	16,986	350	3,325	2.5	483.9	*	483.9	484.6	0.7
186	18,572	170	1,416	5.8	486.8	*	486.8	487.5	0.7
200	19,963	265	2,374	3.5	491.2	*	491.2	492.1	1.0
216	21,562	200	2,350	3.5	495.2	*	495.2	495.6	0.4
236	23,622	595	4,924	1.7	495.8	*	495.8	496.7	0.9

Table 22 - Floodway Data

Floodway Source		Floodway			Water Surface Elevation				
Cross Section	Distance (Feet Above Mouth)	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet Per Second)	Regulatory	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
249	24,882	420	3,589	2.3	497.1	*	497.1	497.9	0.8
264	26,377	259	2,206	3.7	499.0	*	499.0	499.7	0.7
278	27,838	240	2,314	3.6	501.6	*	501.6	502.2	0.6
294	29,376	315	3,315	2.5	504.8	*	504.8	505.7	0.9
308	30,843	345	3,111	2.1	506.0	*	506.0	506.9	0.9
322	32,191	114	1,165	5.5	508.6	*	508.6	509.6	0.9
331	33,059	142	1,326	4.9	513.5	*	513.5	513.9	0.4
344	34,398	260	2,025	3.2	517.2	*	517.2	517.9	0.6
356	35,632	323	3,323	1.9	520.0	*	520.0	520.9	0.9
375	37,494	430	4,081	1.6	520.8	*	520.8	521.7	1.0
389	38,861	160	1,413	4.5	522.3	*	522.3	523.2	1.0
399	39,860	321	3,476	1.8	524.2	*	524.2	525.2	1.0
404	40,439	225	2,049	3.1	524.8	*	524.8	525.8	0.9
424	42,352	214	1,983	3.2	527.4	*	527.4	528.4	1.0
434	43,398	200	1,798	3.6	529.4	*	529.4	530.2	0.8
448	44,802	119	1,341	4.7	533.8	*	533.8	534.6	0.8
464	46,359	156	1,739	3.6	536.6	*	536.6	537.6	1.0
480	47,995	139	1,141	5.5	538.7	*	538.7	539.6	0.9
493	49,343	231	2,281	2.8	541.1	*	541.1	542.0	0.9
500	49,967	142	1,495	4.2	541.8	*	541.8	542.7	1.0
510	50,984	307	2,599	2.4	544.0	*	544.0	544.9	0.9
519	51,913	710	6,512	1.0	544.8	*	544.8	545.8	1.0
540	53,959	365	2,420	2.7	545.3	*	545.3	546.2	0.8
562	56,199	443	3,141	2.1	549.7	*	549.7	550.3	0.6
569	56,890	95	854	6.1	551.8	*	551.8	552.4	0.6
576	57,628	85	1,111	5.9	552.1	*	552.1	552.8	0.7
McGowan Creek									
003	284	180	810	3.6	547.2[1]	*	540.5	541.5	1.0
006	582	55	298	9.6	547.2[1]	*	541.5	542.2	0.7
010	985	150	601	4.4	547.2[1]	*	545.6	546.3	0.7
014	1,425	105	483	5.5	548.0	*	548.0	548.4	0.4
018	1,765	50	340	7.8	549.4	*	549.4	549.9	0.5
026	2,561	40	315	8.4	553.1	*	553.1	553.4	0.3
030	2,978	40	271	9.8	554.9	*	554.9	555.2	0.3
036	3,556	90	442	6.0	558.9	*	558.9	558.9	0.0
040	4,018	125	409	6.5	560.8	*	560.8	561.0	0.1
044	4,442	136	405	6.6	563.2	*	563.2	563.4	0.1
052	5,220	150	657	4.0	568.9	*	568.9	568.9	0.0
057	5,668	111	580	4.6	569.7	*	569.7	570.0	0.3
061	6,087	150	766	3.5	570.7	*	570.7	571.2	0.6
067	6,729	125	609	4.4	572.4	*	572.4	572.6	0.2
073	7,333	65	307	8.0	573.5	*	573.5	574.5	1.0
076	7,641	140	537	4.6	577.3	*	577.3	577.3	0.0
081	8,099	102	506	4.9	579.4	*	579.4	579.9	0.5

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	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
085	8,500	76	437	5.6	580.5	*	580.5	581.5	1.0
088	8,755	75	487	5.0	582.0	*	582.0	582.5	0.5
090	8,983	78	559	4.4	582.9	*	582.9	583.2	0.3
094	9,404	80	444	5.5	584.0	*	584.0	584.1	0.1
100	9,986	85	712	3.5	588.6	*	588.6	589.2	0.6
106	10,554	70	670	3.7	589.1	*	589.1	589.6	0.5
110	10,967	60	579	4.2	589.4	*	589.4	589.9	0.5
114	11,357	59	468	4.6	589.6	*	589.6	590.2	0.6
118	11,783	59	362	5.9	590.3	*	590.3	590.7	0.4
122	12,168	56	283	7.6	591.6	*	591.6	591.8	0.3
127	12,723	160	921	2.3	600.2	*	600.2	600.2	0.0
136	13,569	69	276	7.8	602.8	*	602.8	602.9	0.2
141	14,059	70	512	4.2	607.3	*	607.3	607.6	0.2
145	14,452	85	387	5.5	608.1	*	608.1	608.8	0.7
148	14,799	100	587	3.6	610.6	*	610.6	611.6	1.0
153	15,263	135	716	3.0	612.9	*	612.9	613.5	0.6
156	15,603	150	907	2.4	614.0	*	614.0	614.6	0.6
162	16,175	160	821	2.6	615.1	*	615.1	615.9	0.8
167	16,663	170	884	2.4	616.4	*	616.4	617.3	0.9
173	17,269	105	533	4.0	617.8	*	617.8	618.8	1.0
179	17,921	170	985	1.8	620.8	*	620.8	621.4	0.6
185	18,516	190	992	1.8	621.4	*	621.4	622.3	0.9
196	19,596	168	531	2.6	623.2	*	623.2	624.2	1.0
203	20,311	107	599	2.3	627.2	*	627.2	627.6	0.4
209	20,920	110	349	4.0	627.2	*	627.2	627.8	0.6
214	21,396	120	206	6.8	630.8	*	630.8	630.8	0.0
224	22,442	150	590	2.4	637.6	*	637.6	638.2	0.6
230	23,000	205	839	1.7	639.6	*	639.6	640.5	1.0
236	23,571	170	645	2.2	641.8	*	641.8	642.3	0.6
239	23,925	155	673	2.1	643.1	*	643.1	643.8	0.7
245	24,500	130	371	2.7	645.6	*	645.6	645.9	0.3
248	24,779	113	545	1.8	646.6	*	646.6	647.5	0.9
255	25,500	40	177	3.8	648.1	*	648.1	649.0	0.9
260	26,000	23	153	4.4	650.4	*	650.4	651.3	0.9
265	26,485	20	118	5.8	652.7	*	652.7	653.6	0.9
269	26,879	28	175	3.9	655.1	*	655.1	656.1	1.0
273	27,263	35	115	5.9	657.4	*	657.4	657.5	0.1
279	27,875	21	76	5.5	663.7	*	663.7	664.1	0.4
283	28,272	19	56	7.4	668.8	*	668.8	668.9	0.1
290	29,000	41	146	2.8	674.2	*	674.2	675.2	1.0
295	29,479	24	67	6.2	678.2	*	678.2	678.2	0.0
303	30,260	40	232	1.8	689.5	*	689.5	690.5	1.0
Mill Creek									
240	24,000	27	273	8.2	587.1	*	587.1	588.1	1.0

Table 22 - Floodway Data

Floodway Source		Floodway			Water Surface Elevation				
Cross Section	Distance (Feet Above Mouth)	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet Per Second)	Regulatory	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
253	25,300	130	839	2.7	593.6	*	593.6	594.1	0.6
263	26,261	51	386	5.8	595.8	*	595.8	596.8	1.0
266	26,555	100	641	3.5	598.1	*	598.1	598.5	0.4
285	28,500	116	727	2.8	604.6	*	604.6	605.5	0.9
299	29,899	160	862	2.4	610.8	*	610.8	611.7	0.9
313	31,323	88	439	3.5	614.2	*	614.2	615.2	1.0
316	31,571	130	809	1.9	615.8	*	615.8	616.7	1.0
333	33,349	55	357	4.0	621.4	*	621.4	622.4	1.0
345	34,500	231	821	1.8	625.6	*	625.6	626.5	0.9
360	36,000	100	460	3.1	633.5	*	633.5	634.5	1.0
374	37,382	135	535	2.7	641.3	*	641.3	642.1	0.8
390	39,000	95	331	2.6	648.6	*	648.6	649.2	0.6
404	40,363	50	205	4.1	657.8	*	657.8	658.8	1.0
Morgan Creek									
415	41,468	1,066	9,133	1.3	250.4	*	250.4	251.2	0.7
432	43,204	675	4,250	1.9	250.6	*	250.6	251.5	1.0
454	45,423	240	2,513	3.3	257.1	*	257.1	258.0	0.9
474	47,450	930	7,421	1.1	258.6	*	258.6	259.4	0.9
485	48,456	147	1,295	6.2	260.0	*	260.0	260.6	0.6
500	49,956	86	1,223	6.3	266.7	*	266.7	266.7	0.0
515	51,458	110	1,007	7.7	269.7	*	269.7	270.1	0.4
529	52,916	89	875	8.8	274.8	*	274.8	275.5	0.7
541	54,064	194	1,443	5.3	277.8	*	277.8	278.7	0.9
556	55,576	130	1,530	5.0	280.9	*	280.9	281.9	0.9
570	56,955	88	1,006	7.6	284.1	*	284.1	284.5	0.4
580	57,950	88	843	9.0	287.6	*	287.6	288.4	0.9
587	58,739	78	742	10.2	292.1	*	292.1	292.3	0.2
595	59,503	88	987	7.7	295.3	*	295.3	296.0	0.6
609	60,924	124	1,524	5.0	298.9	*	298.9	299.7	0.8
624	62,440	103	1,345	5.5	300.3	*	300.3	301.2	0.9
631	63,064	151	1,551	4.8	302.4	*	302.4	302.8	0.4
642	64,197	160	1,410	4.8	303.6	*	303.6	304.0	0.4
656	65,586	210	1,625	4.2	305.0	*	305.0	305.9	0.9
667	66,738	240	2,160	3.1	306.3	*	306.3	307.2	0.9
680	68,003	125	1,178	5.7	307.9	*	307.9	308.8	0.9
694	69,369	121	1,137	5.9	310.8	*	310.8	311.6	0.8
709	70,942	239	1,540	3.9	314.5	*	314.5	315.0	0.6
729	72,925	77	780	7.8	316.5	*	316.5	317.2	0.8
751	75,125	72	835	7.2	320.0	*	320.0	320.8	0.9
763	76,255	177	1,578	3.8	322.7	*	322.7	323.7	1.0
774	77,432	147	1,247	4.7	324.4	*	324.4	325.4	1.0
789	78,883	75	831	7.0	326.0	*	326.0	326.9	0.9
835	83,494	180	2,198	1.6	358.2	*	358.2	359.2	1.0
845	84,524	52	329	10.6	360.2	*	360.2	360.4	0.2

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	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
853	85,344	75	594	5.9	368.4	*	368.4	368.5	0.2
864	86,405	73	568	6.1	374.4	*	374.4	375.1	0.7
874	87,430	80	595	5.8	380.6	*	380.6	381.2	0.6
889	88,949	115	583	5.9	386.3	*	386.3	387.2	0.9
899	89,888	60	490	7.0	390.9	*	390.9	391.2	0.3
907	90,718	46	322	10.7	394.5	*	394.5	394.8	0.3
918	91,830	95	468	7.3	402.0	*	402.0	402.4	0.3
933	93,346	70	571	6.0	410.9	*	410.9	411.4	0.5
947	94,691	185	1,019	3.4	418.6	*	418.6	419.3	0.6
964	96,408	70	502	6.8	425.0	*	425.0	425.2	0.2
978	97,784	75	419	8.0	431.6	*	431.6	431.9	0.4
992	99,228	61	392	7.9	439.8	*	439.8	440.5	0.7
1005	100,492	103	445	7.0	446.1	*	446.1	446.2	0.1
1019	101,872	80	465	6.0	451.7	*	451.7	452.4	0.7
1034	103,405	160	815	3.2	457.4	*	457.4	457.8	0.4
1051	105,056	59	455	5.8	463.0	*	463.0	463.4	0.4
1063	106,348	75	377	6.3	467.1	*	467.1	467.3	0.3
1069	106,949	65	523	4.5	471.1	*	471.1	471.3	0.2
1078	107,820	125	564	4.2	473.6	*	473.6	474.0	0.4
1094	109,370	70	434	3.6	479.9	*	479.9	480.6	0.7
1109	110,877	62	307	5.1	482.9	*	482.9	483.5	0.6
1121	112,145	110	233	6.3	489.9	*	489.9	489.9	0.0
1134	113,402	70	330	4.5	496.4	*	496.4	496.8	0.4
1148	114,775	90	375	3.6	502.6	*	502.6	503.1	0.6
1153	115,317	53	349	3.5	508.5	*	508.5	508.6	0.2
1164	116,386	91	417	2.8	511.2	*	511.2	512.1	0.9
1180	117,993	131	484	2.4	516.0	*	516.0	516.7	0.7
1194	119,431	112	382	2.6	523.8	*	523.8	524.5	0.6
1205	120,530	105	202	5.0	534.2	*	534.2	534.2	0.1
1214	121,407	80	282	3.1	538.4	*	538.4	539.0	0.6
1225	122,486	60	208	4.2	544.1	*	544.1	544.6	0.5
1235	123,507	49	147	4.9	550.9	*	550.9	551.2	0.3
1246	124,646	44	135	4.2	557.5	*	557.5	557.9	0.4
1251	125,147	60	94	6.0	563.0	*	563.0	563.0	0.0
Morgan Creek Tributary									
003	311	32	128	4.9	386.4	*	386.4	386.5	0.1
009	885	24	89	7.0	404.5	*	404.5	404.8	0.3
013	1,282	39	101	6.1	421.8	*	421.8	422.4	0.6
018	1,799	27	87	6.5	445.8	*	445.8	445.8	0.0
025	2,458	60	167	3.4	461.3	*	461.3	461.4	0.1
030	3,013	100	1,821	0.2	483.9	*	483.9	483.9	0.0
043	4,265	99	515	0.8	483.9	*	483.9	483.9	0.0
Neville Creek									
002	215	38	220	7.9	364.6[1]	*	362.5	362.7	0.1

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	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
013	1,317	37	182	8.3	372.0	*	372.0	372.7	0.7
021	2,077	96	380	4.0	380.9	*	380.9	381.7	0.8
025	2,548	48	246	6.0	382.8	*	382.8	383.4	0.6
035	3,497	52	214	6.9	390.8	*	390.8	390.8	0.0
045	4,476	64	339	4.3	401.5	*	401.5	402.5	1.0
054	5,416	45	247	5.9	408.1	*	408.1	408.6	0.6
064	6,414	93	383	3.7	412.9	*	412.9	413.2	0.3
074	7,432	71	373	3.5	418.7	*	418.7	419.6	1.0
085	8,478	149	573	2.2	422.8	*	422.8	423.6	0.8
095	9,522	43	247	5.1	427.0	*	427.0	427.8	0.8
104	10,397	62	277	4.4	430.9	*	430.9	431.6	0.7
109	10,905	78	260	4.7	432.9	*	432.9	433.5	0.6
115	11,470	51	214	5.3	436.2	*	436.2	436.3	0.1
New Hope Creek									
687	68,698	2,421	16,975	0.5	260.1	261.2	260.1	261.1	1.0
719	71,854	1,330	4,939	1.7	262.1	262.7	262.1	262.8	0.7
731	73,108	687	3,226	2.6	265.0	*	265.0	265.4	0.4
748	74,820	390	3,424	2.7	271.2	*	271.2	271.2	0.1
770	76,998	437	3,126	2.9	275.1	*	275.1	276.0	1.0
804	80,381	169	1,131	6.8	290.6	*	290.6	291.4	0.7
827	82,699	150	1,329	5.8	307.2	*	307.2	308.1	0.9
844	84,440	75	887	8.6	325.4	*	325.4	326.4	1.0
858	85,817	107	972	7.8	335.6	*	335.6	336.4	0.8
868	86,786	170	1,246	6.0	344.5	*	344.5	344.9	0.4
878	87,809	130	1,172	6.4	349.9	*	349.9	350.1	0.1
889	88,910	135	1,130	6.7	358.4	*	358.4	359.2	0.8
905	90,474	150	1,604	4.6	369.4	*	369.4	369.9	0.5
927	92,685	135	1,262	5.8	376.9	*	376.9	377.8	0.9
933	93,315	168	1,565	4.7	379.8	*	379.8	380.6	0.7
942	94,225	135	1,336	5.5	383.4	*	383.4	384.2	0.8
952	95,247	100	1,197	6.1	390.2	*	390.2	391.2	1.0
968	96,779	147	1,887	3.9	395.5	*	395.5	396.4	0.9
984	98,442	132	1,447	5.0	399.2	*	399.2	399.9	0.7
1002	100,164	175	1,900	3.8	403.0	*	403.0	403.7	0.7
1015	101,487	318	2,633	2.8	405.7	*	405.7	406.3	0.6
1026	102,649	235	2,278	3.2	408.2	*	408.2	409.2	1.0
1055	105,489	910	5,577	1.3	410.4	*	410.4	411.4	1.0
1073	107,273	100	1,003	6.2	415.1	*	415.1	415.8	0.6
1092	109,216	165	1,307	4.7	424.4	*	424.4	425.4	1.0
1110	111,021	69	662	9.3	434.0	*	434.0	434.3	0.3
1128	112,786	128	1,139	5.3	457.2	*	457.2	457.2	0.0
1148	114,840	143	1,473	4.1	464.0	*	464.0	464.2	0.2
1169	116,856	355	3,006	2.0	468.1	*	468.1	468.7	0.5
1187	118,710	499	4,332	1.4	471.9	*	471.9	472.4	0.5

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	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
1218	121,773	330	3,454	1.7	475.6	*	475.6	476.1	0.5
1237	123,707	386	3,132	1.7	477.0	*	477.0	477.7	0.7
1259	125,865	489	2,748	2.0	480.7	*	480.7	481.4	0.7
1274	127,385	137	1,152	4.7	485.0	*	485.0	485.5	0.5
1286	128,581	111	1,152	4.7	488.6	*	488.6	489.4	0.8
1299	129,858	331	2,895	1.8	491.6	*	491.6	492.3	0.7
1311	131,080	340	2,424	2.1	493.1	*	493.1	493.8	0.6
1323	132,305	320	1,727	3.0	495.5	*	495.5	495.7	0.2
1340	134,017	180	1,353	3.8	499.6	*	499.6	500.5	0.9
New Hope Creek Tributary 1									
065	6,526	311	1,555	1.6	265.2	*	265.2	266.1	0.9
071	7,144	369	8,220	0.2	285.6	*	285.6	285.6	0.0
085	8,542	375	6,502	0.3	285.6	*	285.6	285.6	0.0
105	10,531	120	1,039	1.4	286.1	*	286.1	286.9	0.8
121	12,112	150	620	1.7	289.4	*	289.4	290.0	0.6
132	13,250	160	379	2.8	296.6	*	296.6	297.6	1.0
Old Field Creek									
006	645	140	966	3.6	412.3	*	412.3	412.6	0.4
020	1,976	153	1,082	3.2	416.6	*	416.6	417.1	0.6
031	3,113	196	1,220	2.9	418.8	*	418.8	419.7	0.9
045	4,462	189	1,194	2.5	424.1	*	424.1	424.9	0.8
057	5,728	240	1,317	2.3	427.8	*	427.8	428.4	0.7
072	7,241	170	1,127	2.7	434.0	*	434.0	434.6	0.6
087	8,723	95	846	2.8	442.6	*	442.6	443.2	0.6
102	10,218	95	516	4.6	448.7	*	448.7	449.2	0.5
112	11,239	68	740	1.3	461.4	*	461.4	461.4	0.0
134	13,383	100	602	3.4	469.4	*	469.4	469.6	0.3
145	14,462	47	303	4.6	475.2	*	475.2	475.3	0.1
147	14,684	250	4,374	0.3	489.5	*	489.5	489.6	0.1
149	14,933	350	5,807	0.2	489.5	*	489.5	489.6	0.1
Phils Creek									
042	4,161	630	1,287	2.5	358.0[1]	*	349.0	349.0	0.0
047	4,732	185	1,066	3.0	358.0[1]	*	353.4	353.5	0.0
057	5,691	67	608	5.4	358.0[1]	*	357.9	358.6	0.7
060	6,002	57	463	7.0	358.8	*	358.8	359.2	0.4
072	7,232	44	298	8.4	369.9	*	369.9	369.9	0.0
079	7,918	46	260	9.6	384.3	*	384.3	384.4	0.0
089	8,882	100	618	4.0	394.8	*	394.8	395.1	0.3
100	9,967	78	594	4.1	397.4	*	397.4	398.2	0.7
110	11,014	104	563	4.3	401.3	*	401.3	401.8	0.5
125	12,476	109	674	3.6	407.9	*	407.9	408.5	0.6
139	13,915	133	795	2.9	410.9	*	410.9	411.2	0.3
149	14,909	143	657	3.5	413.4	*	413.4	413.8	0.4
163	16,348	73	410	5.2	418.8	*	418.8	419.0	0.2

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	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
174	17,409	144	630	3.2	422.1	*	422.1	422.4	0.3
179	17,868	100	687	3.0	423.5	*	423.5	424.4	0.9
189	18,919	78	577	3.5	426.0	*	426.0	426.8	0.8
204	20,371	85	378	5.2	430.1	*	430.1	430.5	0.5
216	21,562	135	710	2.6	434.6	*	434.6	435.1	0.5
229	22,902	100	393	4.5	439.8	*	439.8	440.5	0.7
238	23,819	97	702	2.5	445.0	*	445.0	445.2	0.2
250	25,042	44	224	6.0	447.5	*	447.5	448.2	0.8
261	26,115	71	432	3.1	456.8	*	456.8	457.5	0.7
273	27,327	65	275	4.9	463.1	*	463.1	463.3	0.2
285	28,546	91	375	3.6	470.1	*	470.1	470.4	0.3
293	29,299	66	527	2.5	480.6	*	480.6	480.6	0.0
299	29,888	766	523	2.3	486.4	*	486.4	486.4	0.0
306	30,618	178	1,170	1.0	492.7	*	492.7	493.0	0.3
312	31,194	115	835	1.4	495.1	*	495.1	495.6	0.5
Piney Mountain Creek									
007	686	145	907	3.7	290.4	*	290.4	291.0	0.6
021	2,143	136	839	4.0	297.2	*	297.2	297.8	0.7
030	3,032	140	1,255	2.7	305.5	*	305.5	306.1	0.6
044	4,439	205	996	3.4	311.2	*	311.2	312.1	0.9
061	6,116	136	943	3.6	324.6	*	324.6	325.4	0.8
074	7,388	139	805	4.2	332.0	*	332.0	332.2	0.2
086	8,649	128	1,141	3.0	338.9	*	338.9	339.5	0.5
108	10,767	210	1,047	1.9	344.0	*	344.0	344.6	0.6
120	12,015	180	820	1.5	348.6	*	348.6	349.0	0.4
133	13,266	55	202	6.1	356.6	*	356.6	356.8	0.2
142	14,206	89	194	6.4	371.0	*	371.0	371.0	0.0
150	14,953	71	280	4.4	383.4	*	383.4	383.5	0.1
157	15,689	75	284	4.4	399.2	*	399.2	399.2	0.0
161	16,142	70	427	2.9	404.8	*	404.8	405.7	0.9
174	17,448	33	120	8.7	415.5	*	415.5	415.5	0.0
188	18,754	94	232	4.5	428.0	*	428.0	428.3	0.3
196	19,607	135	2,180	0.5	457.4	*	457.4	457.6	0.1
201	20,111	106	1,561	0.6	457.5	*	457.5	457.6	0.2
Rhodes Creek									
001	101	38	206	11.0	387.1[1]	*	382.0	382.6	0.6
009	898	45	424	5.4	391.4	*	391.4	391.8	0.4
019	1,923	58	254	8.8	398.2	*	398.2	398.4	0.2
033	3,305	46	327	6.2	409.6	*	409.6	409.8	0.2
061	6,080	186	1,746	1.1	428.8	*	428.8	429.7	0.9
070	7,001	171	1,197	1.2	429.0	*	429.0	429.9	0.9
084	8,415	50	304	4.4	430.1	*	430.1	431.0	0.9
099	9,911	134	2,757	0.5	451.4	*	451.4	451.6	0.2
106	10,570	166	2,844	0.4	451.4	*	451.4	451.6	0.2

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	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
125	12,491	161	2,427	0.4	451.4	*	451.4	451.6	0.3
133	13,327	135	1,769	0.5	451.4	*	451.4	451.6	0.3
139	13,925	112	1,155	0.8	451.4	*	451.4	451.7	0.3
148	14,836	219	1,413	0.5	451.5	*	451.5	451.8	0.4
156	15,611	119	463	1.4	451.6	*	451.6	452.0	0.4
162	16,213	59	186	3.3	453.6	*	453.6	453.8	0.3
165	16,470	69	292	2.1	454.7	*	454.7	455.7	1.0
173	17,290	64	185	2.8	459.6	*	459.6	459.9	0.3
189	18,946	39	125	4.1	467.8	*	467.8	468.4	0.5
201	20,069	186	438	0.4	485.4	*	485.4	485.4	0.0
207	20,675	66	102	1.8	490.8	*	490.8	491.5	0.7
207	20,743	500	1,451	0.1	505.2	*	505.2	505.3	0.0
213	21,267	24	30	6.2	510.0	*	510.0	510.0	0.0
Rocky Run									
004	443	131	359	3.8	524.0[1]	*	521.4	521.9	0.6
031	3,092	81	1,471	0.9	553.6	*	553.6	553.6	0.0
046	4,599	84	803	1.6	553.8	*	553.8	553.9	0.1
064	6,357	64	369	3.5	560.0	*	560.0	560.0	0.0
075	7,461	30	148	8.3	562.1	*	562.1	562.5	0.4
082	8,223	52	153	8.0	576.2	*	576.2	576.6	0.4
088	8,762	85	312	3.8	592.1	*	592.1	592.6	0.5
096	9,625	60	287	4.0	598.3	*	598.3	598.4	0.1
104	10,429	60	212	5.4	601.4	*	601.4	602.2	0.8
112	11,197	111	454	2.5	607.0	*	607.0	607.7	0.6
124	12,362	88	295	3.9	610.3	*	610.3	611.0	0.7
140	13,985	74	347	3.0	623.8	*	623.8	624.2	0.4
145	14,524	106	456	2.3	629.0	*	629.0	629.5	0.5
Sevenmile Creek									
001	104	262	1,615	2.5	523.8[1]	*	520.8	521.4	0.6
026	2,582	320	2,465	1.7	523.8[1]	*	523.0	523.7	0.7
050	4,966	329	1,742	2.1	524.6	*	524.6	525.3	0.7
061	6,063	195	1,182	3.0	526.8	*	526.8	527.4	0.6
078	7,773	232	1,813	2.0	531.2	*	531.2	531.6	0.4
087	8,655	122	962	3.7	531.8	*	531.8	532.4	0.6
Spring Valley Creek									
011	1,060	81	235	5.3	469.7	*	469.7	470.1	0.4
023	2,274	31	129	9.6	486.1	*	486.1	486.2	0.1
032	3,243	21	103	11.4	519.2	*	519.2	519.2	0.0
045	4,519	63	193	6.1	522.7	*	522.7	522.7	0.0
056	5,610	30	118	9.2	534.2	*	534.2	534.2	0.0
062	6,156	77	297	3.6	539.7	*	539.7	540.2	0.6
067	6,728	69	168	6.3	548.6	*	548.6	548.6	0.0
075	7,549	83	286	3.6	553.7	*	553.7	554.1	0.4
080	8,005	58	306	3.4	558.2	*	558.2	558.7	0.5

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	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
086	8,645	90	395	2.5	560.0	*	560.0	560.7	0.7
091	9,139	57	338	2.9	565.7	*	565.7	565.9	0.2
102	10,181	81	252	3.8	574.4	*	574.4	574.8	0.5
111	11,146	237	2,202	0.4	595.5	*	595.5	595.5	0.0
122	12,185	218	2,191	0.4	595.5	*	595.5	595.5	0.0
134	13,437	100	254	2.8	601.8	*	601.8	602.2	0.4
143	14,304	185	1,316	0.6	609.8	*	609.8	609.8	0.0
Stony Creek									
006	588	351	2,322	1.4	421.8	*	421.8	421.9	0.0
015	1,490	346	3,331	1.0	421.9	*	421.9	421.9	0.0
030	2,986	76	546	5.9	424.3	*	424.3	424.7	0.4
053	5,304	122	630	4.6	430.8	*	430.8	431.1	0.3
063	6,288	181	1,008	2.8	434.3	*	434.3	435.1	0.8
082	8,159	113	818	3.4	440.6	*	440.6	440.8	0.2
090	9,019	127	569	4.9	441.7	*	441.7	442.2	0.6
102	10,225	240	639	4.2	446.7	*	446.7	446.9	0.2
108	10,751	145	1,101	2.4	454.5	*	454.5	454.5	0.0
113	11,301	130	1,189	2.2	456.1	*	456.1	456.1	0.0
124	12,381	205	1,145	2.3	456.7	*	456.7	456.7	0.0
134	13,414	150	752	3.4	459.5	*	459.5	459.5	0.0
146	14,576	348	1,749	1.5	464.5	*	464.5	464.7	0.2
153	15,264	200	859	2.8	466.2	*	466.2	466.8	0.6
158	15,823	150	920	2.6	470.2	*	470.2	470.2	0.0
168	16,807	218	1,263	1.9	471.3	*	471.3	471.8	0.4
173	17,255	242	1,218	2.0	472.0	*	472.0	472.7	0.8
185	18,462	220	1,190	2.0	474.4	*	474.4	474.9	0.6
195	19,473	223	881	2.7	476.5	*	476.5	477.4	0.9
209	20,870	206	1,076	2.0	482.2	*	482.2	482.7	0.5
218	21,804	160	982	2.2	483.3	*	483.3	484.1	0.8
235	23,510	111	543	3.2	487.1	*	487.1	488.1	1.0
245	24,525	139	550	3.2	490.5	*	490.5	491.2	0.6
260	26,002	150	484	3.6	494.8	*	494.8	495.6	0.9
264	26,446	106	487	3.5	498.6	*	498.6	499.2	0.6
275	27,497	37	144	9.1	506.5	*	506.5	506.6	0.1
286	28,649	55	182	7.2	524.1	*	524.1	524.2	0.1
Stony Creek Tributary									
007	654	87	258	3.6	432.0	*	432.0	432.7	0.6
017	1,686	232	1,105	0.8	445.3	*	445.3	445.9	0.6
025	2,460	72	245	3.5	447.7	*	447.7	448.0	0.3
030	2,961	85	359	2.4	454.8	*	454.8	455.3	0.5
035	3,488	100	199	4.3	461.2	*	461.2	461.2	0.0
040	3,993	55	308	2.8	469.7	*	469.7	470.4	0.6
043	4,321	89	216	3.9	473.2	*	473.2	473.8	0.6
Strouds Creek									

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	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
002	153	65	449	8.1	487.1[1]	*	478.6	479.6	1.0
005	529	100	472	7.7	487.1[1]	*	481.2	481.2	0.0
012	1,233	100	541	6.7	487.1[1]	*	486.0	486.5	0.5
016	1,637	242	1,575	2.3	493.2	*	493.2	493.2	0.0
022	2,192	100	557	6.4	493.4	*	493.4	493.6	0.2
026	2,648	120	784	4.6	497.0	*	497.0	497.2	0.1
032	3,223	100	674	5.3	499.4	*	499.4	499.6	0.2
038	3,756	105	751	4.8	502.9	*	502.9	502.9	0.0
041	4,105	130	679	5.3	504.6	*	504.6	504.6	0.0
045	4,500	130	936	3.8	507.3	*	507.3	508.0	0.7
052	5,228	125	862	4.2	510.1	*	510.1	511.0	0.9
058	5,832	135	841	4.3	512.2	*	512.2	512.8	0.6
061	6,145	115	897	4.0	513.0	*	513.0	513.8	0.9
065	6,532	120	849	4.2	514.2	*	514.2	515.0	0.8
071	7,097	140	740	4.8	516.6	*	516.6	516.9	0.3
074	7,437	120	787	4.6	517.4	*	517.4	518.3	0.8
081	8,139	180	698	4.2	520.5	*	520.5	520.5	0.1
085	8,459	170	686	4.3	521.6	*	521.6	521.7	0.2
090	8,964	160	1,056	2.8	522.8	*	522.8	523.5	0.7
097	9,664	145	676	4.4	523.7	*	523.7	524.7	1.0
101	10,110	158	1,042	2.8	527.4	*	527.4	527.4	0.0
112	11,178	90	669	3.4	528.8	*	528.8	528.9	0.1
115	11,500	40	358	6.4	529.1	*	529.1	529.2	0.1
119	11,889	40	337	6.8	529.6	*	529.6	530.0	0.4
122	12,196	60	319	7.2	530.6	*	530.6	530.8	0.1
128	12,792	40	256	8.9	533.0	*	533.0	533.9	0.9
130	13,047	40	288	8.0	535.2	*	535.2	535.2	0.0
134	13,417	36	211	10.8	537.1	*	537.1	537.2	0.1
139	13,898	45	368	6.2	541.6	*	541.6	541.9	0.3
144	14,439	40	355	6.4	543.2	*	543.2	543.7	0.5
147	14,729	45	354	6.5	544.3	*	544.3	544.7	0.4
152	15,200	75	686	2.6	550.6	*	550.6	551.4	0.8
157	15,700	45	381	4.6	550.7	*	550.7	551.7	1.0
160	16,046	34	235	7.5	551.4	*	551.4	552.3	0.9
165	16,504	33	188	9.3	554.7	*	554.7	554.7	0.0
170	17,000	41	214	8.2	559.4	*	559.4	559.5	0.0
173	17,321	35	204	8.6	562.6	*	562.6	562.6	0.0
176	17,569	30	173	10.2	564.8	*	564.8	565.0	0.3
179	17,945	30	174	10.1	569.5	*	569.5	569.7	0.2
184	18,405	120	604	2.9	576.9	*	576.9	576.9	0.0
190	19,000	58	305	5.8	577.7	*	577.7	577.7	0.0
194	19,423	52	179	9.8	579.8	*	579.8	579.8	0.0
197	19,748	55	199	8.8	585.4	*	585.4	585.4	0.0
205	20,470	50	322	5.5	590.3	*	590.3	590.4	0.1

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	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
208	20,789	49	251	5.7	591.2	*	591.2	591.3	0.2
213	21,315	44	167	8.5	594.1	*	594.1	594.2	0.1
216	21,551	42	223	6.4	596.3	*	596.3	596.5	0.2
Strouds Creek Tributary 1									
001	114	72	351	3.4	528.6[1]	*	526.5	527.5	1.0
007	698	55	433	2.8	536.8	*	536.8	536.8	0.0
017	1,698	50	245	4.9	540.4	*	540.4	541.0	0.5
022	2,165	50	229	5.2	543.0	*	543.0	543.2	0.2
028	2,837	50	263	4.6	546.4	*	546.4	546.9	0.5
035	3,529	50	263	4.2	550.2	*	550.2	550.4	0.2
043	4,312	45	204	5.4	559.3	*	559.3	559.9	0.5
051	5,136	43	199	5.4	569.3	*	569.3	569.5	0.2
058	5,754	75	165	6.5	578.1	*	578.1	578.1	0.0
065	6,463	111	405	2.6	582.0	*	582.0	582.7	0.7
073	7,312	102	468	2.2	584.8	*	584.8	585.5	0.7
082	8,197	113	435	2.4	586.9	*	586.9	587.9	0.9
088	8,814	124	392	2.6	589.0	*	589.0	589.8	0.8
Toms Creek									
016	1,579	115	613	2.4	329.8	*	329.8	329.8	0.0
024	2,415	38	223	6.6	333.1	*	333.1	333.4	0.3
033	3,283	60	188	7.9	348.6	*	348.6	348.6	0.0
042	4,225	37	173	8.2	357.4	*	357.4	357.8	0.4
048	4,778	114	919	1.5	378.1	*	378.1	378.6	0.4
052	5,236	27	236	5.6	378.0	*	378.0	378.3	0.3
062	6,169	91	226	5.9	391.0	*	391.0	391.1	0.0
070	6,976	36	212	5.7	408.5	*	408.5	409.2	0.8
072	7,250	90	712	1.7	418.4	*	418.4	418.4	0.0
081	8,088	45	148	8.2	419.3	*	419.3	419.3	0.0
086	8,561	49	401	2.6	435.8	*	435.8	436.3	0.4
091	9,147	25	156	6.7	436.2	*	436.2	436.8	0.6
101	10,066	107	448	1.6	442.3	*	442.3	442.7	0.4
104	10,439	235	1,457	0.5	445.9	*	445.9	446.2	0.3
114	11,368	245	1,362	0.5	450.8	*	450.8	451.0	0.2
124	12,377	49	111	4.0	453.7	*	453.7	453.8	0.1
128	12,824	38	155	2.9	461.6	*	461.6	462.1	0.5
132	13,236	57	238	1.9	465.3	*	465.3	466.0	0.7
138	13,827	55	149	1.7	475.2	*	475.2	475.4	0.3
141	14,111	76	90	2.8	479.0	*	479.0	479.0	0.0
Unnamed Urban Creek									
009	894	61	605	1.7	326.0	*	326.0	326.0	0.0
013	1,298	48	143	6.6	330.1	*	330.1	330.6	0.5
017	1,671	64	161	5.8	337.6	*	337.6	337.6	0.0
West Fork Eno River									
003	266	200	1,742	2.2	578.2	*	578.2	578.5	0.3

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	1% Annual Chance Future Water-Surface Elevation	Without Floodway	With Floodway	Increase
014	1,430	229	2,237	1.7	578.7	*	578.7	579.3	0.6
023	2,267	250	2,248	1.5	578.9	*	578.9	579.7	0.8
033	3,333	100	965	3.4	579.3	*	579.3	580.2	0.9
050	4,969	255	1,671	2.0	580.7	*	580.7	581.5	0.8
060	5,963	225	1,057	3.1	583.4	*	583.4	583.8	0.4
074	7,365	250	1,155	2.8	587.7	*	587.7	588.1	0.4
087	8,680	410	1,896	1.7	593.1	*	593.1	593.4	0.2
West Price Creek									
009	925	77	271	3.4	362.0	*	362.0	362.1	0.1
016	1,650	31	152	6.1	369.9	*	369.9	370.6	0.7
023	2,319	28	102	9.1	391.0	*	391.0	391.0	0.0
030	2,962	37	97	9.2	416.0	*	416.0	416.1	0.0
037	3,654	47	257	3.4	436.8	*	436.8	437.2	0.4
047	4,673	74	299	2.9	442.6	*	442.6	443.1	0.5
052	5,249	52	125	6.4	446.7	*	446.7	446.8	0.0
057	5,719	42	231	3.5	449.3	*	449.3	449.7	0.4
065	6,513	73	160	5.0	458.6	*	458.6	458.8	0.2
072	7,153	63	242	3.3	463.4	*	463.4	464.2	0.8
076	7,593	24	155	5.2	466.0	*	466.0	467.0	1.0
Wilson Creek									
010	975	185	684	3.0	306.5	*	306.5	306.5	0.0
021	2,077	180	571	3.6	313.6	*	313.6	313.6	0.0
026	2,558	171	710	1.9	315.4	*	315.4	315.6	0.3
045	4,477	103	567	2.4	325.8	*	325.8	326.0	0.2
067	6,700	53	179	6.0	342.6	*	342.6	342.6	0.1
077	7,721	77	271	3.5	352.4	*	352.4	352.4	0.0
085	8,536	70	268	3.5	359.6	*	359.6	360.2	0.6
093	9,260	29	132	7.2	364.6	*	364.6	364.7	0.1
101	10,057	110	220	4.0	372.1	*	372.1	372.1	0.0
107	10,737	78	185	4.6	381.5	*	381.5	381.5	0.0
112	11,205	110	1,045	0.8	394.7	*	394.7	395.1	0.4
117	11,663	85	563	1.5	394.7	*	394.7	395.2	0.4

[1]Elevation includes backwater effects

* Future conditions not computed for this stream

* Values not computed for this station

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” is not applicable in Orange County.

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 Orange 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 2/2/2007 North Carolina Statewide FIRM, which includes Orange County, are presented in Table 22, “Community Map History.”

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

Table 24 - Map Revision History

Community	Initial Identification Date	Initial FIRM Effective Date	FIS Revision Date
CITY OF DURHAM	1/25/1974	1/17/1979	05/02/2006
CITY OF MEBANE	11/5/1980	11/5/1980	09/06/2006
ORANGE COUNTY	6/16/1978	3/16/1981	02/02/2007
TOWN OF CARRBORO	2/22/1974	6/30/1976	02/02/2007
TOWN OF CHAPEL HILL	6/21/1974	4/17/1978	02/02/2007
TOWN OF HILLSBOROUGH	5/19/1978	5/15/1980	02/02/2007

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

Table 25 — Authority and Acknowledgments

Community	FIS Dated	Study Contracted By	Data Source	Contract or IAA Number	Work Completed In
CITY OF DURHAM	2/2/2007	NCFMP	NCFMP	206-000-23	12/4/2013
CITY OF DURHAM	2/2/2007	NCFMP	NCFMP	286-0000-23	8/8/8888
CITY OF MEBANE	2/2/2007	NCFMP	NCFMP	206-000-23	12/4/2013
CITY OF MEBANE	2/2/2007	NCFMP	NCFMP	286-0000-23	8/8/8888
ORANGE COUNTY	2/2/2007	NCFMP	NCFMP	206-000-23	12/4/2013

Table 25 — Authority and Acknowledgments

Community	FIS Dated	Study Contracted By	Data Source	Contract or IAA Number	Work Completed In
ORANGE COUNTY	2/2/2007	NCFMP	NCFMP	286-0000-23	8/8/8888
TOWN OF CARRBORO	2/2/2007	NCFMP	NCFMP	206-000-23	12/4/2013
TOWN OF CARRBORO	2/2/2007	NCFMP	NCFMP	286-0000-23	8/8/8888
TOWN OF CHAPEL HILL	2/2/2007	NCFMP	NCFMP	206-000-23	12/4/2013
TOWN OF CHAPEL HILL	2/2/2007	NCFMP	NCFMP	286-0000-23	8/8/8888
TOWN OF HILLSBOROUGH	2/2/2007	NCFMP	NCFMP	206-000-23	12/4/2013
TOWN OF HILLSBOROUGH	2/2/2007	NCFMP	NCFMP	286-0000-23	8/8/8888

This FIS Report was produced through a unique cooperative partnership between the State of North Carolina and FEMA. The State of North Carolina, through FEMA's Cooperating Technical Partner (CTP) Initiative, has become the first Cooperating Technical State (CTS) and will assume primary ownership of the NFIP FIRM panels for all North Carolina communities. This role has traditionally been fulfilled by FEMA. The North Carolina Floodplain Mapping Program is conducting flood hazard analyses and producing updated, digital FIRM panels. The hydrologic and hydraulic analyses and the FIRM panels for the initial statewide mapping for Orange County were produced by NCFMP under contract with the State of North Carolina and issued on effective 3/31/2015. 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 Orange County and Incorporated Areas were compiled from the previous countywide FIS Report and are shown in Table 26, "Consultation Coordination Officer's Meetings

Table 26 — Consultation Coordination Officer's Meetings

Community	For FIS Dated	Initial CCO Date	Attended By	Final CCO Date	Attended By
CITY OF DURHAM	1/17/1979	12/17/1974	Representatives of City of Durham, the county, the State, HSMM, and FEMA	5/17/1977	Representatives of City of Durham, the county, the State, HSMM, and FEMA
CITY OF DURHAM	1/17/1979	8/27/1975	Representatives of City of Durham, the county, the State, HSMM, and FEMA	5/17/1977	Representatives of City of Durham, the county, the State, HSMM, and FEMA
CITY OF DURHAM	1/17/1979	9/20/1976	Representatives of City of Durham, the county, the State, HSMM, and FEMA	5/17/1977	Representatives of City of Durham, the county, the State, HSMM, and FEMA
ORANGE COUNTY	9/19/1980	9/22/1976	Representatives of FIA, study contractor, town officials, and local residents	4/22/1980	Representatives of FIA, study contractor, and the county
TOWN OF HILLSBOROUGH	11/1/1979	9/22/1976	Representatives of FIA, study contractor, town officials, and local residents	6/6/1978	Representatives from Moore, Gardner & Associates, Inc, the FIA and the City of Salisbury
TOWN OF HILLSBOROUGH	11/1/1979	9/22/1976	Representatives of FIA, study contractor, town officials, and local residents	8/11/1978	FIA, USACE, Carteret County
TOWN OF HILLSBOROUGH	11/1/1979	9/22/1976	Representatives of FIA, study contractor, town officials, and local residents	1/11/1979	NP
TOWN OF HILLSBOROUGH	11/1/1979	9/22/1976	Representatives of FIA, study contractor, town officials, and local residents	4/26/1979	FIA, Town of Mooresville, O'Brien & Gere, Inc., and general public
TOWN OF HILLSBOROUGH	11/1/1979	9/22/1976	Representatives of FIA, study contractor, town officials, and local residents	4/27/1979	Representatives from FEMA, Davidson County, and Moore, Gardner, & Associates Inc
TOWN OF HILLSBOROUGH	11/1/1979	9/22/1976	Representatives of FIA, study contractor, town officials, and local residents	5/8/1979	Representatives of FIA, study contractor, and the town
TOWN OF HILLSBOROUGH ETJ	11/1/1979	9/22/1976	Representatives of FIA, study contractor, town officials, and local residents	6/6/1978	Representatives from Moore, Gardner & Associates, Inc, the FIA and the City of Salisbury

Table 26 — Consultation Coordination Officer's Meetings

Community	For FIS Dated	Initial CCO Date	Attended By	Final CCO Date	Attended By
TOWN OF HILLSBOROUGH ETJ	11/1/1979	9/22/1976	Representatives of FIA, study contractor, town officials, and local residents	8/11/1978	FIA, USACE, Carteret County
TOWN OF HILLSBOROUGH ETJ	11/1/1979	9/22/1976	Representatives of FIA, study contractor, town officials, and local residents	1/11/1979	NP
TOWN OF HILLSBOROUGH ETJ	11/1/1979	9/22/1976	Representatives of FIA, study contractor, town officials, and local residents	4/26/1979	FIA, Town of Mooresville, O'Brien & Gere, Inc., and general public
TOWN OF HILLSBOROUGH ETJ	11/1/1979	9/22/1976	Representatives of FIA, study contractor, town officials, and local residents	4/27/1979	Representatives from FEMA, Davidson County, and Moore, Gardner, & Associates Inc
TOWN OF HILLSBOROUGH ETJ	11/1/1979	9/22/1976	Representatives of FIA, study contractor, town officials, and local residents	5/8/1979	Representatives of FIA, study contractor, and the town

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 Orange County are shown in Table 27, "Scoping Meetings." Meetings held for the map maintenance revision are also included below for Orange County.

Table 27 — Scoping Meetings

Community	Riverbasin	Initial Scoping Date	Attended By	Final Scoping Date	Attended By
CITY OF DURHAM	CAPE FEAR	11/27/2000	Representatives of the county, FEMA, NCDEM, NC CGIA, and Dewberry	4/23/2001	Representatives of the county, FEMA, NCDEM, NC CGIA, and Dewberry
CITY OF DURHAM	CAPE FEAR	11/27/2000	Representatives of the county, FEMA, NCDEM, NC CGIA, and Dewberry	3/6/2011	Representatives of the county, NCDEM, NC CGIA, Dewberry, and Greenhorne & O'Mara
CITY OF DURHAM	NEUSE	11/27/2000	Representatives of the county, FEMA, NCDEM, NC CGIA, and Dewberry	4/23/2001	Representatives of the county, FEMA, NCDEM, NC CGIA, and Dewberry
CITY OF DURHAM	NEUSE	11/27/2000	Representatives of the county, FEMA, NCDEM, NC CGIA, and Dewberry	3/6/2011	Representatives of the county, NCDEM, NC CGIA, Dewberry, and Greenhorne & O'Mara
ORANGE COUNTY	CAPE FEAR	11/16/2000	FEMA, North Carolina Emergency Management, community representatives, and Dewberry	3/6/2001	FEMA, North Carolina Emergency Management, community representatives, and Dewberry
ORANGE COUNTY	CAPE FEAR	11/16/2000	FEMA, North Carolina Emergency Management, community representatives, and Dewberry	4/22/2001	FEMA, North Carolina Emergency Management, community representatives, and Dewberry
ORANGE COUNTY	NEUSE	11/16/2000	FEMA, North Carolina Emergency Management, community representatives, and Dewberry	3/6/2001	FEMA, North Carolina Emergency Management, community representatives, and Dewberry
ORANGE COUNTY	NEUSE	11/16/2000	FEMA, North Carolina Emergency Management, community representatives, and Dewberry	4/22/2001	FEMA, North Carolina Emergency Management, community representatives, and Dewberry
TOWN OF CARRBORO	CAPE FEAR	11/16/2000	FEMA, North Carolina Emergency Management, community representatives, and Dewberry	3/6/2001	FEMA, North Carolina Emergency Management, community representatives, and Dewberry
TOWN OF CARRBORO ETJ	CAPE FEAR	11/16/2000	FEMA, North Carolina Emergency Management, community representatives, and Dewberry	3/6/2001	FEMA, North Carolina Emergency Management, community representatives, and Dewberry
TOWN OF CHAPEL HILL	CAPE FEAR	11/16/2000	FEMA, North Carolina Emergency Management, community representatives, and Dewberry	3/6/2001	FEMA, North Carolina Emergency Management, community representatives, and Dewberry

Table 27 — Scoping Meetings

Community	Riverbasin	Initial Scoping Date	Attended By	Final Scoping Date	Attended By
TOWN OF CHAPEL HILL ETJ	CAPE FEAR	11/16/2000	FEMA, North Carolina Emergency Management, community representatives, and Dewberry	3/6/2001	FEMA, North Carolina Emergency Management, community representatives, and Dewberry
TOWN OF HILLSBOROUGH	NEUSE	11/16/2000	FEMA, North Carolina Emergency Management, community representatives, and Dewberry	4/22/2001	FEMA, North Carolina Emergency Management, community representatives, and Dewberry
TOWN OF HILLSBOROUGH ETJ	NEUSE	11/16/2000	FEMA, North Carolina Emergency Management, community representatives, and Dewberry	4/22/2001	FEMA, North Carolina Emergency Management, community representatives, and Dewberry

Preliminary Meetings are held in each county to disseminate and review the FIS Report and FIRM panels. This meeting is required by FEMA. Public Participation Meetings are not required by FEMA, but provide an opportunity to review and discuss the FIS Report and FIRM panels for each jurisdiction in a public setting. The dates for the preliminary and public participation meetings are shown in Table 28, “Preliminary and Public Participation Meetings.”

Table 28 — Preliminary and Public Participation Meetings

Community	For FIS Dated	Meeting Location	Preliminary Meeting Date	Attended By	Public Meeting Date	Attended By
TOWN OF HILLSBOROUGH	5/15/2008	Town of Hillsborough	6/18/2004	Officials from Orange county, NCDEM, Dewberry and Watershed Concepts	9/14/2004	The Public
TOWN OF HILLSBOROUGH	5/15/2008	Town of Hillsborough	6/18/2004	Officials from Orange county, NCDEM, Dewberry and Watershed Concepts	6/21/5005	The Public
TOWN OF HILLSBOROUGH	5/15/2008	Town of Hillsborough	6/2/2005	Officials from Orange county, NCDEM, Dewberry and Watershed Concepts	9/14/2004	The Public
TOWN OF HILLSBOROUGH	5/15/2008	Town of Hillsborough	6/2/2005	Officials from Orange county, NCDEM, Dewberry and Watershed Concepts	6/21/5005	The Public
TOWN OF HILLSBOROUGH ETJ	5/15/2008	Town of Hillsborough	6/18/2004	Officials from Orange county, NCDEM, Dewberry and Watershed Concepts	9/14/2004	The Public
TOWN OF HILLSBOROUGH ETJ	5/15/2008	Town of Hillsborough	6/18/2004	Officials from Orange county, NCDEM, Dewberry and Watershed Concepts	6/21/5005	The Public
TOWN OF HILLSBOROUGH ETJ	5/15/2008	Town of Hillsborough	6/2/2005	Officials from Orange county, NCDEM, Dewberry and Watershed Concepts	9/14/2004	The Public
TOWN OF HILLSBOROUGH ETJ	5/15/2008	Town of Hillsborough	6/2/2005	Officials from Orange county, NCDEM, Dewberry and Watershed Concepts	6/21/5005	The Public

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 Orange 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
City of Mebane	Mebane Planning Department, 106 East Washington Street	Mebane	NC	27302

Table 27 — Map Repositories

Town of Hillsborough	Hillsborough Town Hall, 101 East Orange Street	Hillsborough	NC	27278
City of Durham	City Hall, Public Works Department, 101 City Hall Plaza	Durham	NC	27701
Town of Carrboro	Town of Carrboro Planning Department, 301 West Main Street	Carrboro	NC	27510
Town of Chapel Hill	Town of Chapel Hill Stormwater MGMT Program Office, 208 North Columbia Street	Chapel Hill	NC	27514
Orange County	Orange County Planning Department, 131 W. Margaret Lane, Suite 201	Hillsborough	NC	27278

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 28, “Additional Information” is not applicable in Orange 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