FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 1

HABERSHAM COUNTY, GEORGIA

AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
TOWN OF ALTO	130083
CITY OF BALDWIN	130205
CITY OF CLARKESVILLE	130103
CITY OF CORNELIA	130329
CITY OF DEMOREST	130330
HABERSHAM COUNTY UNINCORPORATED AREAS	130458
TOWN OF MOUNT AIRY*	130331
TOWN OF TALLULAH FALLS	130380

***No Special Flood Hazard Areas Identified**

FEMA

PRELIMINARY

REVISED: **4/14/2016**

FLOOD INSURANCE STUDY NUMBER
13137CV000B

Version Number 2.3.3.2

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Exhibits

Published Separately

FLOOD INSURANCE STUDY REPORT
HABERSHAM COUNTY, GEORGIA AND INCORPORATED AREAS

SECTION 1.0 – INTRODUCTION

1.1 The National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a voluntary Federal program that enables property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

For decades, the national response to flood disasters was generally limited to constructing flood-control works such as dams, levees, sea-walls, and the like, and providing disaster relief to flood victims. This approach did not reduce losses nor did it discourage unwise development. In some instances, it may have actually encouraged additional development. To compound the problem, the public generally could not buy flood coverage from insurance companies, and building techniques to reduce flood damage were often overlooked.

In the face of mounting flood losses and escalating costs of disaster relief to the general taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances, and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection.

The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act of 1994 and the Flood Insurance Reform Act of 2004. The NFIP is administered by the Federal Emergency Management Agency (FEMA), which is a component of the Department of Homeland Security (DHS).

Participation in the NFIP is based on an agreement between local communities and the Federal Government. If a community adopts and enforces floodplain management regulations to reduce future flood risks to new construction and substantially improved structures in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses. The community's floodplain management regulations must meet or exceed criteria established in accordance with Title 44 Code of Federal Regulations (CFR) Part 60.3, *Criteria for land Management and Use*.

SFHAs are delineated on the community's Flood Insurance Rate Maps (FIRMs). Under the NFIP, buildings that were built before the flood hazard was identified on the community's FIRMs are generally referred to as "Pre-FIRM" buildings. When the NFIP was created, the U.S. Congress recognized that insurance for Pre-FIRM buildings would be prohibitively expensive if the premiums were not subsidized by the Federal Government. Congress also recognized that most of these floodprone buildings were built by individuals who did not have sufficient knowledge of the flood hazard to make informed decisions. The NFIP requires that full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved on or after

the effective date of the initial FIRM for the community or after December 31, 1974, whichever is later. These buildings are generally referred to as "Post-FIRM" buildings.

1.2 Purpose of this Flood Insurance Study Report

This Flood Insurance Study (FIS) report revises and updates information on the existence and severity of flood hazards for the study area. The studies described in this report developed flood hazard data that will be used to establish actuarial flood insurance rates and to assist communities in efforts to implement sound floodplain management.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive than the minimum Federal requirements. Contact your State NFIP Coordinator to ensure that any higher State standards are included in the community's regulations.

1.3 Jurisdictions Included in the Flood Insurance Study Project

This FIS Report covers the entire geographic area of Habersham County, Georgia and Incorporated Areas.

The jurisdictions that are included in this project area, along with the Community Identification Number (CID) for each community and the 8-digit Hydrologic Unit Codes (HUC-8) sub-basins affecting each, are shown in Table 1. The Flood Insurance Rate Map (FIRM) panel numbers that affect each community are listed. If the flood hazard data for the community is not included in this FIS Report, the location of that data is identified.

The location of flood hazard data for participating communities in multiple jurisdictions is also indicated in the table.

Jurisdictions that have no identified SFHAs as of the effective date of this study are indicated in the table. Changed conditions in these communities (such as urbanization or annexation) or the availability of new scientific or technical data about flood hazards could make it necessary to determine SFHAs in these jurisdictions in the future.

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Town of Alto	130083	03060104, 03130001	13137C0277D, 13137C0279D	
City of Baldwin	130205	03060104, 03130001	13137C0214D, 13137C0218D, 13137C0219D, 13137C0277D, 13137C0281D, 13137C0285C[2]	
City of Clarkesville	130103	03130001	13137C0120D, 13137C0206D, 13137C0207D	
City of Cornelia	130329	03060104, 03130001	13137C0216D, 13137C0217D, 13137C0218D, 13137C0219D, 13137C0285C[2]	
City of Demorest	130330	03130001	13137C0208D, 13137C0209D, 13137C0216D, 13137C0217D	
Habersham County Unincorporated Areas	130458	03060102, 03060104, 03130001	13137C0020D, 13137C0025C[2], 13137C0030D, 13137C0040D, 13137C0050C[2], 13137C0075D, 13137C0085D, 13137C0095D, 13137C0105D, 13137C0110D, 13137C0115D, 13137C0119D, 13137C0120D, 13137C0130C[2], 13137C0135C, 13137C0140D, 13137C0145C[2], 13137C0155C, 13137C0165C, 13137C0185D, 13137C0195D, 13137C0205D, 13137C0206D, 13137C0207D, 13137C0208D, 13137C0209D, 13137C0211D, 13137C0212D, 13137C0213D, 13137C0214D, 13137C0216D, 13137C0217D, 13137C0218D, 13137C0219D, 13137C0226D, 13137C0227D, 13137C0228D, 13137C0229D, 13137C0235C[2], 13137C0236D, 13137C0240C[2], 13137C0245C[2], 13137C0257D, 13137C0259D, 13137C0260C[2], 13137C0276D, 13137C0277D, 13137C0278D, 13137C0279D, 13137C0281D, 13137C0285C[2], 13137C0300C[2], 13137C0305C	
Town of Mount Airy[1]	130331	03060104, 03130001	13137C0217D, 13137C0219D, 13137C0236D, 13137C0240C	
Town of Tallulah Falls	130380	03060102	13137C0075C, 13137C0135C, 13137C0155C	

[1] No Special Flood Hazard Areas Identified

[2] Panel Not Printed

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).

This section presents important considerations for using the information contained in this FIS Report and the FIRM, including changes in format and content. Figures 1, 2, and 3 present information that applies to using the FIRM with the FIS Report.

- Part or all of this FIS Report may be revised and republished at any time. In addition, part of this FIS Report may be revised by a Letter of Map Revision (LOMR), which does not involve republication or redistribution of the FIS Report. Refer to Section 6.5 of this FIS Report for information about the process to revise the FIS Report and/or FIRM.

  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 31, "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 Habersham County became effective on 6/2/2009. Refer to Table 28 for information about subsequent revisions to the FIRMs.

- 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.

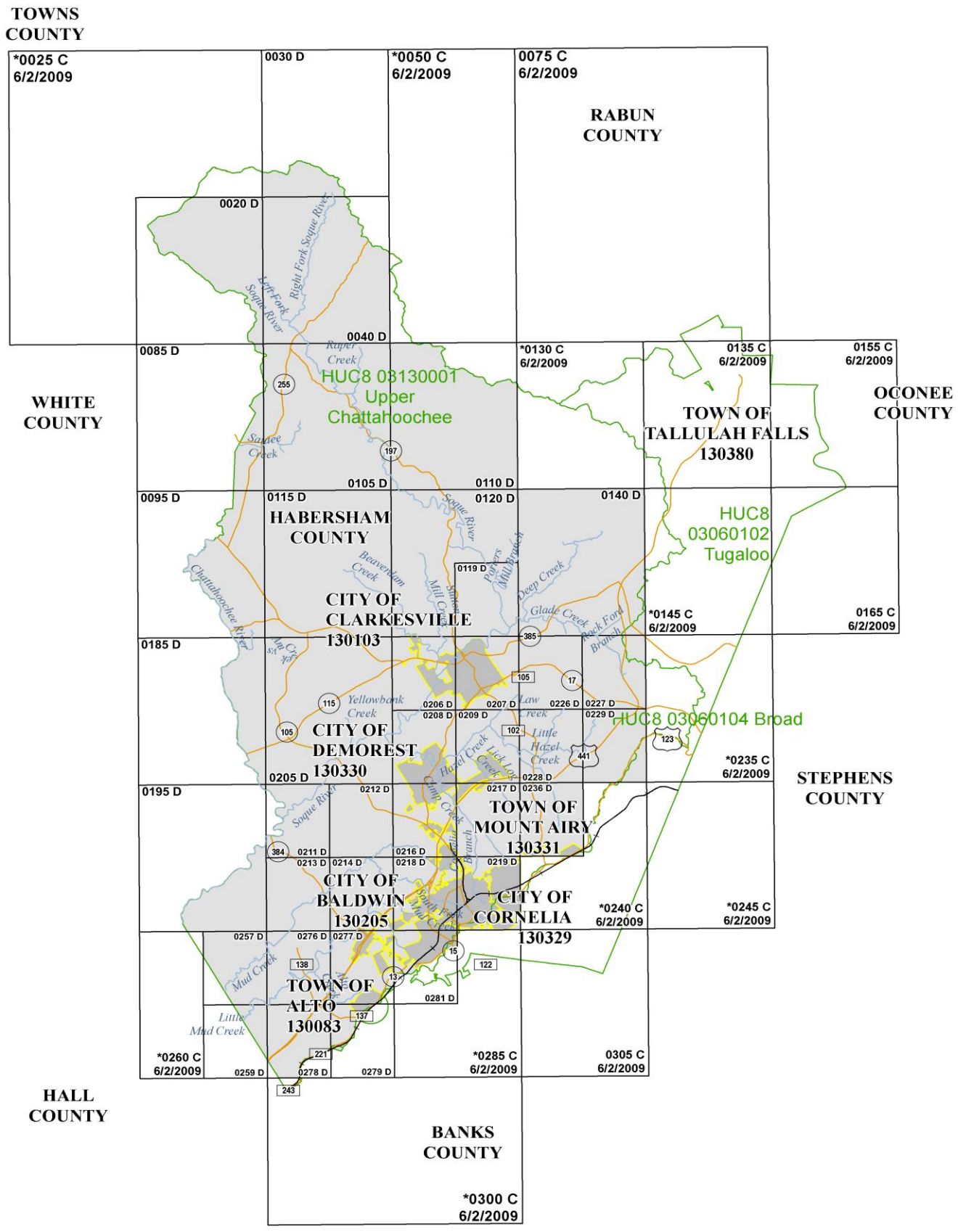
- Previous FIS Reports and FIRMs may have included levees that were accredited as providing protection from the 1% annual chance flood based on the information available and the mapping standards of the NFIP at that time. For FEMA to continue to accredit the identified levees with providing protection from the base flood, 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."

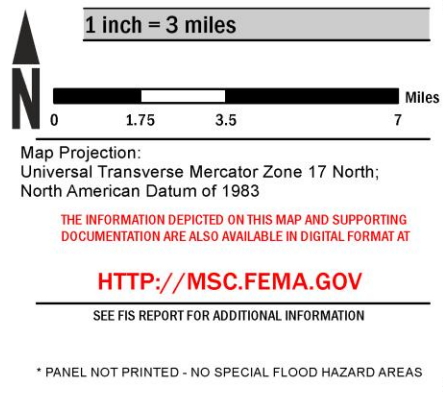
  Since the status of levees is subject to change at any time, the user should contact the appropriate agency for the latest information regarding levees presented in Table 9 of this

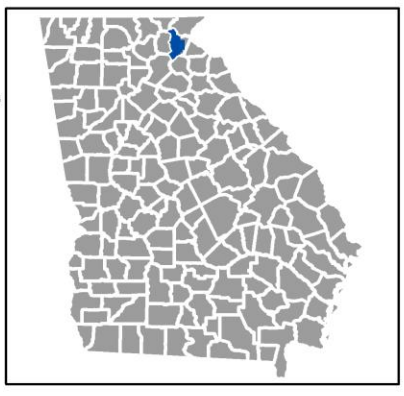
FIS Report. For levees owned or operated by the U.S. Army Corps of Engineers (USACE), information may be obtained from the USACE national levee database. For all other levees, the user is encouraged to contact the appropriate local community.

- 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.

Figure 1: FIRM Panel Index







NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

HABERSHAM COUNTY, GEORGIA AND INCORPORATED AREAS

PANELS PRINTED:

0020, 0030, 0040, 0075, 0085, 0095, 0105, 0110, 0115, 0119, 0120, 0135, 0140, 0155, 0165, 0185, 0195, 0205, 0206, 0207, 0208, 0209, 0211, 0212, 0213, 0214, 0216, 0217, 0218, 0219, 0226, 0227, 0228, 0229, 0236, 0257, 0259, 0276, 0277, 0278, 0279, 0281, 0305

FEMA

PRELIMINARY 4/14/2016

MAP NUMBER 13311CIND0B

MAP REVISED

Each FIRM panel may contain specific notes to the user that provide additional information regarding the flood hazard data shown on that map. However, the FIRM panel does not contain enough space to show all the notes that may be relevant in helping to better understand the information on the panel. Figure 2 contains the full list of these notes.

Figure 2: FIRM Notes to Users

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates, refer to Table 28 in this FIS Report.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

PRELIMINARY FIS REPORT: FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination Officer's meeting or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.

The map is for use in administering the NFIP. It may not identify all areas subject to flooding, particularly from local drainage sources of small size. Consult the community map repository to find updated or additional flood hazard information.

BASE FLOOD ELEVATIONS: For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables within this FIS Report. Use the flood elevation data within the FIS Report in conjunction with the FIRM for construction and/or floodplain management.

FLOODWAY INFORMATION: Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the FIS Report for this jurisdiction.

Figure 2. FIRM Notes to Users *(continued)*

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction.

PROJECTION INFORMATION: The projection used in the preparation of the map was State Plane Georgia West (1002). The horizontal datum was North American Datum 1983, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

ELEVATION DATUM: Flood elevations on the FIRM are referenced to North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community listed in Table 31 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on the FIRM was provided in digital format by FEMA, and the U.S. Census Bureau. Orthophotography was provided by the USGS and dated 2013. . For information about base maps, refer to Section 6.2 “Base Map” in this FIS Report.

The map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map.

Corporate limits shown on the map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after the map was published, map users should contact appropriate community officials to verify current corporate limit locations.

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Habersham County, Georgia and Incorporated Areas, corresponding revisions to the FIRM Index will be incorporated within the FIS Report to reflect the effective dates of those panels. Please refer to Table 28 of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.

Figure 2. FIRM Notes to Users *(continued)*

SPECIAL NOTES FOR SPECIFIC FIRM PANELS This Notes to Users section was created specifically for Habersham County, Georgia and Incorporated Areas, effective _____.
FLOOD RISK REPORT: A Flood Risk Report (FRR) may be available for many of the flooding sources and communities referenced in this FIS Report. The FRR is provided to increase public awareness of flood risk by helping communities identify the areas within their jurisdictions that have the greatest risks. Although non-regulatory, the information provided within the FRR can assist communities in assessing and evaluating mitigation opportunities to reduce these risks. It can also be used by communities developing or updating flood risk mitigation plans. These plans allow communities to identify and evaluate opportunities to reduce potential loss of life and property. However, the FRR is not intended to be the final authoritative source of all flood risk data for a project area; rather, it should be used with other data sources to paint a comprehensive picture of flood risk.

Figure 3: Map Legend for FIRM

SPECIAL FLOOD HAZARD AREAS: *The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood. 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. See note for specific types. If the floodway is too narrow to be shown, a note is shown.*

Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)

Zone A — The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone.

Zone AE — The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone, either at cross section locations or as static whole-foot elevations that apply throughout the zone.

Zone AH — 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 BFEs derived from the hydraulic analyses are shown at selected intervals within this zone.

Zone AO — 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 hydraulic analyses are shown within this zone.

Zone AR — 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.

Zone A99 — 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 flood depths are shown within this zone.

Zone V — The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone.

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. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.

Regulatory Floodway determined in Zone AE.

Figure 3: Map Legend for FIRM *(continued)*

OTHER AREAS OF FLOOD HAZARD

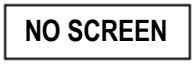
Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.

Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.

Zone X Protected by Accredited Levee: Areas protected by an accredited levee, dike or other flood control structures. See Notes to Users for important information.

OTHER AREAS

Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible



Unshaded Zone X: Areas determined to be outside the 0.2% annual chance floodplain

FLOOD HAZARD AND OTHER BOUNDARY LINES

Flood Zone Boundary (white line)

Limit of Study

Jurisdiction Boundary

Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet

GENERAL STRUCTURES

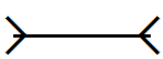
Aqueduct
Channel
Culvert
Storm Sewer

Channel, Culvert, Aqueduct, or Storm Sewer

Dam
Jetty
Weir

Dam, Jetty, Weir

Levee, Dike or Floodwall



Bridge

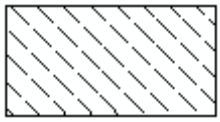
Bridge

Figure 3: Map Legend for FIRM *(continued)*

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AND OTHERWISE PROTECTED AREAS (OPA): *CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas. See Notes to Users for important information.*

CBRS AREA
09/30/2009

Coastal Barrier Resources System Area: Labels are shown to clarify where this area shares a boundary with an incorporated area or overlaps with the floodway.



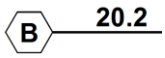
OTHERWISE PROTECTED AREA
09/30/2009

Otherwise Protected Area

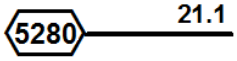
REFERENCE MARKERS

River mile Markers

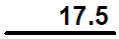
CROSS SECTION & TRANSECT INFORMATION



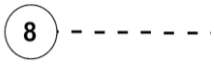
Lettered Cross Section with Regulatory Water Surface Elevation (BFE)



Numbered Cross Section with Regulatory Water Surface Elevation (BFE)



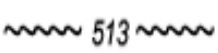
Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)



Coastal Transect

Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation.

Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.



Base Flood Elevation Line (shown for flooding sources for which no cross sections or profile are available)

ZONE AE
(EL 16)

Static Base Flood Elevation value (shown under zone label)

ZONE AO
(DEPTH 2)

Zone designation with Depth

ZONE AO
(DEPTH 2)
(VEL 15 FPS)

Zone designation with Depth and Velocity

Figure 3: Map Legend for FIRM *(continued)*

BASE MAP FEATURES	
Missouri Creek	River, Stream or Other Hydrographic Feature
234	Interstate Highway
234	U.S. Highway
234	State Highway
234	County Highway
MAPLE LANE	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
RAILROAD	Railroad
———————	Horizontal Reference Grid Line
——	Horizontal Reference Grid Ticks
+	Secondary Grid Crosshairs
Land Grant	Name of Land Grant
7	Section Number
R. 43 W. T. 22 N.	Range, Township Number
$^{42}76^{000m}$E	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80° 16’ 52.5”	Corner Coordinates (Latitude, Longitude)

SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

2.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1% annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2% annual chance (500-year) flood is employed to indicate additional areas of flood hazard in the community.

Each flooding source included in the project scope has been studied and mapped using professional engineering and mapping methodologies that were agreed upon by FEMA and Habersham County as appropriate to the risk level. Flood risk is evaluated based on factors such as known flood hazards and projected impact on the built environment. Engineering analyses were performed for each studied flooding source to calculate its 1% annual chance flood elevations; elevations corresponding to other floods (e.g. 10-, 4-, 2-, 0.2-percent annual chance, etc.) may have also been computed for certain flooding sources. Engineering models and methods are described in detail in Section 5.0 of this FIS Report. The modeled elevations at cross sections were used to delineate the floodplain boundaries on the FIRM; between cross sections, the boundaries were interpolated using elevation data from various sources. More information on specific mapping methods is provided in Section 6.0 of this FIS Report.

Depending on the accuracy of available topographic data (Table 23), study methodologies employed (Section 5.0), and flood risk, certain flooding sources may be mapped to show both the 1% and 0.2% annual chance floodplain boundaries, regulatory water surface elevations (BFEs), and/or a regulatory floodway. Similarly, other flooding sources may be mapped to show only the 1% annual chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary is shown on the FIRM. Figure 3, "Map Legend for FIRM", describes the flood zones that are used on the FIRMs to account for the varying levels of flood risk that exist along flooding sources within the project area. Table 2 and Table 3 indicate the flood zone designations for each flooding source and each community within Habersham County, Georgia, respectively.

Table 2, "Flooding Sources Included in this FIS Report," lists each flooding source, including its study limits, affected communities, mapped zone on the FIRM, and the completion date of its engineering analysis from which the flood elevations on the FIRM and in the FIS Report were derived. Descriptions and dates for the latest hydrologic and hydraulic analyses of the flooding sources are shown in Table 13. Floodplain boundaries for these flooding sources are shown on the FIRM (published separately) using the symbology described in Figure 3. On the map, the 1% annual chance floodplain corresponds to the SFHAs. The 0.2% annual chance floodplain shows areas that, although out of the regulatory floodplain, are still subject to flood hazards.

Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data. The procedures to remove these areas from the SFHA are described in Section 6.5 of this FIS Report.

2.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the

encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard.

For purposes of the NFIP, a floodway is used as a tool to assist local communities in balancing floodplain development against increasing flood hazard. With this approach, the area of the 1% annual chance floodplain on a river is divided into a floodway and a floodway fringe based on hydraulic modeling. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order to carry the 1% annual chance flood. The floodway fringe is the area between the floodway and the 1% annual chance floodplain boundaries where encroachment is permitted. The floodway must be wide enough so that the floodway fringe could be completely obstructed without increasing the water-surface elevation of the 1% annual chance flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 4.

To participate in the NFIP, Federal regulations require communities to limit increases caused by encroachment to 1.0 foot, provided that hazardous velocities are not produced. Regulations for Georgia require communities in Habersham County to limit increases caused by encroachment to 0.5 foot and several communities have adopted additional restrictions. The floodways in this project are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway projects.

Figure 4: Floodway Schematic

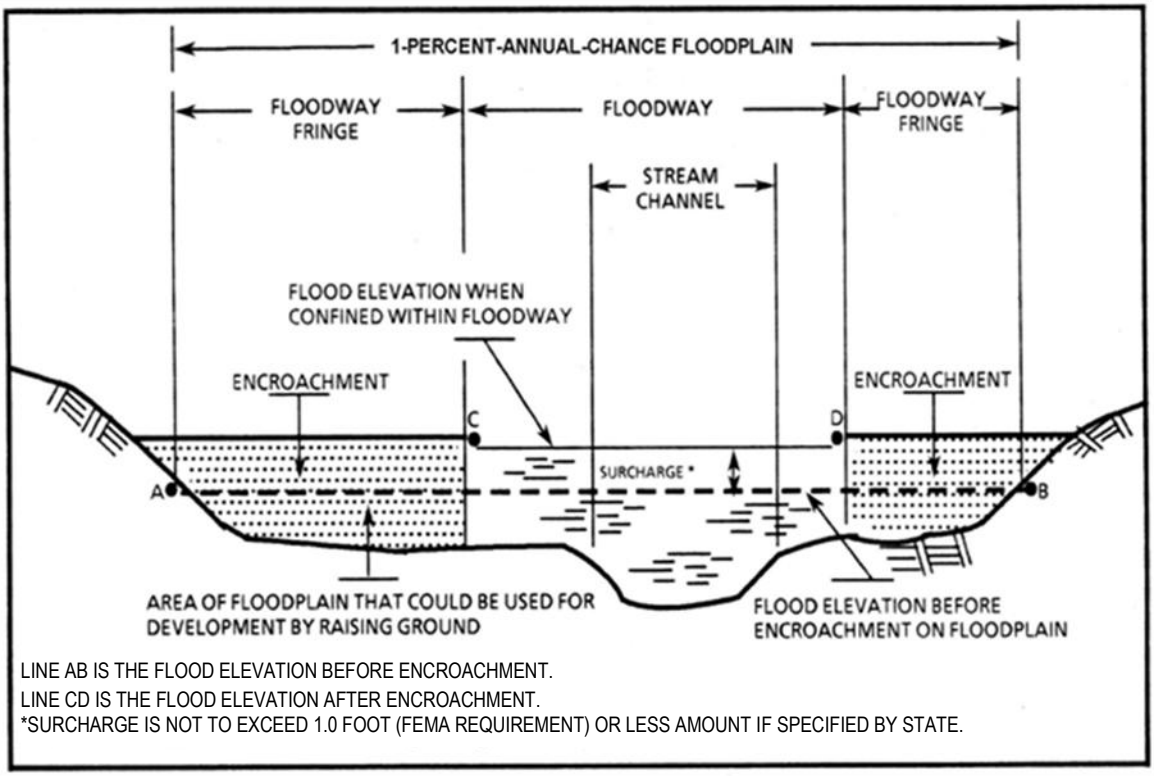


Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Alto Creek	Habersham County Unincorporated Areas	Confluence with Little Mud Creek	Approximately 0.5 miles upstream of B C Grant Rd	03130001	2.4		Y	AE	2015
Amys Creek	Habersham County Unincorporated Areas	NP	NP	03130001	1.3		N	A	2015
Amys Creek Tributary 1	Habersham County Unincorporated Areas	NP	NP	03130001	0.4		N	A	2015
Beaverdam Creek	City of Clarkesville, Habersham County Unincorporated Areas	NP	NP	03130001	5.8		N	A	2015
Beaverdam Creek Tributary 1	City of Clarkesville, Habersham County Unincorporated Areas	NP	NP	03130001	0.6		N	A	2015
Beaverdam Creek Tributary 3	Habersham County Unincorporated Areas	NP	NP	03130001	0.4		N	A	2015

Table 2: Flooding Sources Included in this FIS Report *(continued)*

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Beaverdam Creek Tributary 4	Habersham County Unincorporated Areas	NP	NP	03130001	0.5		N	A	2015
Beaverdam Creek Tributary 6	Habersham County Unincorporated Areas	NP	NP	03130001	0.3		N	A	2015
Ben Tatum Branch	Habersham County Unincorporated Areas	NP	NP	03130001	0.5		N	A	2015
Camp Creek	City of Demorest, Habersham County Unincorporated Areas	Approximately 0.5 miles downstream of US Highway 23	Downstream of Unnamed Dam	03130001	2.5		Y	AE	2015
Camp Creek	City of Demorest, Habersham County Unincorporated Areas	NP	NP	03130001	1.8		N	A	2015
Camp Creek Tributary 1	City of Demorest	NP	NP	03130001	0.9		N	A	2015
Chattahoochee River	Habersham County Unincorporated Areas	NP	NP	03130001	16.8		N	A	2015
Chattahoochee River Tributary 8	Habersham County Unincorporated Areas	NP	NP	03130001	0.4		N	A	2015

Table 2: Flooding Sources Included in this FIS Report *(continued)*

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Chattahoochee River Tributary 14	Habersham County Unincorporated Areas	NP	NP	03130001	0.2		N	A	2015
Chattahoochee River Tributary 18	Habersham County Unincorporated Areas	NP	NP	03130001	0.6		N	A	2015
Chattahoochee River Tributary 20	Habersham County Unincorporated Areas	NP	NP	03130001	0.5		N	A	2015
Chattahoochee River Tributary 22	Habersham County Unincorporated Areas	NP	NP	03130001	0.4		N	A	2015
Chattahoochee River Tributary 26	Habersham County Unincorporated Areas	NP	NP	03130001	0.9		N	A	2015
Cocklebur Creek	Habersham County Unincorporated Areas	Confluence with Hazel Creek	Downstream of Reservoir 19	03130001	1.1		Y	AE	2015
Cocklebur Creek	Habersham County Unincorporated Areas	NP	NP	03130001	0.7		N	A	2015

Table 2: Flooding Sources Included in this FIS Report *(continued)*

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Cornelia Branch	City of Cornelia, Habersham County Unincorporated Areas	NP	NP	03130001	2.9		N	A	2015
Cornelia Branch Tributary 1	City of Cornelia	NP	NP	03130001	0.5		N	A	2015
Deep Creek	Habersham County Unincorporated Areas	NP	NP	03130001	5.6		N	A	2015
Deep Creek South	Habersham County Unincorporated Areas	NP	NP	03130001	0.4		N	A	2015
Deep Creek Tributary 2	Habersham County Unincorporated Areas	NP	NP	03130001	0.5		N	A	2015
Glade Creek	Habersham County Unincorporated Areas	NP	NP	03130001	4.6		N	A	2015
Glade Creek Tributary 2	Habersham County Unincorporated Areas	NP	NP	03130001	0.5		N	A	2015
Glade Creek Tributary 4	Habersham County Unincorporated Areas	NP	NP	03130001	0.4		N	A	2015

Table 2: Flooding Sources Included in this FIS Report *(continued)*

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Hazel Creek	City of Demorest, Habersham County Unincorporated Areas	Approximately 0.25 miles upstream of Demorest Mt Airy Hwy	Downstream of Reservoir 12	03130001	6.2		Y	AE	2015
Hazel Creek	City of Demorest, Habersham County Unincorporated Areas	NP	NP	03130001	5.0		N	A	2015
Hazel Creek Tributary 1	Habersham County Unincorporated Areas	NP	NP	03130001	0.5		N	A	2015
Hazel Creek Tributary 3	City of Demorest, Habersham County Unincorporated Areas	NP	NP	03130001	1.2		N	A	2015
Hazel Creek Tributary 11	Habersham County Unincorporated Areas	NP	NP	03130001	0.4		N	A	2015
Ivy Branch	Habersham County Unincorporated Areas	NP	NP	03130001	0.3		N	A	2015
Law Creek	Habersham County Unincorporated Areas	Confluence with Hazel Creek	Downstream of State Rte 197	03130001	0.8		Y	AE	2015

Table 2: Flooding Sources Included in this FIS Report *(continued)*

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Law Creek	Habersham County Unincorporated Areas	NP	NP	03130001	0.6		N	A	2015
Law Creek Tributary 1	Habersham County Unincorporated Areas	NP	NP	03130001	0.1		N		2015
Left Fork Soque River	Habersham County Unincorporated Areas	NP	NP	03130001	2.0		N	A	2015
Liberty Creek	Habersham County Unincorporated Areas	NP	NP	03130001	0.4		N	A	2015
Lick Log Creek	City of Demorest, Habersham County Unincorporated Areas	Confluence with Hazel Creek	Camp Creek Rd	03130001	2.6		Y	AE	2015
Little Hazel Creek	Habersham County Unincorporated Areas	Confluence with Hazel Creek	Downstream of Reservoir 21	03130001	2.2		Y	AE	2015
Little Hazel Creek	Habersham County Unincorporated Areas	NP	NP	03130001	0.8		N	A	2015

Table 2: Flooding Sources Included in this FIS Report *(continued)*

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Little Mud Creek	City of Baldwin, City of Cornelia, Habersham County Unincorporated Areas	Crane Mill Rd	Downstream of Baldwin Rd	03130001	9.0		Y	AE	2015
Little Mud Creek	Habersham County Unincorporated Areas	NP	NP	03130001	1.4		N	A	2015
Long Branch	Habersham County Unincorporated Areas	NP	NP	03130001	0.2		N	A	2015
Mauldin Mill Creek	Habersham County Unincorporated Areas	NP	NP	03130001	0.7		N	A	2015
Mud Creek	City of Cornelia, Habersham County Unincorporated Areas	Approximately 220 feet downstream of Crane Mill Rd	Highway US-23	03130001	9.7		Y	AE	2015
Mud Creek	City of Cornelia, Habersham County Unincorporated Areas	NP	NP	03130001	1.7		N	A	2015
Mud Creek Tributary 1	Habersham County Unincorporated Areas	NP	NP	03130001	0.2		N	A	2015

Table 2: Flooding Sources Included in this FIS Report *(continued)*

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Mud Creek Tributary 10	City of Cornelia, Habersham County Unincorporated Areas	NP	NP	03130001	0.8		N	A	2015
Porters Mill Branch	Habersham County Unincorporated Areas	NP	NP	03130001	1.9		N	A	2015
Raper Creek	Habersham County Unincorporated Areas	NP	NP	03130001	1.7		N	A	2015
Right Fork Soque River	Habersham County Unincorporated Areas	NP	NP	03130001	5.4		N	A	2015
Rock Ford Branch	Habersham County Unincorporated Areas	NP	NP	03130001	0.9		N	A	2015
Rogers Creek	Habersham County Unincorporated Areas	NP	NP	03130001	0.1		N	A	2015
Sautee Creek	Habersham County Unincorporated Areas	NP	NP	03130001	2.8		N	A	2015

Table 2: Flooding Sources Included in this FIS Report *(continued)*

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Sautee Creek Tributary 4	Habersham County Unincorporated Areas	NP	NP	03130001	0.3		N	A	2015
Shoal Creek	Habersham County Unincorporated Areas	NP	NP	03130001	0.3		N	A	2015
Soque River	City of Clarkesville, Habersham County Unincorporated Areas	Confluence with Beaverdam Creek	Approximately 0.5 miles upstream of the confluence with Soque River Tributary 11	03130001	2.1		Y	AE	2015
Soque River	City of Clarkesville, Habersham County Unincorporated Areas	NP	NP	03130001	27.7		N	A	2015
Soque River Tributary 1	Habersham County Unincorporated Areas	NP	NP	03130001	0.3		N	A	2015
Soque River Tributary 2	Habersham County Unincorporated Areas	NP	NP	03130001	0.3		N	A	2015
Soque River Tributary 3	Habersham County Unincorporated Areas	NP	NP	03130001	0.4		N	A	2015

Table 2: Flooding Sources Included in this FIS Report *(continued)*

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Soque River Tributary 4	Habersham County Unincorporated Areas	NP	NP	03130001	0.3		N	A	2015
Soque River Tributary 6	Habersham County Unincorporated Areas	NP	NP	03130001	0.4		N	A	2015
Soque River Tributary 7	Habersham County Unincorporated Areas	NP	NP	03130001	0.5		N	A	2015
Soque River Tributary 9	City of Clarkesville, Habersham County Unincorporated Areas	NP	NP	03130001	0.9		N	A	2015
Soque River Tributary 10	City of Clarkesville	NP	NP	03130001	0.8		N	A	2015
Soque River Tributary 11	City of Clarkesville	Confluence with Soque River	Approximately 310 feet upstream of State Rte 385/ Grant Street	03130001	0.5		Y	AE	2015
Soque River Tributary 11	City of Clarkesville	NP	NP	03130001	0.7		N	A	2015
Soque River Tributary 11.1	City of Clarkesville, Habersham County Unincorporated Areas	NP	NP	03130001	0.5		N	A	2015

Table 2: Flooding Sources Included in this FIS Report *(continued)*

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Soque River Tributary 13	Habersham County Unincorporated Areas	NP	NP	03130001	0.3		N	A	2015
Soque River Tributary 17	Habersham County Unincorporated Areas	NP	NP	03130001	0.5		N	A	2015
Soque River Tributary 18	Habersham County Unincorporated Areas	NP	NP	03130001	0.7		N	A	2015
Soque River Tributary 26	Habersham County Unincorporated Areas	NP	NP	03130001	0.2		N	A	2015
South Fork Little Mud Creek	City of Baldwin, Habersham County Unincorporated Areas	Confluence with Little Mud Creek	Approximately 0.4 miles downstream of Industrial Blvd	03130001	1.9		Y	AE	2015
South Fork Mud Creek	Habersham County Unincorporated Areas	Confluence with Mud Creek	J Warren Rd	03130001	1.1		Y	AE	2015
South Fork Mud Creek	City of Cornelia, Habersham County Unincorporated Areas	NP	NP	03130001	3.4		N	A	2015
South Fork Mud Creek Tributary 1	City of Cornelia	NP	NP	03130001	0.6		N	A	2015

Table 2: Flooding Sources Included in this FIS Report *(continued)*

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Sutton Mill Creek	Habersham County Unincorporated Areas	NP	NP	03130001	3.9		N	A	2015
Yellowbank Creek Tributary 1	Habersham County Unincorporated Areas	NP	NP	03130001	0.2		N	A	2015
Yellowbank Creek	Habersham County Unincorporated Areas	NP	NP	03130001	1.1		N	A	2015

NP – Not Populated

Floodway widths presented in this FIS Report and on the FIRM were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. For certain stream segments, floodways were adjusted so that the amount of floodwaters conveyed on each side of the floodplain would be reduced equally. The results of the floodway computations have been tabulated for selected cross sections and are shown in Table 24, "Floodway Data."

All floodways that were developed for this FIS project are shown on the FIRM using the symbology described in Figure 3. In cases where the floodway and l% annual chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown on the FIRM. For information about the delineation of floodways on the FIRM, refer to Section 6.3.

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 Non-Encroachment Zones

Some States and communities use non-encroachment zones to manage floodplain development. While not a FEMA designated floodway, the non-encroachment zone represents that area around the stream that should be reserved to convey the 1% annual chance flood event.

2.5 Coastal Flood Hazard Areas

2.5.1 Water Elevations and the Effects of Waves

This section is not applicable to this Flood Risk Project.

Figure 5: Wave Runup Transect Schematic

[Not Applicable to this Flood Risk Project]

2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

This section is not applicable to this Flood Risk Project.

2.5.3 Coastal High Hazard Areas

This section is not applicable to this Flood Risk Project.

Figure 6: Coastal Transect Schematic

[Not Applicable to this Flood Risk Project]

2.5.4 Limit of Moderate Wave Action

This section is not applicable to this Flood Risk Project.

SECTION 3.0 – INSURANCE APPLICATIONS

3.1 National Flood Insurance Program Insurance Zones

For flood insurance applications, the FIRM designates flood insurance rate zones as described in Figure 3, "Map Legend for FIRM." Flood insurance zone designations are assigned to flooding sources based on the results of the hydraulic or coastal analyses. Insurance agents use the zones shown on the FIRM and depths and base flood elevations in this FIS Report in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

The 1% annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (e.g. Zones A, AE, V, VE, etc.), and the 0.2% annual chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table 3 lists the flood insurance zones in the unincorporated and incorporated areas of Habersham County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Town of Alto	AE, X
City of Baldwin	AE, X
City of Clarkesville	A, AE, X
City of Cornelia	A, AE, X
City of Demorest	A, AE, X
Habersham County Unincorporated Areas	A, AE, X
Town of Mount Airy	X
Town of Tallulah Falls	A, X

3.2 Coastal Barrier Resources System

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

have been identified in the project area are in Table 4, "Coastal Barrier Resource System Information."

Table 4: Coastal Barrier Resources System Information

[Not Applicable to this Flood Risk Project]

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

Table 5 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 drainage area.

Table 5: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (Square Miles)
Broad	03060104	Broad River	Located in the Southeastern Portion of Habersham County.	20
Tugaloo	03060102	Tugaloo River	Located in the Northeastern Portion of Habersham County.	40
Upper Chattahoochee	03130001	Upper Chattahoochee River	Largest Watershed Within Habersham County, Encompassing the Central and Western Portions of the County.	225

4.2 Principal Flood Problems

Table 6 contains a description of the principal flood problems that have been noted for Habersham County by flooding source.

Table 6: Principal Flood Problems

Flooding Source	Description of Flood Problems
Soque River	Major floods occurred in the Clarkesville area in 1919 and on June 16, 1949. Based on records at the USGS gage on the Soque River near its mouth, the 1949 flood was estimated to have a 1-percent-annual-chance recurrence interval. The interval for the 1919 flood is unknown but believed to exceed the 1-percentannual-chance flood. The Habersham Dam, located approximately two miles southwest of Clarkesville on the Soque River, had a peak discharge of 15,900 cubic feet per second (cfs) for the 1949 flood according to the USGS.

Table 7 contains information about historic flood elevations in the communities within Habersham County.

Table 7: Historic Flooding Elevations

[Not Applicable to this Flood Risk Project]

4.3 Non-Levee Flood Protection Measures

Table 8 contains information about non-levee flood protection measures within Habersham County such as dams, jetties, and or dikes. Levees are addressed in Section 4.4 of this FIS Report.

Table 8: Non-Levee Flood Protection Measures

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Camp Creek	Unnamed Dam	Dam	Approximately 530 feet upstream of Camp Creek Road	
Cocklebur Creek	Reservoir 19	Dam	Approximately 4,470 feet upstream of Cody Road	
Hazel Creek	Reservoir 12	Dam	Approximately 590 feet upstream of Cody Road	
Little Hazel Creek	Reservoir 21	Dam	Approximately 1,830 feet upstream of Camp Creek Road	
Tugaloo River	Tugaloo Dam	Dam	NP	

4.4 Levees

This section is not applicable to this Flood Risk Project.

Table 9: Levees

[Not Applicable to this Flood Risk Project]

SECTION 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.

In addition to these flood events, the "1-percent-plus", or "1%+", annual chance flood elevation has been modeled and included on the flood profile for certain flooding sources in this FIS Report. While not used for regulatory or insurance purposes, this flood event has been calculated to help illustrate the variability range that exists between the regulatory 1% annual chance flood elevation and a 1% annual chance elevation that has taken into account an additional amount of uncertainty in the flood discharges (thus, the 1% "plus"). For flooding sources whose discharges were estimated using regression equations, the 1%+ flood elevations are derived by taking the 1% annual chance flood discharges and increasing the modeled discharges by a percentage equal to the average predictive error for the regression equation. For flooding sources with gage- or rainfall-runoff-based discharge estimates, the upper 84-percent confidence limit of the discharges is used to compute the 1%+ flood elevations.

The engineering analyses described here incorporate the results of previously issued Letters of Map Change (LOMCs) listed in Table 27, "Incorporated Letters of Map Change", which include Letters of Map Revision (LOMRs). For more information about LOMRs, refer to Section 6.5, "FIRM Revisions."

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. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for each stream is provided in Table 13. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

A summary of the discharges is provided in Table 10. Frequency Discharge-Drainage Area Curves used to develop the hydrologic models may also be shown in Figure 7 for selected flooding sources. A summary of stillwater elevations developed for non-coastal flooding sources is provided in Table 11. (Coastal stillwater elevations are discussed in Section 5.3 and shown in Table 17.) Stream gage information is provided in Table 12.

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (square miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Alto Creek	At The Confluence With Little Mud Creek	3.3	834	1,110	1,356	1,582	*	2,155
Blue Creek	At State Rte 255	4.4	998	1,324	1,614	1,880	*	2,553
Blue Creek	Approximately 2000 Feet Upstream of State Rte 384	6.4	1,252	1,654	2,013	2,339	*	3,163
Blue Creek	At Confluence With Chattahoochee River	12	1,843	2,419	2,932	3,394	*	4,559
Blue Creek	At Stovall Road	9.7	1,620	2,131	2,587	2,998	*	4,036
Brasstown Creek	At Confluence With Chattahoochee River	6.9	1,316	1,738	2,113	2,454	*	3,317
Brasstown Creek	Upstream of Confluence With Brasstown Creek Tributary No 1	4	933	1,240	1,513	1,763	*	2,397
Brasstown Creek	At Skunk Hollow Road	2.6	721	962	1,176	1,374	*	1,877
Brasstown Creek Tributary No.1	At Confluence With Brasstown Creek	1.3	458	617	758	889	*	1,224
Brasstown Creek Tributary No.2	At Confluence With Brasstown Creek	1	409	552	679	797	*	1,100

Table 10: Summary of Discharges *(continued)*

Flooding Source	Location	Drainage Area (square miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Camp Creek	Downstream of Private Lake	1.8	239	368	484	610	*	891
Camp Creek	At The Confluence With Cornelia Branch	4.3	1,307	1,622	1,880	2,142	*	2,694
Camp Creek	At The Confluence With Hazel Creek	6.8	2,218	2,746	3,179	3,616	*	4,542
Camp Creek	At Camp Creek Road	2.7	394	629	820	1,016	*	1,435
Chattahoochee River	At State Rte 75 At Helen	46.3	4,683	6,479	7,967	9,617	*	13,803
Cocklebur Creek	Downstream of Reservoir 19	1.6	90	94	98	118	*	260
Cocklebur Creek	At The Confluence With Hazel Creek	2	215	255	289	323	*	397
Hazel Creek	At US Hwy 23	3	203	241	300	461	*	800
Hazel Creek	At Demorest Mt Airy Hwy	21.3	3,402	4,278	5,009	5,760	*	7,366
Hazel Creek	Downstream of Reservoir 12	2.9	96	129	299	449	*	784
Hazel Creek	Upstream of Confluence With Cocklebur Creek	5.4	793	987	1,147	1,311	*	1,661
Hazel Creek	At State Rte 197	7.9	1,104	1,366	1,585	1,808	*	2,285
Hazel Creek	Upstream of Confluence With Law Creek	13.7	1,913	2,374	2,757	3,150	*	3,989

Table 10: Summary of Discharges *(continued)*

Flooding Source	Location	Drainage Area (square miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Hazel Creek	NP	17	2,635	3,305	3,861	4,433	*	5,653
Law Creek	Confluence With Hazel Creek	2.6	738	922	1,073	1,227	*	1,554
Lick Log Creek	At The Confluence With Hazel Creek	3.4	684	859	1,005	1,156	*	1,477
Lick Log Creek	At US Hwy 23	2.5	525	658	767	879	*	1,116
Little Hazel Creek	At Camp Creek Road	2.8	417	512	589	667	*	831
Little Hazel Creek	At The Confluence With Hazel Creek	4.5	777	947	1,086	1,225	*	1,517
Little Hazel Creek	Downstream of Reservoir 21	2	28	130	231	331	*	560
Little Mud Creek	NP	17.2	2,299	3,006	3,636	4,200	*	5,619
Little Mud Creek	At Payne Norton Road	12.3	1,870	2,454	2,974	3,442	*	4,621
Little Mud Creek	At Wilbanks Road	7.8	1,722	2,182	2,517	2,856	*	3,658
Little Mud Creek	At US Hwy 23	2.4	917	1,147	1,310	1,473	*	1,850
Mud Creek	At Crane Mill Road	14.3	2,054	2,691	3,258	3,767	*	5,050
Mud Creek	At Garrison Dr	11.8	1,826	2,397	2,906	3,364	*	4,519
Mud Creek	Approximately 1600 Feet Upstream of State Rte 384	7.9	1,762	2,224	2,559	2,897	*	3,698
Mud Creek	At Hill Mill Road	3.6	1,106	1,403	1,619	1,836	*	2,344

Table 10: Summary of Discharges *(continued)*

Flooding Source	Location	Drainage Area (square miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Mud Creek	At Old Cleveland Road	2.3	883	1,108	1,268	1,428	*	1,799
Soque River	At Monroe St/ State Rte 115	94.5	7,124	9,170	10,887	12,578	*	16,657
Soque River	At The Confluence With Soque River Tributary	92.2	7,007	9,025	10,717	12,383	*	16,390
Soque River Tributary	At The Confluence With Soque River	1	554	701	806	911	*	1,152
South Fork Little Mud Creek	At The Confluence With Little Mud Creek	2	856	1,063	1,209	1,353	*	1,688
South Fork Mud Creek	At The Confluence With Mud Creek	2.6	1,028	1,263	1,427	1,589	*	1,967
White Creek	At The Confluence With Chattahoochee River	10.5	1,696	2,229	2,704	3,133	*	4,214
White Creek	At Webster Lake Road	9.4	1,583	2,083	2,529	2,932	*	3,948
White Creek	At Little Rock Road	4	941	1,250	1,525	1,776	*	2,415

*Not calculated for this FIS project

Figure 7: Frequency Discharge-Drainage Area Curves

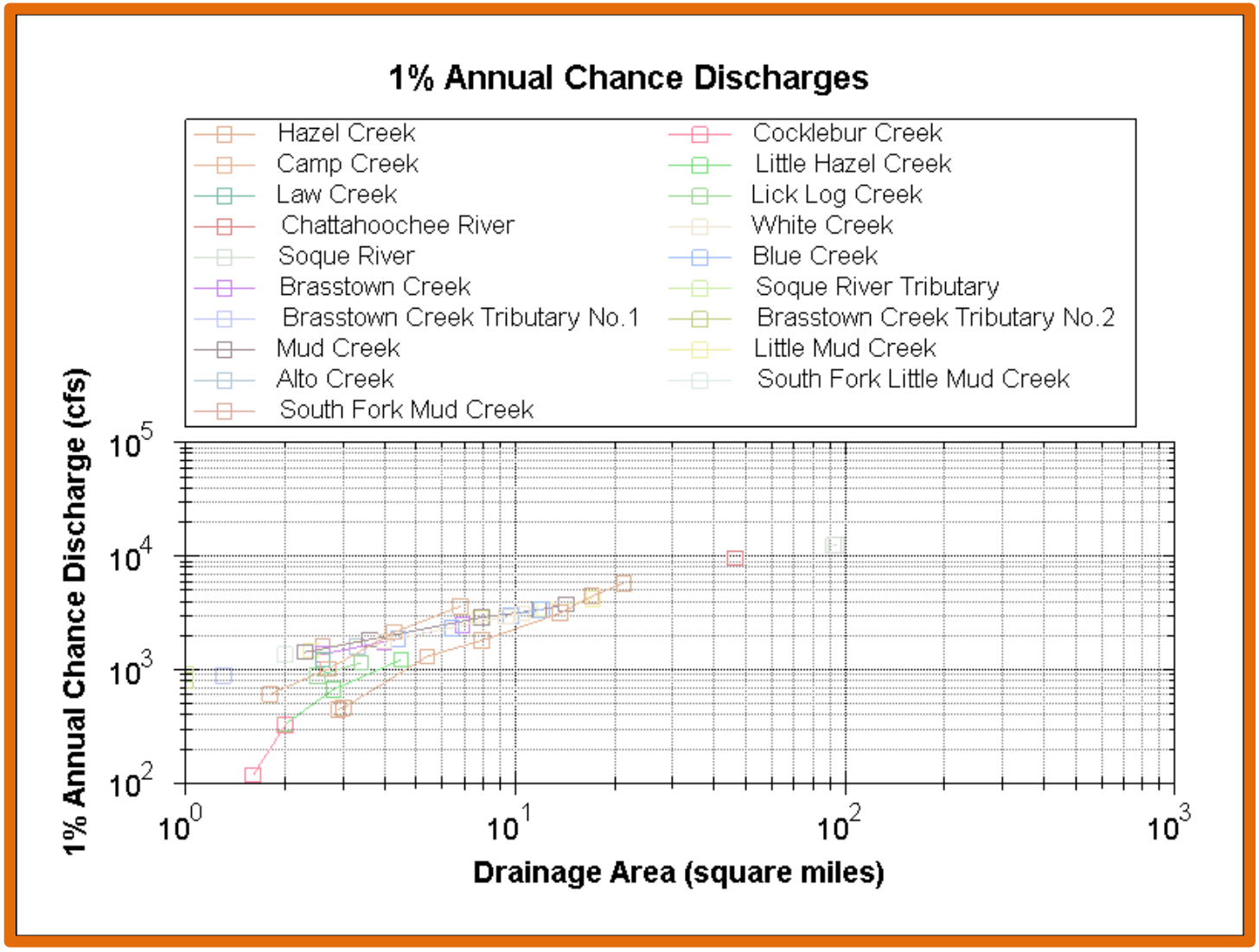


Table 11: Summary of Non-Coastal Stillwater Elevations

[Not Applicable to this Flood Risk Project]

Table 12: Stream Gage Information used to Determine Discharges

Flooding Source	Gage Identifier	Agency that Maintains Gage	Site Name	Drainage Area (Square Miles)	Period of Record	
					From	To
Chattahoochee River	02331600	USGS	Chattahoochee River Near Cornelia, Ga	315	8/13/1940	10/2/2012
Chattahoochee River	02330450	USGS	Chattahoochee River At Helen, Ga	45	10/4/1964	11/26/2013
Chattahoochee River	02331000	USGS	Chattahoochee River Near Leaf, Ga	150	8/13/1940	12/23/2013
Soque River	02331500	USGS	Soque River At Ga 105, Near Demorest, Ga	156	6/30/1905	5/28/1973

5.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. Flood elevations shown on the FIRM 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. The hydraulic analyses for this FIS were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed on Table 24, "Floodway Data."

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 13. Roughness coefficients are provided in Table 14. Roughness coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. They are used in the calculations to determine water surface elevations. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

Table 13: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
Alto Creek	Confluence with Little Mud Creek	Approximately 0.5 miles upstream of B C Grant Rd	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	AE	
Amys Creek	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Amys Creek Tributary 1	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Beaverdam Creek	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Beaverdam Creek Tributary 1	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Beaverdam Creek Tributary 3	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Beaverdam Creek Tributary 4	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Beaverdam Creek Tributary 6	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Ben Tatum Branch	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Camp Creek	Approximately 0.5 miles downstream of US Highway 23	Downstream of Unnamed Dam	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 3.1.1 and up	07/02/2015	AE	
Camp Creek	NP	NP	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 3.1.1 and up	07/02/2015	A	
Camp Creek Tributary 1	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Chattahoochee River	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	

Table 13: Summary of Hydrologic and Hydraulic Analyses *(continued)*

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
Chattahoochee River Tributary 8	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Chattahoochee River Tributary 14	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Chattahoochee River Tributary 18	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Chattahoochee River Tributary 20	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Chattahoochee River Tributary 22	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Chattahoochee River Tributary 26	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Cocklebur Creek	Confluence with Hazel Creek	Downstream of Reservoir 19	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 3.1.1 and up	07/02/2015	AE	
Cocklebur Creek	NP	NP	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 3.1.1 and up	07/02/2015	A	
Cornelia Branch	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Cornelia Branch Tributary 1	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Deep Creek	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Deep Creek South	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Deep Creek Tributary 2	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	

Table 13: Summary of Hydrologic and Hydraulic Analyses *(continued)*

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
Glade Creek	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Glade Creek Tributary 2	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Glade Creek Tributary 4	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Hazel Creek	Approximately 0.25 miles upstream of Demorest Mt Airy Hwy	Downstream of Reservoir 12	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 3.1.1 and up	07/02/2015	AE	
Hazel Creek	NP	NP	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 3.1.1 and up	07/02/2015	A	
Hazel Creek Tributary 1	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Hazel Creek Tributary 3	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Hazel Creek Tributary 11	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Ivy Branch	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Law Creek	Confluence with Hazel Creek	Downstream of State Rte 197	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 3.1.1 and up	07/02/2015	AE	
Law Creek	NP	NP	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 3.1.1 and up	07/02/2015	A	
Law Creek Tributary 1	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Left Fork Soque River	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	

Table 13: Summary of Hydrologic and Hydraulic Analyses *(continued)*

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
Liberty Creek	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Lick Log Creek	Confluence with Hazel Creek	Camp Creek Rd	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 3.1.1 and up	07/02/2015	AE	
Little Hazel Creek	Confluence with Hazel Creek	Downstream of Reservoir 21	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 3.1.1 and up	07/02/2015	AE	
Little Hazel Creek	NP	NP	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 3.1.1 and up	07/02/2015	A	
Little Mud Creek	Crane Mill Rd	Downstream of Baldwin Rd	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	AE	
Little Mud Creek	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Long Branch	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Mauldin Mill Creek	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Mud Creek	Approximately 220 feet downstream of Crane Mill Rd	Highway US-23	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	AE	
Mud Creek	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Mud Creek Tributary 1	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Mud Creek Tributary 10	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Porters Mill Branch	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Raper Creek	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	

Table 13: Summary of Hydrologic and Hydraulic Analyses *(continued)*

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
Right Fork Soque River	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Rock Ford Branch	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Rogers Creek	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Sautee Creek	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Sautee Creek Tributary 4	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Shoal Creek	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Soque River	Confluence with Beaverdam Creek	Approximately 0.5 miles upstream of the confluence with Soque River Tributary 11	OTHER	HEC-RAS 3.1.1 and up	07/02/2015	AE	
Soque River	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Soque River Tributary 1	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Soque River Tributary 2	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Soque River Tributary 6	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Soque River Tributary 7	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Soque River Tributary 9	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Soque River Tributary 10	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	

Table 13: Summary of Hydrologic and Hydraulic Analyses *(continued)*

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
Soque River Tributary 11	Confluence with Soque River	Approximately 310 feet upstream of State Rte 385/ Grant Street	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	AE	
Soque River Tributary 11	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Soque River Tributary 11.1	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Soque River Tributary 13	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Soque River Tributary 17	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Soque River Tributary 18	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Soque River Tributary 26	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
South Fork Little Mud Creek	Confluence with Little Mud Creek	Approximately 0.4 miles downstream of Industrial Blvd	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	AE	
South Fork Mud Creek	Confluence with Mud Creek	J Warren Rd	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	AE	
South Fork Mud Creek	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
South Fork Mud Creek Tributary 1	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Sutton Mill Creek	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Yellowbank Creek	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	
Yellowbank Creek Tributary 1	NP	NP	Regression Equations	HEC-RAS 3.1.1 and up	07/02/2015	A	

NP – Not Populated

Table 14: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Alto Creek	0.040-0.100	0.035-0.070
Camp Creek	0.040-0.100	0.025-0.100
Cocklebur Creek	0.025-0.100	0.025-0.070
Hazel Creek	0.025-0.100	0.025-0.070
Law Creek	0.040-0.100	0.070-0.070
Lick Log Creek	0.025-0.100	0.070-0.070
Little Hazel Creek	0.025-0.100	0.025-0.070
Little Mud Creek	0.040-0.100	0.070-0.070
Mud Creek	0.025-0.100	0.025-0.100
Soque River	0.040-0.100	0.035-0.070
Soque River Tributary 11	0.050-0.070	0.040-0.100
South Fork Little Mud Creek	0.025-0.100	0.070-0.070
South Fork Mud Creek	0.035-0.100	0.035-0.070

5.3 Coastal Analyses

This section is not applicable to this Flood Risk Project.

Table 15: Summary of Coastal Analyses
[Not Applicable to this Flood Risk Project]

5.3.1 Total Stillwater Elevations

This section is not applicable to this Flood Risk Project.

Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas
[Not Applicable to this Flood Risk Project]

Table 16: Tide Gage Analysis Specifics
[Not Applicable to this Flood Risk Project]

5.3.2 Waves

This section is not applicable to this Flood Risk Project.

5.3.3 Coastal Erosion

This section is not applicable to this Flood Risk Project.

5.3.4 Wave Hazard Analyses

This section is not applicable to this Flood Risk Project.

Table 17: Coastal Transect Parameters
[Not Applicable to this Flood Risk Project]

Figure 9: Transect Location Map
[Not Applicable in this Flood Risk Project]

5.4 Alluvial Fan Analyses

This section is not applicable to this Flood Risk Project.

Table 18: Summary of Alluvial Fan Analyses
[Not Applicable to this Flood Risk Project]

Table 19: Results of Alluvial Fan Analyses
[Not Applicable to this Flood Risk Project]

SECTION 6.0 – MAPPING METHODS

6.1 Vertical and Horizontal Control

All FIS Reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS Reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS Reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum.

Flood elevations shown in this FIS Report and on the FIRMs are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between NGVD29 and NAVD88 or other datum conversion, visit the National Geodetic Survey website at www.ngs.noaa.gov, or contact the National Geodetic Survey at the following address:

NGS Information Services NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

Temporary vertical monuments 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, they may be found in the archived project documentation associated with the FIS Report and the FIRMs for this community. Interested individuals may contact FEMA to access these data.

To obtain current elevation, description, and/or location information for benchmarks in the area, please contact information services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

The datum conversion locations and values that were calculated for Habersham County are provided in Table 20.

Table 20: Countywide Vertical Datum Conversion

Quadrangle Name	Quadrangle Corner	Latitude	Longitude	Conversion from NGVD29 to NAVD88 (feet)
Ayersville	NE	34.625	-83.375	-0.001
Baldwin	NE	34.500	-83.500	0.014
Clarkesville	NE	34.625	-83.500	0.038
Clarkesville NE	NE	34.750	-83.500	0.112
Helen	NE	34.750	-83.625	0.025
Leaf	NE	34.625	-83.625	0.036
Lula	NE	34.500	-83.625	0.061
Tallulah Falls	NE	34.750	-83.375	0.002
Average Conversion from NGVD29 to NAVD88 = 0.036 (FEET)				

Table 21: Stream-by-Stream Vertical Datum Conversion

[Not Applicable to this Flood Risk Project]

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. For example, the information contained in the Floodway Data table and Flood Profiles can be linked to the cross sections that are shown on the FIRMs. Additional information about the FIRM Database and its contents can be found in FEMA's *Guidelines and Standards for Mapping Partners*, Appendix L.

Base map information shown on the FIRM was derived from the sources described in Table 22.

Table 22: Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
2013 National Ag. Imagery Program Mosaic	USDA	2013	1:24000	Color Orthoimagery
Habersham County TIGER Transportation	U.S. Census Bureau	2014	1:24000	Roads and Railroads
Henry County Master Boundary	Georgia Department of Transportation	2006	1:24000	County Boundary
Upper Chattahoochee (North) Discovery Database	FEMA	2014	1:24000	Municipal Boundaries

6.3 Floodplain and Floodway Delineation

The FIRM shows tints, screens, and symbols to indicate floodplains and floodways as well as the locations of selected cross sections used in the hydraulic analyses and floodway computations.

For riverine flooding sources, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 23.

In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

The floodway widths presented in this FIS Report and on the FIRM 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. Table 2 indicates the flooding sources for which floodways have been determined. The results of the floodway computations for those flooding sources have been tabulated for selected cross sections and are shown in Table 24, “Floodway Data.”

Table 23: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Scale	Contour Interval	Citation
Habersham County and Incorporated Areas	All Within Habersham County	Lake Lanier, GA, ARRA LIDAR	1:6000	2	Photo Science 2010

BFEs shown at cross sections on the FIRM represent the 1% annual chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report.

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (Feet NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (Feet)	SECTION AREA (Square Miles)	MEAN VELOCITY (Feet / Second)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	605	212	444	3.6	1,226.0	1,217.9	1,218.6	0.7
B	3,279	260	540	2.9	1,230.2	1,230.2	1,230.8	0.6
C	4,949	96	1,078	1.5	1,247.2	1,247.2	1,247.2	0.0
D	8,122	108	333	4.8	1,257.1	1,257.1	1,257.5	0.4
E	10,331	75	264	6.0	1,269.3	1,269.3	1,269.9	0.6
F	12,504	180	461	3.4	1,284.7	1,284.7	1,285.4	0.7

[1]Stream distance in feet above Confluence with Little Mud Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

HABERSHAM COUNTY, GEORGIA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: ALTO CREEK

Table 24: Floodway Data *(continued)*

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (Feet NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (Feet)	SECTION AREA (Square Miles)	MEAN VELOCITY (Feet / Second)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	9,842	74	1,570	2.3	1,338.5	1,338.5	1,339.3	0.8
B	10,868	517	7,700	0.5	1,338.6	1,338.6	1,339.4	0.8
C	13,245	425	4,624	0.8	1,338.6	1,338.6	1,339.4	0.8
D	16,697	75	223	4.6	1,345.3	1,345.3	1,346.1	0.8
E	17,351	157	599	1.7	1,350.2	1,350.2	1,351.2	1.0
F	19,451	54	690	0.9	1,368.8	1,368.8	1,369.2	0.5
G	19,853	135	393	1.6	1,368.8	1,368.8	1,369.2	0.5

[1]Stream distance in feet above Confluence with Hazel Creek

Table 24: Floodway Data *(continued)*

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (Feet NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (Feet)	SECTION AREA (Square Miles)	MEAN VELOCITY (Feet / Second)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,016	32	130	2.5	1,328.2	1,328.2	1,328.6	0.3
B	1,356	31	206	1.6	1,332.1	1,332.1	1,332.3	0.3
C	2,401	25	111	2.9	1,333.3	1,333.3	1,333.8	0.5
D	3,507	40	135	2.4	1,337.1	1,337.1	1,337.3	0.2
E	4,562	27	112	2.9	1,341.8	1,341.8	1,341.9	0.1
F	5,741	19	40	8.0	1,348.8	1,348.8	1,348.9	0.0

[1]Stream distance in feet above Confluence with Hazel Creek

Table 24: Floodway Data *(continued)*

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (Feet NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (Feet)	SECTION AREA (Square Miles)	MEAN VELOCITY (Feet / Second)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	22,334	156	1,900	3.0	1,302.7	1,302.7	1,303.0	0.3
B	23,880	164	1,761	3.3	1,302.9	1,302.9	1,303.4	0.5
C	25,259	305	3,028	1.5	1,303.6	1,303.6	1,304.2	0.7
D	29,767	170	1,111	4.0	1,307.9	1,307.9	1,308.8	0.9
E	31,984	68	563	5.6	1,311.0	1,311.0	1,311.9	0.9
F	35,495	82	827	3.8	1,317.5	1,317.5	1,318.4	1.0
G	38,135	78	769	4.1	1,321.2	1,321.2	1,321.9	0.7
H	41,818	27	194	9.3	1,322.8	1,322.8	1,323.4	0.5
I	43,691	190	579	3.1	1,326.4	1,326.4	1,327.3	0.9
J	45,502	118	541	2.4	1,331.4	1,331.4	1,332.4	0.9
K	47,623	98	534	2.5	1,337.9	1,337.9	1,338.3	0.4
L	51,359	175	872	1.5	1,346.8	1,346.8	1,347.7	0.9
M	54,244	64	75	6.2	1,359.1	1,359.1	1,359.1	0.0

[1]Stream distance in feet above Confluence with Soque River

Table 24: Floodway Data *(continued)*

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (Feet NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (Feet)	SECTION AREA (Square Miles)	MEAN VELOCITY (Feet / Second)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	520	43	245	5.0	1,308.7	1,308.2	1,308.5	0.3
B	2,901	50	288	4.3	1,321.2	1,321.2	1,321.3	0.1
C	3,764	96	303	4.1	1,326.2	1,326.2	1,326.9	0.7

[1]Stream distance in feet above Confluence with Hazel Creek

Table 24: Floodway Data *(continued)*

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (Feet NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (Feet)	SECTION AREA (Square Miles)	MEAN VELOCITY (Feet / Second)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,223	103	372	3.1	1,303.6	1,299.2	1,300.2	1.0
B	4,438	86	341	3.4	1,313.5	1,313.5	1,314.2	0.8
C	7,065	29	216	5.4	1,324.4	1,324.4	1,325.3	0.8
D	8,701	70	374	2.4	1,333.4	1,333.4	1,333.5	0.1
E	11,207	91	325	2.7	1,341.1	1,341.1	1,342.0	0.9
F	13,294	123	367	2.4	1,349.8	1,349.8	1,350.8	1.0

[1]Stream distance in feet above Confluence with Hazel Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

HABERSHAM COUNTY, GEORGIA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: LICK LOG CREEK

Table 24: Floodway Data *(continued)*

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (Feet NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (Feet)	SECTION AREA (Square Miles)	MEAN VELOCITY (Feet / Second)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,665	76	291	4.2	1,321.5	1,320.1	1,321.0	0.8
B	2,585	40	311	3.9	1,323.5	1,323.5	1,324.4	0.9
C	3,511	43	232	5.3	1,324.9	1,324.9	1,325.9	1.0
D	3,977	71	380	3.2	1,329.5	1,329.5	1,330.1	0.7
E	6,916	37	205	6.0	1,357.0	1,357.0	1,357.8	0.8
F	7,986	330	2,194	0.6	1,362.4	1,362.4	1,363.1	0.8
G	9,504	21	116	5.8	1,362.4	1,362.4	1,363.1	0.7
H	9,747	79	302	2.2	1,363.4	1,363.4	1,364.1	0.7
I	11,250	23	124	2.7	1,367.3	1,367.3	1,367.7	0.5

[1]Stream distance in feet above Confluence with Hazel Creek

Table 24: Floodway Data *(continued)*

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (Feet NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (Feet)	SECTION AREA (Square Miles)	MEAN VELOCITY (Feet / Second)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	9,857	305	1,764	2.2	1,186.8	1,186.8	1,187.7	0.9
B	12,794	127	1,179	3.2	1,194.2	1,194.2	1,195.2	1.0
C	15,437	140	1,173	2.9	1,201.5	1,201.5	1,202.2	0.7
D	19,617	234	2,311	1.5	1,214.8	1,214.8	1,215.7	0.9
E	22,654	302	4,087	0.8	1,226.0	1,226.0	1,226.0	0.0
F	25,029	330	2,670	1.1	1,227.0	1,227.0	1,227.3	0.3
G	29,093	378	2,088	1.4	1,236.4	1,236.4	1,236.4	0.0
H	31,482	54	382	7.5	1,243.8	1,243.8	1,244.5	0.6
I	34,414	349	1,836	1.6	1,251.8	1,251.8	1,252.8	1.0
J	38,310	203	648	4.4	1,263.8	1,263.8	1,264.7	0.8
K	42,010	84	490	3.0	1,279.6	1,279.6	1,280.5	0.8
L	43,473	32	230	6.4	1,286.8	1,286.8	1,287.4	0.7
M	47,090	38	214	6.9	1,306.9	1,306.9	1,307.7	0.8
N	49,258	165	2,198	0.7	1,332.8	1,332.8	1,333.4	0.6
O	50,552	97	254	5.8	1,335.5	1,335.5	1,336.1	0.6
P	51,935	88	307	4.8	1,352.8	1,352.8	1,353.6	0.8
Q	53,667	161	1,208	1.2	1,399.3	1,399.3	1,400.1	0.9

[1] Stream distance in feet above Limit of Study (Limit of Study is approximately 355 feet downstream of Habersham County / Hall County boundary)

Table 24: Floodway Data *(continued)*

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (Feet NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (Feet)	SECTION AREA (Square Miles)	MEAN VELOCITY (Feet / Second)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	5,973	68	572	6.6	1,217.6	1,217.6	1,217.6	0.0
B	9,357	57	603	6.3	1,225.5	1,225.5	1,225.9	0.4
C	13,461	75	654	5.5	1,237.1	1,237.1	1,237.2	0.1
D	14,406	100	691	5.2	1,239.1	1,239.1	1,239.3	0.3
E	16,784	51	494	6.8	1,244.6	1,244.6	1,245.0	0.4
F	18,853	154	1,116	3.0	1,249.3	1,249.3	1,250.2	0.9
G	21,280	479	1,859	1.8	1,251.4	1,251.4	1,252.3	0.8
H	23,082	189	539	6.2	1,254.0	1,254.0	1,254.7	0.7
I	26,817	365	1,376	2.3	1,263.3	1,263.3	1,264.1	0.9
J	31,317	70	768	4.2	1,278.2	1,278.2	1,279.0	0.9
K	34,915	112	578	5.0	1,281.7	1,281.7	1,282.6	0.9
L	38,783	129	582	5.0	1,290.3	1,290.3	1,291.0	0.6
M	42,469	191	1,175	1.6	1,303.7	1,303.7	1,303.7	0.0
N	45,587	40	273	5.2	1,313.7	1,313.7	1,313.7	0.0
O	50,288	137	1,367	1.0	1,341.0	1,341.0	1,341.2	0.2
P	52,784	57	297	4.8	1,351.9	1,351.9	1,352.3	0.3
Q	56,344	72	302	4.7	1,376.9	1,376.9	1,377.3	0.4

[1]Stream distance in feet above Limit of Study (Limit of Study is approximately 355 feet downstream of Habersham County / Hall County boundary)

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

HABERSHAM COUNTY, GEORGIA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: MUD CREEK

Table 24: Floodway Data *(continued)*

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (Feet NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (Feet)	SECTION AREA (Square Miles)	MEAN VELOCITY (Feet / Second)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	46,596	419	4,867	2.6	1,304.1	1,304.1	1,304.3	0.2
B	47,837	264	3,614	3.5	1,304.6	1,304.6	1,305.0	0.4
C	48,270	590	7,855	1.6	1,305.2	1,305.2	1,305.6	0.4
D	51,837	271	3,409	3.7	1,305.7	1,305.7	1,306.1	0.5
E	53,577	1,366	12,837	1.0	1,306.2	1,306.2	1,306.7	0.6
F	56,268	433	2,917	4.2	1,308.0	1,308.0	1,308.7	0.7

[1]Stream distance in feet above Confluence with Chattahoochee River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

HABERSHAM COUNTY, GEORGIA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SOQUE RIVER

Table 24: Floodway Data *(continued)*

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (Feet NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (Feet)	SECTION AREA (Square Miles)	MEAN VELOCITY (Feet / Second)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	596	25	154	5.9	1,306.2	1,299.6	1,300.2	0.6
B	1,152	31	165	5.5	1,306.2	1,302.5	1,303.3	0.7
C	1,705	53	249	3.7	1,306.4	1,306.4	1,307.4	1.0
D	2,052	25	161	5.7	1,309.3	1,309.3	1,309.7	0.4
E	2,210	32	209	4.4	1,310.5	1,310.5	1,310.7	0.2

[1]Stream distance in feet above Confluence with Soque River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

HABERSHAM COUNTY, GEORGIA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SOQUE RIVER TRIBUTARY 11

Table 24: Floodway Data *(continued)*

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (Feet NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (Feet)	SECTION AREA (Square Miles)	MEAN VELOCITY (Feet / Second)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	236	38	303	4.5	1,278.7	1,278.7	1,279.2	0.6
B	2,256	45	380	3.6	1,291.9	1,291.9	1,292.5	0.6
C	3,326	160	1,487	0.9	1,305.1	1,305.1	1,305.2	0.1
D	4,135	110	732	1.9	1,306.5	1,306.5	1,307.4	0.9
E	6,540	52	202	6.7	1,322.1	1,322.1	1,322.1	0.0
F	7,765	37	254	5.3	1,334.8	1,334.8	1,335.1	0.3
G	9,884	41	232	5.8	1,351.1	1,351.1	1,351.7	0.6

[1]Stream distance in feet above Confluence with Little Mud Creek

Table 24: Floodway Data *(continued)*

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (Feet NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (Feet)	SECTION AREA (Square Miles)	MEAN VELOCITY (Feet / Second)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	435	35	179	8.9	1,298.7	1,295.7	1,296.0	0.2
B	1,351	40	337	4.7	1,302.1	1,302.1	1,302.7	0.6
C	3,267	41	267	6.0	1,337.8	1,337.8	1,338.3	0.5
D	3,806	76	557	2.9	1,342.0	1,342.0	1,342.2	0.2
E	5,731	193	893	1.8	1,357.3	1,357.3	1,357.8	0.5

[1]Stream distance in feet above Confluence with Mud Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

HABERSHAM COUNTY, GEORGIA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SOUTH FORK MUD CREEK

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams
[Not Applicable to this Flood Risk Project]

6.4 Coastal Flood Hazard Mapping

This section is not applicable to this Flood Risk Project.

Table 26: Summary of Coastal Transect Mapping Considerations
[Not Applicable to this Flood Risk Project]

6.5 FIRM Revisions

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions to FIS projects may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table 31, "Map Repositories").

6.5.1 Letters of Map Amendment

A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative process that involves the review of scientific or technical data submitted by the owner or lessee of property who believes the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in a SFHA. A LOMA cannot be issued for properties located on the PFD (primary frontal dune).

To obtain an application for a LOMA, visit http://www.fema.gov and download the form "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill". Visit the "Flood Map-Related Fees" section to determine the cost, if any, of applying for a LOMA.

FEMA offers a tutorial on how to apply for a LOMA. The LOMA Tutorial Series can be accessed at http://www.fema.gov/plan/prevent/fhm/ot_lmreq.shtm.

For more information about how to apply for a LOMA, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627).

6.5.2 Letters of Map Revision Based on Fill

A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA's determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is, therefore, excluded from the SFHA.

Information about obtaining an application for a LOMR-F can be obtained in the same manner as that for a LOMA, by visiting http://www.fema.gov for the "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill" or by calling the FEMA Map Information eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627). Fees for applying for a LOMR-F, if any, are listed in the "Flood Map-Related Fees" section.

A tutorial for LOMR-F is available at http://www.fema.gov/plan/prevent/fhm/ot_lmreq.shtm.

6.5.3 Letters of Map Revision

A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All requests for LOMRs should be made to FEMA through the chief executive officer of the community, since it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the community, evidence must be submitted that the community has been notified of the request.

To obtain an application for a LOMR, visit http://www.fema.gov and download the form "MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision". Visit the "Flood Map-Related Fees" section to determine the cost of applying for a LOMR. For more information about how to apply for a LOMR, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627) to speak to a Map Specialist.

Previously issued mappable LOMCs (including LOMRs) that have been incorporated into the Habersham County FIRM are listed in Table 27.

Table 27: Incorporated Letters of Map Change

[Not Applicable to this Flood Risk Project]

6.5.4 Physical Map Revisions

PMRs are an official republication of a community's NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements, annexations resulting in additional flood hazard areas or correction to base flood elevations or SFHAs.

The community's chief executive officer must submit scientific and technical data to FEMA to support the request for a PMR. The data will be analyzed and the map will be revised if warranted. The community is provided with copies of the revised information and is afforded a review period. When the base flood elevations are changed, a 90-day appeal period is provided. A 6-month adoption period for formal approval of the revised map(s) is also provided.

For more information about the PMR process, please visit http://www.fema.gov and visit the "Flood Map Revision Processes" section.

6.5.5 Contracted Restudies

The NFIP provides for a periodic review and restudy of flood hazards within a given community. FEMA accomplishes this through a national watershed-based mapping needs assessment strategy, known as the Coordinated Needs Management Strategy (CNMS). The CNMS is used by FEMA to assign priorities and allocate funding for new flood hazard analyses used to update the FIS Report and FIRM. The goal of CNMS is to define the validity of the engineering study data

within a mapped inventory. The CNMS is used to track the assessment process, document engineering gaps and their resolution, and aid in prioritization for using flood risk as a key factor for areas identified for flood map updates. Visit www.fema.gov to learn more about the CNMS or contact the FEMA Regional Office listed in Section 8 of this FIS Report.

6.5.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Habersham County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBMs) and/or Flood Boundary and Floodway Maps (FBFMs) may have been prepared for the incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table 28, "Community Map History." A description of each of the column headings and the source of the date is also listed below.

- *Community Name* includes communities falling within the geographic area shown on the FIRM, including those that fall on the boundary line, nonparticipating communities, and communities with maps that have been rescinded. Communities with No Special Flood Hazards are indicated by a footnote. If all maps (FHBM, FBFM, and FIRM) were rescinded for a community, it is not listed in this table unless SFHAs have been identified in this community.

- *Initial Identification Date (First NFIP Map Published)* is the date of the first NFIP map that identified flood hazards in the community. If the FHBM has been converted to a FIRM, the initial FHBM date is shown. If the community has never been mapped, the upcoming effective date or "pending" (for Preliminary FIS Reports) is shown. If the community is listed in Table 28 but not identified on the map, the community is treated as if it were unmapped.

- *Initial FHBM Effective Date* is the effective date of the first Flood Hazard Boundary Map (FHBM). This date may be the same date as the Initial NFIP Map Date.

- *FHBM Revision Date(s)* is the date(s) that the FHBM was revised, if applicable.

- *Initial FIRM Effective Date* is the date of the first effective FIRM for the community. This is the first effective date that is shown on the FIRM panel.

- *FIRM Revision Date(s)* is the date(s) the FIRM was revised, if applicable. This is the revised date that is shown on the FIRM panel, if applicable. As countywide studies are completed or revised, each community listed should have its FIRM dates updated accordingly to reflect the date of the countywide study. Once the FIRMs exist in countywide format, as Physical Map Revisions (PMR) of FIRM panels within the county are completed, the FIRM Revision Dates in the table for each community affected by the PMR are updated with the date of the PMR, even if the PMR did not revise all the panels within that community.

The initial effective date for the Habersham County FIRMs in countywide format was 6/2/2009.

Table 28: Community Map History

Community Name	Initial Identification Date (First NFIP Map Published)	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
City of Baldwin	1/23/1976	1/23/1976	N/A	6/2/2009	1/23/1976
City of Clarkesville	6/21/1974	6/21/1974	2/6/1976	2/17/1988	6/2/2009 2/17/1988 2/6/1976
City of Cornelia	4/11/1975	4/11/1975	N/A	8/1/1986	6/2/2009 8/1/1986 4/11/1975
City of Demorest	4/4/1975	4/4/1975	N/A	6/2/2009	4/4/1975
Habersham County Unincorporated Areas	2/24/1978	2/24/1978	N/A	4/2/1991	6/2/2009 2/24/1978
Town of Alto	4/2/1991	N/A	N/A	4/2/1991	6/2/2009
Town of Mount Airy*	6/2/2009	N/A	N/A	6/2/2009	N/A
Town of Tallulah Falls	4/25/1975	4/25/1975	N/A	8/13/1982	6/2/2009 8/13/1982 4/25/1975

*No Special Flood Hazard Areas Identified

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

Table 29 provides a summary of the contracted studies, by flooding source that are included in this FIS Report.

Table 29: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
All Studied Streams Within Habersham County	To Be Determined	Atkins North America, Atlanta Office	EMA-2012-CA-5264	7/2/2015	Habersham County and Incorporated Areas

7.2 Community Meetings

The dates of the community meetings held for this FIS project and any previous FIS projects are shown in Table 30. These meetings may have previously been referred to by a variety of names (Community Coordination Officer (CCO), Scoping, Discovery, etc.), but all meetings represent opportunities for FEMA, community officials, study contractors, and other invited guests to discuss the planning for and results of the project.

Table 30: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Habersham County and Incorporated Areas	To Be Determined	11/12/13	Project Discovery	ATKINS, City of Baldwin, City of Clarksville, FEMA, GEMA, Georgia DNR, Georgia Mountains Regional Commission, Habersham County
Habersham County and Incorporated Areas	06/02/09	01/18/06	Scoping	FEMA, Georgia DNR, PBS&J
		02/05/08	Final CCO	City of Baldwin, City of Clarksville, City of Cornelia, City of Demorest, FEMA, Georgia DNR, Habersham County, PBS&J, Town of Alto, Town of Mount Airy, Town of Tallulah Falls
Habersham County Unincorporated Areas	04/02/91	12/28/87	Initial CCO	FEMA, Habersham County, PBS&J
		05/15/90	Final CCO	FEMA, Habersham County, PBS&J
City of Clarkesville	02/17/88	03/04/87	Final CCO	City of Clarksville, FEMA, PBS&J

SECTION 8.0 – 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.

Table 31 is a list of the locations where FIRMs for Habersham 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 31: Map Repositories

Community	Address	City	State	Zip Code
Town of Alto	Town Hall 162 South Grant Street	Alto	GA	30510
City of Baldwin	City Hall 130 Airport Road	Baldwin	GA	30511
City of Clarkesville	City Hall 123 North Laurel Drive	Clarkesville	GA	30523
City of Cornelia	City Hall 181 Larkin Street	Cornelia	GA	30531
City of Demorest	City Hall 546 Georgia Street	Demorest	GA	30535
Habersham County Unincorporated Areas	Habersham County Planning and Development Department 555 Monroe Street, Suite 70	Clarkesville	GA	30523
Town of Mount Airy	Town Hall 869 Dick's Hill Parkway	Mount Airy	GA	30563
Town of Tallulah Falls	Town Hall 255 Main Street	Tallulah Falls	GA	30573

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table 32

Table 32 contains useful contact information regarding the FIS Report, the FIRM, and other relevant flood hazard and GIS data. In addition, information about the state NFIP Coordinator and GIS Coordinator is shown in this table. At the request of FEMA, each Governor has designated an agency of State or territorial government to coordinate that State's or territory's NFIP activities. These agencies often assist communities in developing and adopting necessary floodplain management measures. State GIS Coordinators are knowledgeable about the availability and location of state and local GIS data in their state.

Table 32: Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	http://www.fema.gov
NFIP website	http://www.fema.gov/business/nfip
NFHL Dataset	http://msc.fema.gov
FEMA Region IV	3003 Chamblee Tucker Road Atlanta, GA 30341 (770) 220-5515
Other Federal Agencies	
USGS website	http://www.usgs.gov
Hydraulic Engineering Center website	http://www.hec.usace.army.mil
State Agencies and Organizations	
State NFIP Coordinator	State National Floodplain Insurance Program (NFIP) Coordinator Tom Shillock, CFM Georgia Department of Natural Resources 4220 International Parkway, Ste. 101 Atlanta, GA 30354 (404) 675-1607 Tom.Shillock@dnr.state.ga.us
State GIS Coordinator	State GIS Coordinator Lisa Westin Senior GIS Specialist Department of Community Affairs 60 Executive Park South, N.E. Atlanta, GA 30329 404-679-3125 lwestin@dca.state.ga.us

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table 33 includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

Table 33: Bibliography and References

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
FEMA 2009	Federal Emergency Management Agency	*Flood Insurance Study, Habersham County, Georgia and Unincorporated Areas*	Federal Emergency Management Agency	Washington, D.C.	June 2009	FEMA Flood Map Service Center msc.fema.gov msc.fema.gov
Photo Science 2010	Photo Science Inc.	*Lake Lanier, GA, ARRA LIDAR*	Photo Science Inc.	Lexington, KY	06/17/2010	