

# FLOOD INSURANCE STUDY

## FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 1



## CARROLL COUNTY, GEORGIA

### AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
BOWDON, CITY OF	130244
CARROLL COUNTY UNINCORPORATED AREAS	130464
CARROLLTON, CITY OF	130208
MOUNT ZION, CITY OF	130286
ROOPVILLE, CITY OF*	130287
TEMPLE, CITY OF	130288
VILLA RICA, CITY OF	130289
WHITESBURG, CITY OF*	130503

\*No Special Flood Hazard Areas Identified



# FEMA

**PRELIMINARY**

**MAY 12 2016**

**REVISED:**

**TBD**

FLOOD INSURANCE STUDY NUMBER

**13045CV001C**

Version Number 2.3.3.3

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**Volume 1**  
**Exhibits**

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Buck Creek	05 P
Buffalo Creek	06-09 P
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Buffalo Creek Tributary 2	11 P
Chandler's Spring Creek	12-13 P
Chattahoochee River	13A P-13E P
Curtis Creek	14 P
Curtis Creek Tributary 1	15-17 P
Curtis Creek Tributary 3	18 P
Keaton Creek Tributary 1	18A P-18B P
Keaton Creek Tributary 2	18C P
Little Tallapoosa River	19-26 P
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Sweetwater Creek	31 P
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**Published Separately**

Flood Insurance Rate Map (FIRM)

# FLOOD INSURANCE STUDY REPORT CARROLL COUNTY, GEORGIA

## 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 Carroll County, Georgia.

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
City of Bowdon	130244	03150108	13045C0210D 13045C0220D 13045C0230D 13045C0240D	
City of Bremen <sup>1,2</sup>	130335	03150108	13045C0108D* 13045C0109D* 13045C0115D 13045C0116D 13045C0117D	Haralson County FIS Report, 2008

<sup>1</sup> No Special Flood Hazard Areas Identified

<sup>2</sup> Area not included

\* Panel not Printed

**Table 2: Listing of NFIP Jurisdictions continued**

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Carroll County, Unincorporated Areas	130464	03130002, 03150108	13045C0020D	
			13045C0040D	
			13045C0043D	
			13045C0044D	
			13045C0045D	
			13045C0090D*	
			13045C0095D	
			13045C0108D*	
			13045C0109D*	
			13045C0115D	
			13045C0116D	
			13045C0117D	
			13045C0120D	
			13045C0130D	
			13045C0135D	
			13045C0140D	
			13045C0145D	
			13045C0152D	
			13045C0154D	
			13045C0155D	
			13045C0157E	
			13045C0158D	
			13045C0159E	
			13045C0165D	
			13045C0170D	
			13045C0205D*	
			13045C0210D	
			13045C0215D*	
			13045C0220D	
			13045C0230D	
13045C0235D				
13045C0240D				
13045C0245D				
13045C0251D				
13045C0252D				
13045C0253D				
13045C0256D				

\* Panel not Printed

**Table 2: Listing of NFIP Jurisdictions continued**

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Carroll County, Unincorporated Areas	130464	03130002, 03150108	13045C0258D 13045C0260D 13045C0261D 13045C0262D 13045C0265D 13045C0270D 13045C0280D 13045C0285D 13045C0290D 13045C0295D 13045C0305E 13045C0310E 13045C0315E 13045C0335D 13045C0345D* 13045C0355D 13045C0360D 13045C0365D* 13045C0370D* 13045C0380D 13045C0385D 13045C0390D 13045C0395E 13045C0405E 13045C0410E 13045C0415E 13045C0420E 13045C0430E	
City of Carrollton	130208	03130002, 03150108	13045C0140D 13045C0235D 13045C0251D 13045C0252D 13045C0253D 13045C0254D 13045C0256D 13045C0258D 13045C0260D 13045C0261D	

\* Panel not Printed

**Table 2: Listing of NFIP Jurisdictions continued**

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
City of Carrollton	130208	03130002, 03150108	13045C0262D 13045C0270D	
City of Mount Zion	130286	03150108	13045C0115D 13045C0116D 13045C0120D 13045C0230D 13045C0235D	
City of Roopville <sup>1</sup>	130287	03130002, 03150108	13045C0360D 13045C0380D	
City of Temple	130288	03150108	13045C0020D 13045C0135D 13045C0155D	
City of Villa Rica	130289	03130002, 03150108	13045C0040D 13045C0043D 13045C0044D 13045C0063E 13045C0152D 13045C0154D 13045C0155D 13045C0156D 13045C0157E 13045C0158D 13045C0159E 13045C0165D 13045C0170D 13045C0176E	
City of Whitesburg <sup>1</sup>	130503	03130002	13045C0295D 13045C0410E	

<sup>1</sup> No Special Flood Hazard Areas Identified

#### 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

## **Table 2: Listing of NFIP Jurisdictions continued**

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.

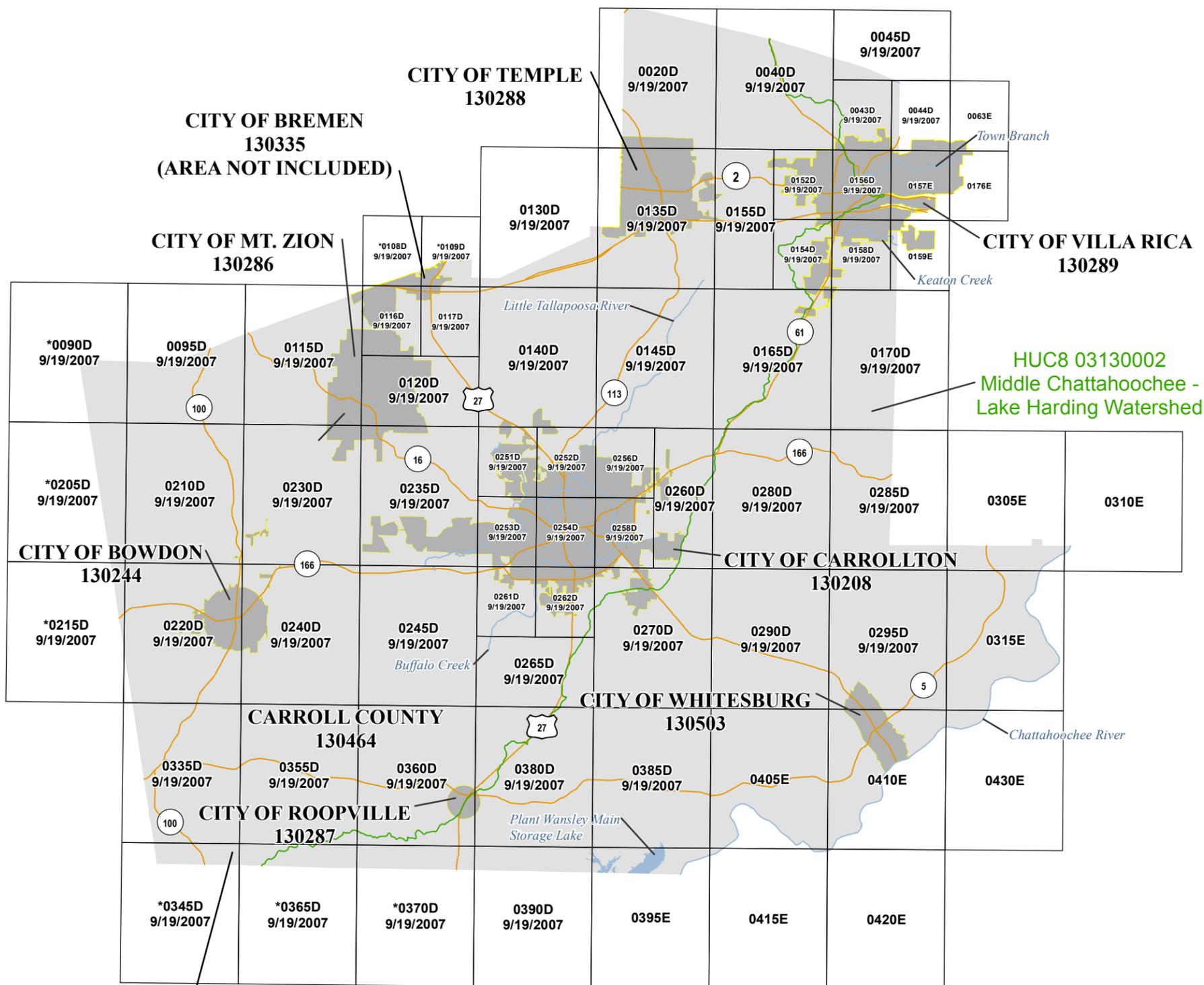
- Part or all of this FIS Report may be revised and republished at any time. In addition, part of this FIS Report may be revised by a Letter of Map Revision (LOMR), which does not involve republication or redistribution of the FIS Report. Refer to Section 6.5 of this FIS Report for information about 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 Carroll County became effective on September 19, 2007. Refer to Table 28 for information about subsequent revisions to the FIRMs.

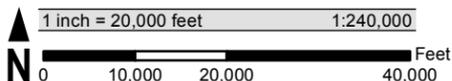
Figure 1: FIRM Panel Index



HUC8 03150108  
Upper Tallapoosa  
Watershed

**PRELIMINARY**  
**5/12/2016**

**ATTENTION:** The corporate limits shown on this FIRM Index are based on the best information available at the time of publication. As such, they may be more current than those shown on FIRM panels issued before MONTH DAY, YEAR.

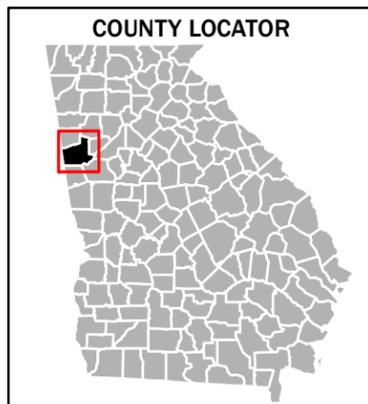


Map Projection:  
Georgia State Plane Zone 1002;  
North American Datum 1983

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT [HTTP://MSC.FEMA.GOV](http://MSC.FEMA.GOV)

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

\*PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS



**NATIONAL FLOOD INSURANCE PROGRAM**  
FLOOD INSURANCE RATE MAP PANEL INDEX

CARROLL COUNTY, GEORGIA and Incorporated Areas

PANELS PRINTED:

0020, 0040, 0043, 0044, 0045, 0063, 0095, 0115, 0116, 0117, 0120, 0130, 0135, 0140, 0145, 0152, 0154, 0155, 0156, 0157, 0158, 0159, 0165, 0170, 0176, 0210, 0220, 0230, 0235, 0240, 0245, 0251, 0252, 0253, 0254, 0256, 0258, 0260, 0261, 0262, 0265, 0270, 0280, 0285, 0290, 0295, 0305, 0310, 0315, 0335, 0355, 0360, 0380, 0385, 0390, 0395, 0405, 0410, 0415, 0420, 0430



FEMA

MAP NUMBER  
13045CINDOC  
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 Flood Map Service Center website at [msc.fema.gov](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 Flood 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

**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 Georgia State Plane Zone 1002. The horizontal datum was North American Datum 1983, GRS 1980 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 the 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 the 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 by Carroll County and Douglas County. Ortho imagery was originally produced by Carroll County in connection with Multi County Cooperative Purchase in 2010 and by Douglas County in 2013 with 1":100' scale and 0.5 foot resolution. For information about base maps, refer to Section 6.2 "Base Map" in this FIS Report.

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.

**Figure 2. FIRM Notes to Users**

**NOTES FOR FIRM INDEX**

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Carroll County, GA, 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.

**SPECIAL NOTES FOR SPECIFIC FIRM PANELS**

This Notes to Users section was created specifically for Carroll County, GA, effective TBD.

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.

Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Carroll County.

**Figure 3: Map Legend for FIRM**

<p><b>SPECIAL FLOOD HAZARD AREAS:</b> <i>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.</i></p>	
	<p>Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)</p>
<p>Zone A</p>	<p>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.</p>
<p>Zone AE</p>	<p>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.</p>
<p>Zone AH</p>	<p>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.</p>
<p>Zone AO</p>	<p>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.</p>
<p>Zone AR</p>	<p>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.</p>
<p>Zone A99</p>	<p>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.</p>
<p>Zone V</p>	<p>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.</p>
<p>Zone VE</p>	<p>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.</p>

**Figure 3: Map Legend for FIRM**

	<p>Regulatory Floodway determined in Zone AE.</p>
<p><b>OTHER AREAS OF FLOOD HAZARD</b></p>	
	<p>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.</p>
	<p>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.</p>
	<p>Area with Reduced Flood Risk due to Levee: Areas where an accredited levee, dike, or other flood control structure has reduced the flood risk from the 1% annual chance flood. See Notes to Users for important information.</p>
<p><b>OTHER AREAS</b></p>	
	<p>Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible</p>
	<p>Unshaded Zone X: Areas determined to be outside the 0.2% annual chance flood hazard</p>
<p><b>FLOOD HAZARD AND OTHER BOUNDARY LINES</b></p>	
	<p>Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)</p>
	<p>Limit of Study</p>
	<p>Jurisdiction Boundary</p>
	<p>Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet</p>
<p><b>GENERAL STRUCTURES</b></p>	
	<p>Channel, Culvert, Aqueduct, or Storm Sewer</p>
	<p>Dam, Jetty, Weir</p>

**Figure 3: Map Legend for FIRM**

	Levee, Dike, or Floodwall
<p style="text-align: center;">Bridge</p>	Bridge
<p><b>COASTAL BARRIER RESOURCES SYSTEM (CBRS) AND OTHERWISE PROTECTED AREAS (OPA):</b> <i>CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas. See Notes to Users for important information.</i></p>	
	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.
<p style="text-align: center;">CBRS AREA 09/30/2009</p>	
	Otherwise Protected Area
<p style="text-align: center;">OTHERWISE PROTECTED AREA 09/30/2009</p>	
<p><b>REFERENCE MARKERS</b></p>	
	River mile Markers
<p><b>CROSS SECTION &amp; TRANSECT INFORMATION</b></p>	
	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)
<p style="text-align: center;">ZONE AE (EL 16)</p>	Static Base Flood Elevation value (shown under zone label)
<p style="text-align: center;">ZONE AO (DEPTH 2)</p>	Zone designation with Depth

**Figure 3: Map Legend for FIRM**

<p><b>ZONE AO (DEPTH 2) (VEL 15 FPS)</b></p>	<p>Zone designation with Depth and Velocity</p>
<p><b>BASE MAP FEATURES</b></p>	
<p> <i>Missouri Creek</i></p>	<p>River, Stream or Other Hydrographic Feature</p>
<p></p>	<p>Interstate Highway</p>
<p></p>	<p>U.S. Highway</p>
<p></p>	<p>State Highway</p>
<p></p>	<p>County Highway</p>
<p><u>MAPLE LANE</u></p>	<p>Street, Road, Avenue Name, or Private Drive if shown on Flood Profile</p>
<p> <i>RAILROAD</i></p>	<p>Railroad</p>
<p></p>	<p>Horizontal Reference Grid Line</p>
<p></p>	<p>Horizontal Reference Grid Ticks</p>
<p></p>	<p>Secondary Grid Crosshairs</p>
<p>Land Grant</p>	<p>Name of Land Grant</p>
<p>7</p>	<p>Section Number</p>
<p>R. 43 W. T. 22 N.</p>	<p>Range, Township Number</p>
<p><sup>42</sup>76<sup>000m</sup>E</p>	<p>Horizontal Reference Grid Coordinates (UTM)</p>
<p><b>365000 FT</b></p>	<p>Horizontal Reference Grid Coordinates (State Plane)</p>
<p><b>80° 16' 52.5"</b></p>	<p>Corner Coordinates (Latitude, Longitude)</p>

## **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 Carroll 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 Carroll County, GA, 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**

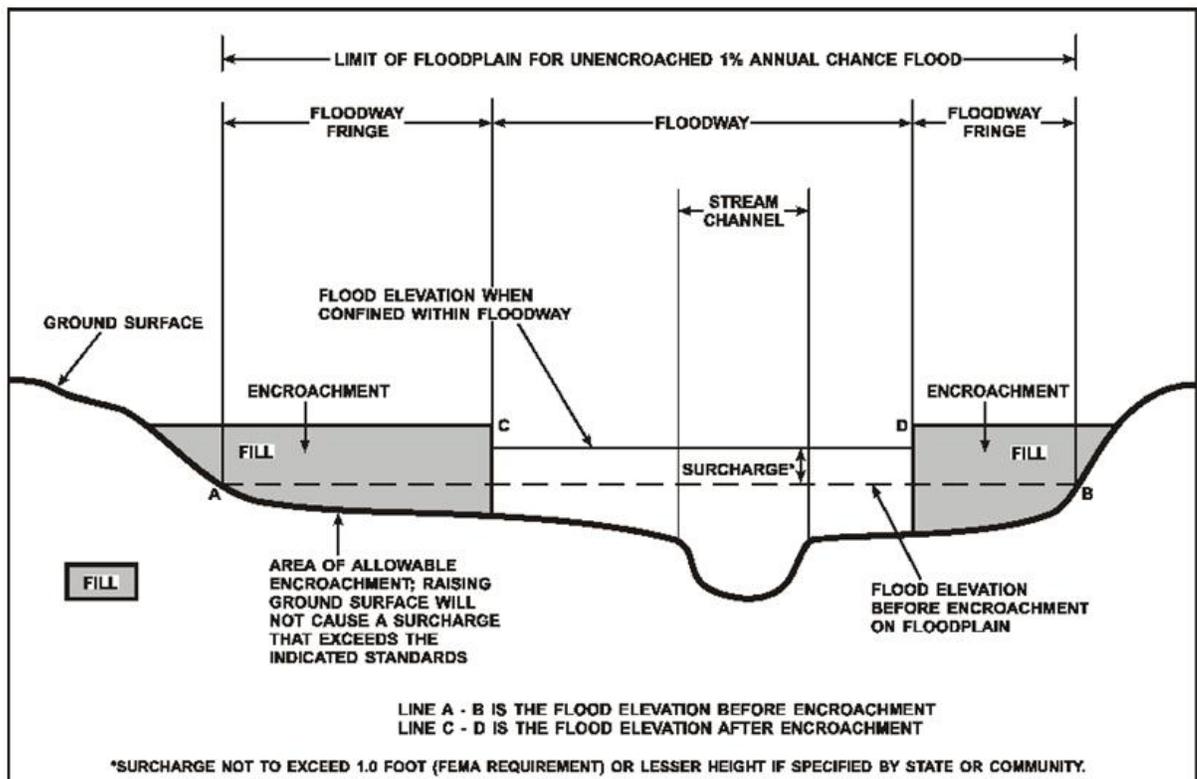
Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the

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 Carroll County to limit increases caused by encroachment to 1.0 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**



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."

**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 <sup>2</sup> ) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
All Zone A Streams in HUC-8 03130002	Carroll County and Incorporated Areas	Various	Various	03130002	89.5		N	A	1976
All Zone A Streams in HUC-8 03150108	Carroll County and Incorporated Areas	Various	Various	03150108	152.7		N	A	1976
Beulah Creek	City of Carrollton	Confluence of Little Tallapoosa River	Approximately 45 feet downstream of Railroad	03130002	1.2		Y	AE	1976
Beulah Creek	City of Carrollton	Approximately 45 feet downstream of Railroad	Approximately 160 feet upstream of Industrial Court	03130002	0.1		N	A	1976
Beulah Creek Tributary	City of Carrollton	Confluence of Beulah Creek	Approximately 1,130 feet upstream of Columbia Drive	03130002	0.3		Y	AE	1976
Buck Creek	Carroll County Unincorporated Areas, City of Carrollton	Confluence of Little Tallapoosa River	Approximately 150 feet upstream of Bagwell Road	03130002	4.0		N	A	1976
Buck Creek	Carroll County Unincorporated Areas, City of Carrollton	Approximately 150 feet upstream of Bagwell Road	Approximately 3,667 feet upstream of Bagwell Road	03130002	0.7		Y	AE	1976
Buck Creek	Carroll County Unincorporated Areas, City of Carrollton	Approximately 3,667 feet upstream of Bagwell Road	Haralson County boundary	03130002	9.5		N	A	1976

**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 <sup>2</sup> ) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Buffalo Creek	Carroll County Unincorporated Areas, City of Carrollton	Confluence of Little Tallapoosa River	Approximately 520 feet downstream of Laurel Road	03130002	4.1		N	A	1976
Buffalo Creek	Carroll County Unincorporated Areas, City of Carrollton	Approximately 520 feet downstream of Laurel Road	Approximately 470 feet upstream of Newman Road	03130002	6.9		Y	AE	1976
Buffalo Creek Tributary 1	City of Carrollton	Confluence of Buffalo Creek	Approximately 70 feet upstream of Adamson Avenue	03130002	0.6		Y	AE	1976
Buffalo Creek Tributary 2	City of Carrollton	Confluence of Buffalo Creek	140 feet upstream of U.S. Highway 27	03130002	2.9		Y	AE	1976
Chandler's Spring Creek	City of Carrollton	Confluence of Little Tallapoosa River	At Spring Street	03130002	0.9		Y	AE	1976
Chattahoochee River	Carroll County Unincorporated Areas, City of Whitesburg	Heard County boundary	Fulton County boundary	03150108	14.9		Y	AE	2013
Chattahoochee River	Carroll County Unincorporated Areas	Coweta County boundary	Douglas County boundary	03150108	8.6		Y	AE	2007
Curtis Creek	City of Carrollton	Confluence of Little Tallapoosa River	Approximately 760 feet upstream of Bankhead Highway	03130002	1.9		Y	AE	1976
Curtis Creek	Carroll County Unincorporated Areas, City of Carrollton	Approximately 760 feet upstream of Bankhead Highway	Approximately 2,280 feet upstream of Folds Road	03130002	2.4		N	A	1976

**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 <sup>2</sup> ) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Curtis Creek Tributary 1	City of Carrollton	Confluence of Curtis Creek	At Old Newman Road	03130002	1.3		Y	AE	1976
Curtis Creek Tributary 3	City of Carrollton	Confluence of Curtis Creek	Approximately 270 feet upstream of Northlake Drive	03130002	0.5		Y	AE	1976
Curtis Creek Tributary 3	Carroll County Unincorporated Areas, City of Carrollton	Approximately 270 feet upstream of Northlake Drive	Approximately 2,170 feet upstream of Northlake Drive	03130002	0.4		N	A	1976
Keaton Creek Tributary 1	City of Villa Rica	Approximately 250 feet downstream of the City of Villa Rica	Approximately 290 feet upstream of confluence with Tributary B to Keaton Creek Tributary 1	03130002	1.5		Y	AE	2015
Keaton Creek Tributary 2	City of Villa Rica	Approximately 1,140 feet upstream of Confluence with Keaton Creek	Approximately 583 feet downstream of Liberty Road	03130002	1.2		Y	AE	2015
Little Tallapoosa River	Carroll County Unincorporated Areas	Randolph County boundary	Approximately 360 feet downstream of State Route 166	03130002	21.2		N	A	1976
Little Tallapoosa River	Carroll County Unincorporated Areas, City of Carrollton	Approximately 360 feet downstream of State Route 166	Approximately 880 feet upstream of the confluence of Bethel Creek	03130002	17.6		Y	AE	1976
Little Tallapoosa River	Carroll County Unincorporated Areas, City of Villa Rica	Approximately 880 feet upstream of the confluence of Bethel Creek	Approximately 4,550 feet upstream of Lake Paradise Road	03130002	7.3		N	A	1976

**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 <sup>2</sup> ) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Little Tallapoosa River Tributary	City of Carrollton	Confluence of Little Tallapoosa River	Approximately 90 feet upstream of Cherry Drive	03130002	1.1		Y	AE	1976
Nalley Creek	City of Villa Rica	At City of Villa Rica boundary	Approximately 665 feet upstream of City of Villa Rica boundary	03130002	0.5		Y	AE	2015
Sweetwater Creek	Carroll County Unincorporated Areas	Paulding County boundary	Approximately 1,300 feet upstream of Paulding County boundary	03150108	0.3		Y	AE	1977
Sweetwater Creek	Carroll County Unincorporated Areas	Approximately 1,300 feet upstream of Paulding County boundary	Paulding County boundary	03150108	0.7		N	A	1976
Tanyard Branch	City of Carrollton	Confluence of Little Tallapoosa River	Approximately 220 feet upstream of Alabama Street	03130002	1.1		Y	AE	1976
Town Branch	City of Villa Rica	City of Villa Rica, Douglas County corporate limits	Approximately 3,800 feet upstream of Mirror Lake Parkway	03150108	1.5		Y	AE	1976
Town Branch	City of Villa Rica	Approximately 3,800 feet upstream of Mirror Lake Parkway	Approximately 340 feet upstream of Walker Street	03150108	2.2		N	A	2006
Tributary A to Nalley Creek	City of Villa Rica	Approximately 530 feet upstream of Tyson Road	Approximately 735 feet upstream of confluence with Tyson Road	03130002	0.05		Y	AE	2015

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 1% 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.

Regulations for Georgia require communities in Carroll County to limit increases caused by encroachment to 1.0 foot and several communities have adopted additional restrictions for non-encroachment areas.

Non-encroachment determinations may be delineated where it is not possible to delineate floodways because specific channel profiles with bridge and culvert geometry were not developed. Any non-encroachment determinations for this FIS project have been tabulated for selected cross sections and are shown in Table 25, “Flood Hazard and Non-Encroachment Data for Selected Streams.”

## **2.5 Coastal Flood Hazard Areas**

This section is not applicable to this Flood Risk Project.

### **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 Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Carroll County.

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 Carroll County.

**Table 3: Flood Zone Designations by Community**

Community	Flood Zone(s)
Bowdon, City of	A, X
Carroll County, Unincorporated Areas	A, AE, X
Carrollton, City of	A, AE, X
Mount Zion, City of	A, X

**Table 3: Flood Zone Designations by Community continued**

Roopville, City of <sup>1</sup>	X
Temple, City of	A, X
Villa Rica, City of	A, AE, X
Whitesburg, City of <sup>1</sup>	A, AE, X

<sup>1</sup> No Special Flood Hazard Areas Identified

### 3.2 Coastal Barrier Resources System

This section is not applicable to this Flood Risk Project.

**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)
Middle Chattahoochee – Lake Harding Watershed	03130002	Chattahoochee River	Encompasses the southeastern half of the county	3,060
Upper Tallapoosa Watershed	03150108	Tallapoosa River	Encompasses the northwestern half of the county	1,400

### 4.2 Principal Flood Problems

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

**Table 6: Principal Flood Problems**

Flooding Source	Description of Flood Problems
All Sources	Several streams, including the Little Tallapoosa River, Buffalo Creek, and Bethel Creek are subject to flooding during any month. Most of the major flood problems existing in the county are in low-lying agricultural areas.

**Table 6: Principal Flood Problems continued**

Flooding Source	Description of Flood Problems
All Sources	The floodplains are covered with natural brush and undergrowth except for a subdivision development which has encroached on the portion of the floodplain downstream of King's Bridge Road. The undergrowth tends to impede flood flows along the rivers, particularly below Alabama Street. The City of Carrollton's waste stabilization pond and portions of its 5 million gallons per day, extended aeration plant are subject to flooding by the Little Tallapoosa River.
Chattahoochee River	Most recently, extensive flooding occurred in Coweta County following the historical flooding event of September 2009, when the Chattahoochee River reached a record high flood stage of 29.74 feet at City of Whitesburg. During the September 2009 storm, much of the flood losses can be attributed to the backwater effects of the Chattahoochee River. Resulted in prolonged rainfall and precipitation totals that were as high as 20 inches in some areas.

Table 7 contains information about historic flood elevations in the communities within Carroll 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 Carroll 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
Buffalo Creek	Flood-Retarding Structures & Richland Lake	Flood-Retarding Structures & Richland Lake	Upper portions of stream	Attenuate flood flows
Curtis Creek	Flood-Retarding Structures & Richland Lake	Flood-Retarding Structures & Richland Lake	Upper portions of stream	Attenuate flood flows
Little Tallapoosa River	Fourteen SCS Flood-Retarding Structures	Flood-Retarding Structures & Lake Carroll	Along Little Tallapoosa River	Attenuate flood flows

#### 4.4 Levees

This section is not applicable to this FIS project.

## **Table 9: Levees**

[Not Applicable to this FIS 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.

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	0.2% Annual Chance
Buck Creek	Approximately 19,550 feet upstream of the confluence with Possum Branch	22.1	2,700	*	3,850	4,700	5,800
Buffalo Creek	At Laurel Road	15.8	*	*	*	5,345	7,191
Buffalo Creek	Just upstream of Buffalo Creek Road	11.3	*	*	*	4,350	5,849
Buffalo Creek	Approximately 500 feet downstream of Martin Cemetery Road	8.3	*	*	*	3,316	4,215
Buffalo Creek	Approximately 2,100 feet downstream of Hayes Mill Road	1.8	510	*	900	1,000	1,400
Chattahoochee River	At Coweta/Heard County boundary	2,528.0	44,820	*	59,866	66,378	82,143
Chattahoochee River	At State Highway 16	2,430.0	43,387	*	57,897	64,170	79,342
Keaton Creek Tributary 1	Approximately 3,360 feet downstream of West Tyson Road	1.2	2,053	2,767	3,332	3,915	5,437
Keaton Creek Tributary 1	Approximately 75 feet downstream of West Tyson Road	0.9	1,820	2,431	2,914	3,411	4,707

**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	0.2% Annual Chance
Keaton Creek Tributary 1	Approximately 520 feet downstream of I- 20	0.5	992	1,352	1,641	1,939	2,722
Keaton Creek Tributary 1	Approximately 470 feet downstream of I- 20	0.3	905	1,224	1478	1735	2403
Keaton Creek Tributary 2	At the City of Villa Rica Boundary	0.8	2,185	3,348	4,274	5,233	7,729
Keaton Creek Tributary 2	Approximately 1,930 feet downstream of Liberty Road	0.5	1,987	3,016	3,821	4,663	6,861
Little Tallapoosa River	At State Highway 166	146.0	6,607	*	9,586	10,797	13,584
Little Tallapoosa River	At confluence of Buck Creek	104.4	5,419	*	7,890	8,916	11,255
Little Tallapoosa River	Approximately 800 feet upstream of McKenzie Bridge Road	73.1	*	*	*	7,280	9,223
Little Tallapoosa River	Just upstream of confluence of Hominy Creek	53.1	*	*	*	6,065	7,708
Nalley Creek	At HWY 78	0.7	512	735	912	1,098	1,580
Sweetwater Creek	At Douglas County Boundary	13.2	1,646	*	2,289	2,569	2,238
Town Branch	Downstream of Lake Val-Do-Mar	3.1	1,088	*	1,668	1,927	2,595

**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	0.2% Annual Chance
Tributary A to Nalley Creek	At City of Villa Rica boundary	0.3	26	34	39	111	265

\*Not calculated for this FIS project

Figure 7: Frequency Discharge-Drainage Area Curves

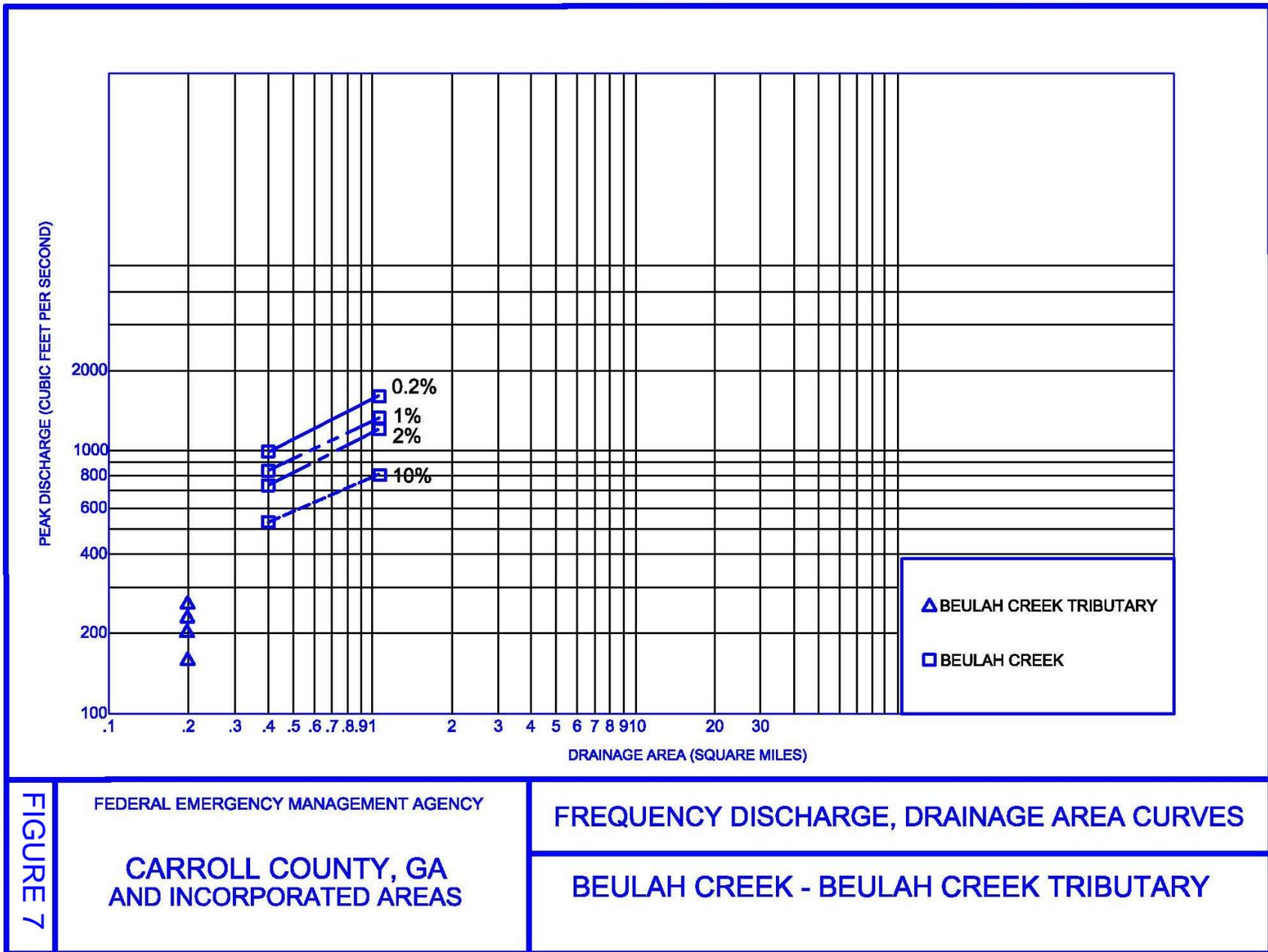


FIGURE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
AND INCORPORATED AREAS

FREQUENCY DISCHARGE, DRAINAGE AREA CURVES

BEULAH CREEK - BEULAH CREEK TRIBUTARY

Figure 7: Frequency Discharge-Drainage Area Curves

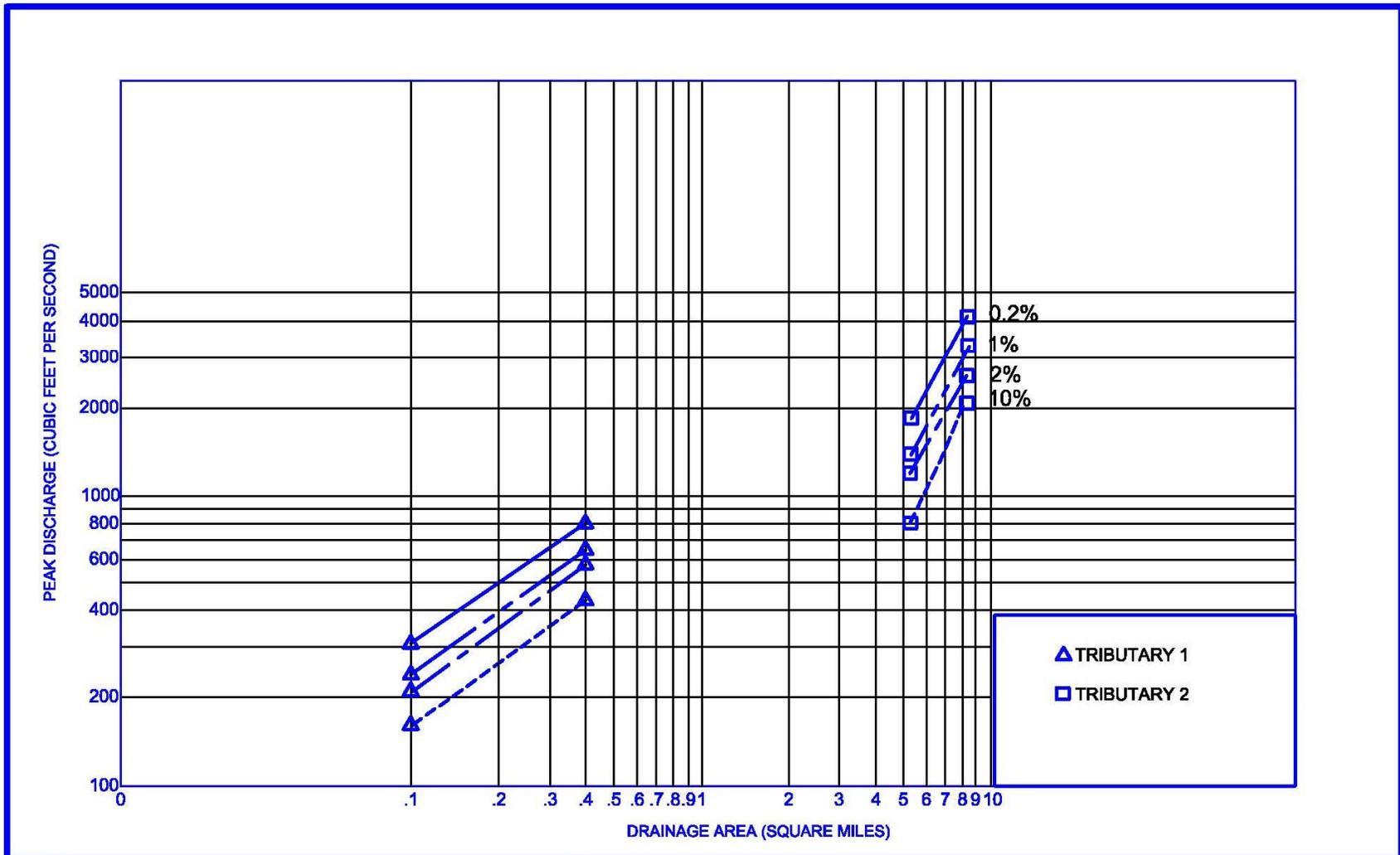


FIGURE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
AND INCORPORATED AREAS

FREQUENCY DISCHARGE, DRAINAGE AREA CURVES

BUFFALO CREEK TRIBUTARY 1 - BUFFALO CREEK  
TRIBUTARY 2

Figure 7: Frequency Discharge-Drainage Area Curves

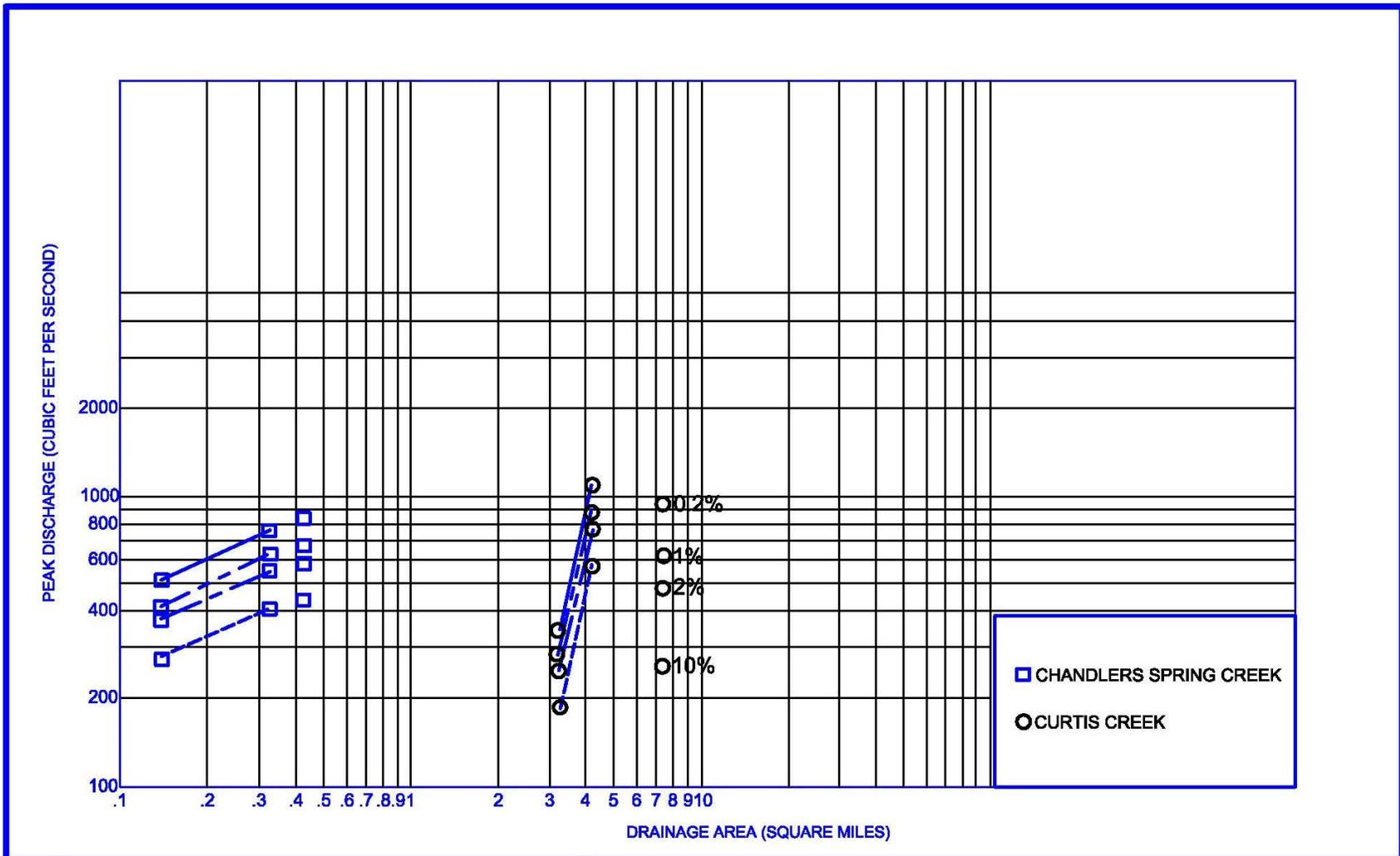


FIGURE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
AND INCORPORATED AREAS

FREQUENCY DISCHARGE, DRAINAGE AREA CURVES

CHANDLERS SPRING CREEK  
- CURTIS CREEK

Figure 7: Frequency Discharge-Drainage Area Curves

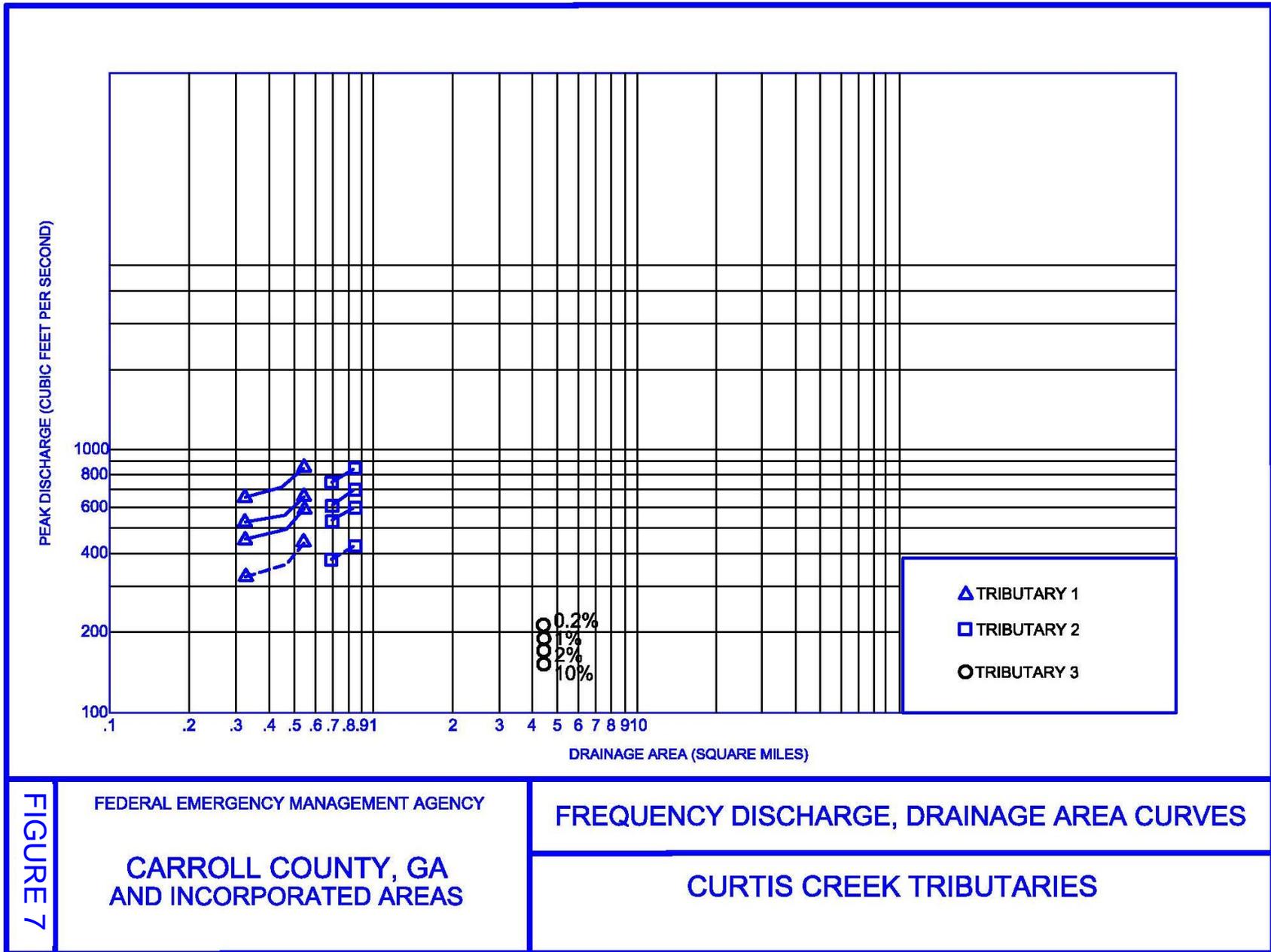


FIGURE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
AND INCORPORATED AREAS

FREQUENCY DISCHARGE, DRAINAGE AREA CURVES

CURTIS CREEK TRIBUTARIES

Figure 7: Frequency Discharge-Drainage Area Curves

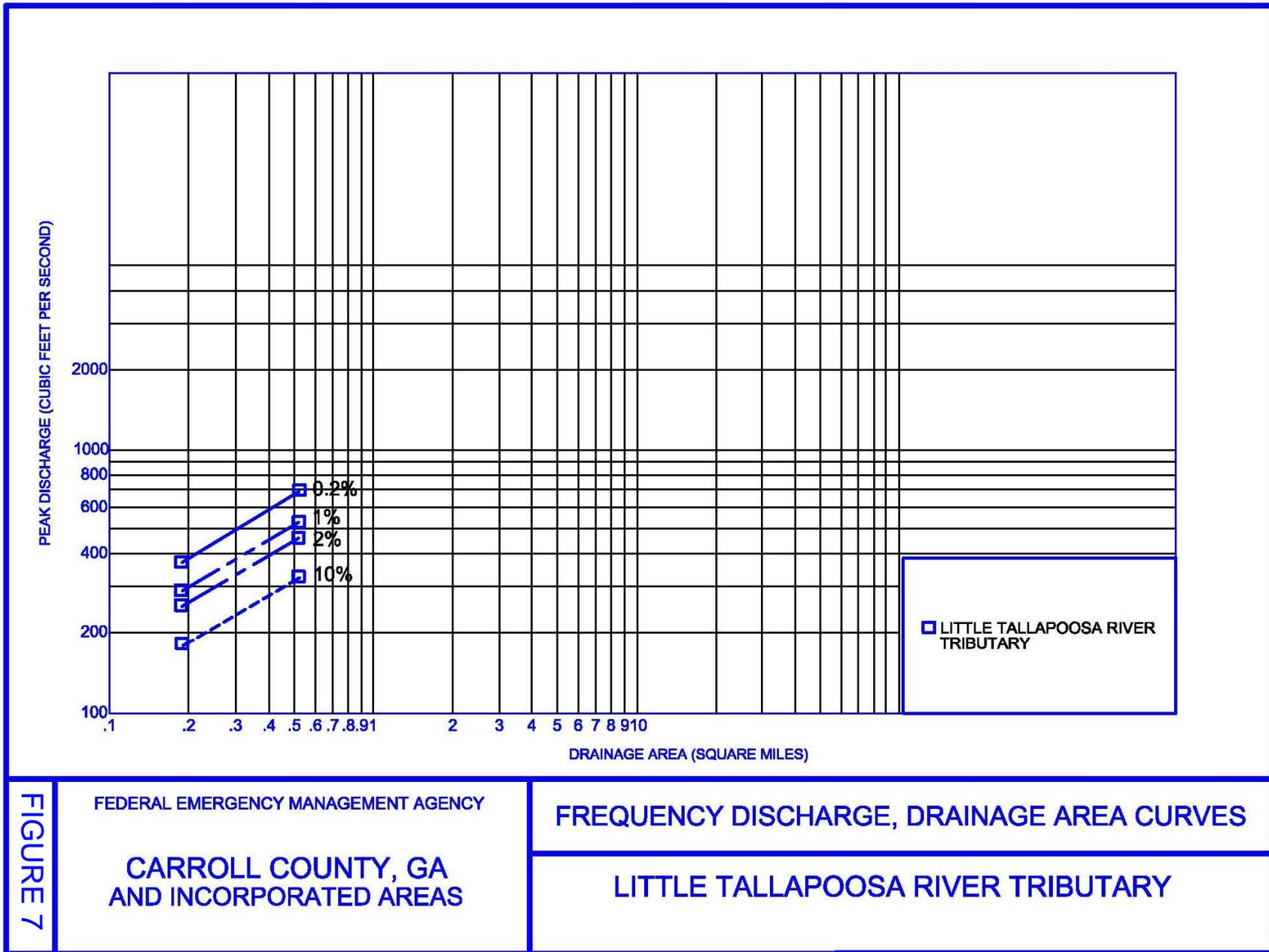


FIGURE 7

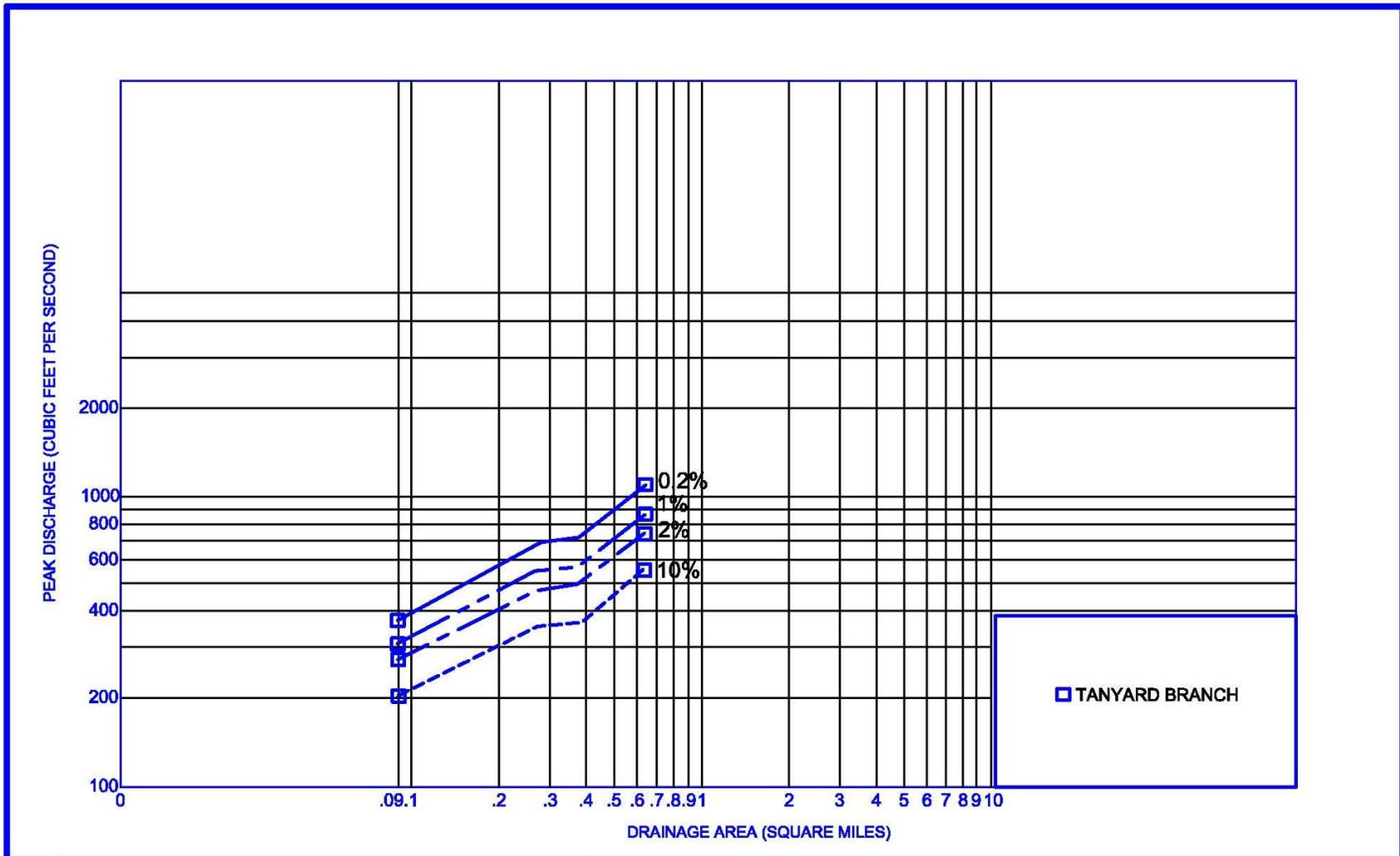
FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
AND INCORPORATED AREAS

FREQUENCY DISCHARGE, DRAINAGE AREA CURVES

LITTLE TALLAPOOSA RIVER TRIBUTARY

Figure 7: Frequency Discharge-Drainage Area Curves



**FIGURE 7**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**CARROLL COUNTY, GA  
AND INCORPORATED AREAS**

**FREQUENCY DISCHARGE, DRAINAGE AREA CURVES**

**TANYARD BRANCH**

**Table 11: Summary of Non-Coastal Stillwater Elevations**

Flooding Source	Location	Elevations (feet NAVD88)				
		10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Town Branch	City of Villa Rica	*	*	*	1,026	*

\*Not calculated for this FIS 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	02337170	USGS	Chattahoochee River near Fairburn, GA	2,060	1886	2013
Chattahoochee River	02338000	USGS	Chattahoochee River near Whitesburg, GA	2,430	1886	2013
Little Tallapoosa River	02413000	USGS	Little Tallapoosa River at U.S. Highway 27, at Carrollton, GA	95.1	1936	1965
Sweetwater Creek	02337000	USGS	Sweetwater Creek near Austell, GA in Cobb County	238.0	1904	1977

## 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					
All Zone A Streams in HUC-8 03130002	Various	Various	N/A	Digital Conversion	11/01/1976	A	
All Zone A Streams in HUC-8 03150108	Various	Various	N/A	Digital Conversion	11/01/1976	A	
Beulah Creek	Confluence of Little Tallapoosa River	Approximately 45 feet downstream of Railroad	HEC-1	HEC-2	11/01/1976	AE w/ floodway	Floodways were not computed for portions.
Beulah Creek	Approximately 45 feet downstream of Railroad	Approximately 160 feet upstream of Industrial Court	N/A	Digital Conversion	11/01/1976	A	
Beulah Creek Tributary	Confluence of Beulah Creek	Approximately 1,130 feet upstream of Columbia Drive	HEC-1	HEC-2	11/01/1976	AE w/ floodway	
Buck Creek	Confluence of Little Tallapoosa River	Approximately 150 feet upstream of Bagwell Road	N/A	Digital Conversion	11/01/1976	A	
Buck Creek	Approximately 150 feet upstream of Bagwell Road	Approximately 3,667 feet upstream of Bagwell Road	Regression Equations	HEC-2	11/01/1976	AE w/ floodway	Preliminary Flood-Frequency Relations for Urban Streams in Metropolitan Atlanta, Georgia.
Buck Creek	Approximately 3,667 feet upstream of Bagwell Road	Haralson County boundary	N/A	Digital Conversion	11/01/1976	A	
Buffalo Creek	Confluence of Little Tallapoosa River	Approximately 520 feet downstream of Laurel Road	N/A	Digital Conversion	11/01/1976	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					
Buffalo Creek	Approximately 520 feet downstream of Laurel Road	Approximately 470 feet upstream of Newman Road	Regression Equations	HEC-2	11/01/1976	AE w/ floodway	Floodways were not computed for portions.
Buffalo Creek Tributary 1	Confluence of Buffalo Creek	Approximately 70 feet upstream of Adamson Avenue	Regression Equations	HEC-2	11/01/1976	AE w/ floodway	Preliminary Flood-Frequency Relations for Urban Streams in Metropolitan Atlanta, Georgia.
Buffalo Creek Tributary 2	Confluence of Buffalo Creek	140 feet upstream of U.S. Highway 27	Regression Equations	HEC-2	11/01/1976	AE w/ floodway	Preliminary Flood-Frequency Relations for Urban Streams in Metropolitan Atlanta, Georgia.
Chandler's Spring Creek	Confluence of Little Tallapoosa River	At Spring Street	Regression Equations	HEC-2	11/01/1976	AE w/ floodway	Preliminary Flood-Frequency Relations for Urban Streams in Metropolitan Atlanta, Georgia.
Chattahoochee River	Heard County Boundary	Fulton County boundary	HEC-HMS 3.4, Gage Analysis	HEC-RAS 4.0	07/01/2011	AE w/ floodway	Data taken from the effective Coweta County FIS (02/06/2013)
Chattahoochee River	Coweta County boundary	Douglas County boundary	HEC-1	HEC-2	07/01/2007	AE w/ floodway	Data taken from the effective Fulton County FIS (09/18/2013).
Curtis Creek	Confluence of Little Tallapoosa River	Approximately 760 feet upstream of Bankhead Highway	HEC-1	HEC-2	11/01/1976	AE w/ floodway	Floodway was not computed for portions.
Curtis Creek	Approximately 760 feet upstream of Bankhead Highway	Approximately 2,280 feet upstream of Folds Road	N/A	Digital Conversion	11/01/1976	A	
Curtis Creek Tributary 1	Confluence of Curtis Creek	At Old Newman Road	Regression Equations	HEC-2	11/01/1976	AE w/ floodway	Preliminary Flood-Frequency Relations for Urban Streams in Metropolitan Atlanta, Georgia.
Curtis Creek Tributary 3	Confluence of Curtis Creek	Approximately 270 feet upstream of Northlake Drive	HEC-1	HEC-2	11/01/1976	AE w/ floodway	

**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					
Curtis Creek Tributary 3	Approximately 270 feet upstream of Northlake Drive	Approximately 2,170 feet upstream of Northlake Drive	N/A	Digital Conversion	11/01/1976	A	
Keaton Creek Tributary 1	Approximately 250 feet downstream of the City of Villa Rica boundary	Approximately 290 feet upstream of confluence with Tributary B to Keaton Creek Tributary 1	HEC-HMS	HEC-RAS 4.1	12/01/2012	AE w/ floodway	
Keaton Creek Tributary 2	Approximately 1,140 feet upstream of Confluence with Keaton Creek	Approximately 583 feet downstream of Liberty Road	HEC-HMS	HEC-RAS 4.1	12/01/2012	AE w/ floodway	
Little Tallapoosa River	Randolph County boundary	Approximately 360 feet downstream of State Route 166	N/A	Digital Conversion	11/01/1976	A	
Little Tallapoosa River	Approximately 360 feet downstream of State Route 166	Approximately 880 feet upstream of the confluence of Bethel Creek	Regression Equations, Gage Analysis	Regression Equations	11/01/1976	AE w/ floodway	Floodway was not computed for portions.
Little Tallapoosa River	Approximately 880 feet upstream of the confluence of Bethel Creek	Approximately 4,550 feet upstream of Lake Paradise Road	N/A	Digital Conversion	11/01/1976	A	
Little Tallapoosa River Tributary	Confluence with Little Tallapoosa River	Approximately 90 feet upstream of Cherry Drive	Regression Equations, Gage Analysis	HEC-2	11/01/1976	AE w/ floodway	Preliminary Flood-Frequency Relations for Urban Streams in Metropolitan Atlanta, Georgia.

**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					
Nalley Creek	At City of Villa Rica boundary	Approximately 665 feet upstream of City of Villa Rica boundary	HEC-HMS	HEC-RAS 4.1	12/01/2012	AE w/ floodway	
Sweetwater Creek	Paulding County boundary	Approximately 1,300 feet upstream of Paulding County boundary	Gage Analysis	HEC-2	04/01/1977	AE w/ floodway	Data taken from the effective Paulding County FIS (09/29/2006).
Sweetwater Creek	Approximately 1,300 feet upstream of Paulding County boundary	Paulding County boundary	N/A	Digital Conversion	11/01/1976	A	
Tanyard Branch	Confluence of Little Tallapoosa River	Approximately 220 feet upstream of Alabama Street	Regression Equations	HEC-2	11/01/1976	AE w/ floodway	Preliminary Flood-Frequency Relations for Urban Streams in Metropolitan Atlanta, Georgia.
Town Branch	City of Villa Rica, Douglas County corporate limits	Approximately 3,800 feet upstream of Mirror Lake Parkway	Golden-Price Methodology	HEC-2	11/01/1976	AE w/ floodway	Floodway was not computed for portions. See Table 11. The City of Villa Rica is geographically located in Carroll and Douglas Counties. The flood-hazard information for the City of Villa Rica is included in its entirety in this FIS Report.
Town Branch	Approximately 3,800 feet upstream of Mirror Lake Parkway	Approximately 340 feet upstream of Walker Street	Regression Equations	HEC-RAS 3.1.3	04/01/2006	A	The City of Villa Rica is geographically located in Carroll and Douglas Counties. The flood-hazard information for the City of Villa Rica is included in its entirety in this FIS Report.

**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					
Tributary A to Nalley Creek	Approximately 530 feet upstream of Tyson Road	Approximately 735 feet upstream of confluence with Tyson Road	HEC-HMS	HEC-RAS 4.1	12/01/2012	AE w/ floodway	

**Table 14: Roughness Coefficients**

Flooding Source	Channel "n"	Overbank "n"
All Zone A Streams in HUC-8 03130002	*	*
All Zone A Streams in HUC-8 03150108	*	*
Beulah Creek	0.015-0.090	0.020-0.150
Beulah Creek Tributary	0.015-0.090	0.020-0.150
Buck Creek	0.015-0.090	0.020-0.150
Buffalo Creek	0.015-0.090	0.020-0.150
Buffalo Creek Tributary 1	0.015-0.090	0.020-0.150
Buffalo Creek Tributary 2	0.015-0.090	0.020-0.150
Chandler's Spring Creek	0.015-0.090	0.020-0.150
Chattahoochee River <sup>1</sup>	0.033-0.053	0.078-0.112
Chattahoochee River <sup>2</sup>	0.028-0.055	0.070-0.188
Curtis Creek	0.015-0.090	0.020-0.150
Curtis Creek Tributary 1	0.015-0.090	0.020-0.150
Curtis Creek Tributary 3	0.015-0.090	0.020-0.150
Keaton Creek	0.035	0.040
Keaton Creek Tributary 1	0.035	0.060-0.110
Keaton Creek Tributary 2	0.040	0.045
Keaton Creek Tributary 2	0.035-0.040	0.035-0.110
Little Tallapoosa River	0.015-0.090	0.020-0.150
Little Tallapoosa River Tributary	0.015-0.090	0.020-0.150
Nalley Creek	0.035	0.035-0.110
Sweetwater Creek <sup>3</sup>	0.045-0.055	0.060-0.160
Tanyard Branch	0.015-0.090	0.020-0.150
Town Branch	0.015-0.090	0.020-0.150
Town Branch	0.040	0.045
Tributary A to Nalley Creek	0.035	0.040-0.110

\* Data not available as streams are not model backed

<sup>1</sup> Data taken from the effective Coweta County FIS (02/06/2013)

<sup>2</sup> Data taken from the effective Fulton County FIS (09/18/2013)

<sup>3</sup> Data taken from the effective Paulding County FIS (09/29/2006)

### **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 to 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](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

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](http://www.ngs.noaa.gov).

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

#### **Table 20: Countywide Vertical Datum Conversion**

[Not applicable to this Flood Risk Project]

#### **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
County Boundary	Carroll County and Douglas County GIS Department	03/06/2013 and 01/04/2016	N/A	S_Pol_Ar. Incorporated Community Boundaries.
Digital Orthophoto	Carroll County and Douglas County GIS Department	01/01/2010 and 01/04/2016	N/A	S_Base_Index Orthophotography; S_Base_Index table contains information about the raster data used as a base map for the study area.
Incorporated Community Boundaries	Georgia Department of Transportation	10/13/2000	N/A	S_Pol_Ar. County Boundary.
Surface Water Features	Georgia Department of Transportation and Douglas County	04/12/2001 and 01/04/2016	N/A	S_Wtr_Ar. Water areas within the study area.
Transportation Features	Carroll County and Douglas County GIS Department	03/06/2013 and 01/04/2016	N/A	S_Trnsport_Ln. All roads and railroads within the study area.

### 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
Carroll County and Incorporated Areas	All Zone A Streams in HUC-8 03130002	Topographic Maps	1:4,800	4 ft	Woolpert Consultants
Carroll County and Incorporated Areas	All Zone A Streams in HUC-8 03150108	Topographic Maps	1:4,800	4 ft	Woolpert Consultants
City of Carrollton	Beulah Creek	Digital Topographic Maps	1:24,000	2 ft	Carroll County 2003
City of Carrollton	Beulah Creek Tributary	15-Minute Series Topographic Maps	1:9,600	20 ft	USGS 1973
Carroll County Unincorporated Areas, City of Carrollton	Buck Creek	15-Minute Series Topographic Maps	1:9,600	20 ft	USGS 1973
Carroll County Unincorporated Areas, City of Carrollton	Buffalo Creek	Digital Topographic Maps	1:24,000	2 ft	Carroll County 2003
City of Carrollton	Buffalo Creek Tributary 1	Digital Topographic Maps	N/A	2 ft	Carroll County 2003
City of Carrollton	Buffalo Creek Tributary 2	15-Minute Series Topographic Maps	1:9,600	20 ft	USGS 1973
City of Carrollton	Chandler's Spring Creek	Digital Topographic Maps	1:24,000	2 ft	Carroll County 2003
Carroll County Unincorporated Areas, City of Whitesburg	Chattahoochee River	LiDAR	1:1,200	N/A	Photo Science Inc. 2007
City of Carrollton	Curtis Creek	Digital Topographic Maps	1:24,000	2 ft	Carroll County 2003
City of Carrollton	Curtis Creek Tributary 1	Digital Topographic Maps	1:24,000	2 ft	Carroll County 2003

**Table 23: Summary of Topographic Elevation Data used in Mapping continued**

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Scale	Contour Interval	Citation
City of Carrollton	Curtis Creek Tributary 3	Digital Topographic Maps	1:24,000	2 ft	Carroll County 2003
Carroll County Unincorporated Areas, City of Villa Rica	Keaton Creek	Topographic Maps	1:800	2 ft	Photo Science Geospatial Solutions
City of Villa Rica (Douglas County)	Keaton Creek Tributary	Topographic Maps	1:800	2 ft	Photo Science Geospatial Solutions
Carroll County Unincorporated Areas, City of Carrollton	Little Tallapoosa River	Digital Topographic Maps	1:24,000	2 ft	Carroll County 2003
City of Carrollton	Little Tallapoosa River Tributary	15-Minute Series Topographic Maps	1:9,600	20 ft	USGS 1973
Carroll County Unincorporated Areas	Sweetwater Creek	Topographic Maps	1:6,000	2 ft	Paulding County 2004
City of Carrollton	Tanyard Branch	Digital Topographic Maps	1:24,000	2 ft	Carroll County 2003
City of Villa Rica	Town Branch	7.5-Minute Series Topographic Maps	1:24,000	20 ft	USGS 1973
City of Villa Rica	Town Branch	Topographic Maps	1:800	2 ft	Photo Science Geospatial Solutions

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. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations.

**Table 24: Floodway Data**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,200	236	2,002	0.7	987.8	985.8 <sup>2</sup>	986.8	1.0
B	1,608	241	2,787	0.5	990.0	990.0	990.9	0.9
C	6,395	117	521	1.5	1,006.2	1,006.2	1,007.2	1.0

<sup>1</sup> Feet above confluence with Little Tallapoosa River

<sup>2</sup> Elevation computed without consideration of backwater effects from Little Tallapoosa River

**TABLE 24**

**FEDERAL EMERGENCY MANAGEMENT AGENCY  
CARROLL COUNTY, GA  
AND INCORPORATED AREAS**

**FLOODWAY DATA**

**FLOODING SOURCE: BEULAH CREEK**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	230	13	33	7.7	1,005.4	1,005.4	1,005.8	0.4
B	418	115	47	1.7	1,013.2	1,013.2	1,013.4	0.2
C	840	10	51	5.0	1,015.3	1,015.3	1,016.3	1.0
D	1,241	14	42	6.1	1,021.7	1,021.7	1,022.4	0.7
E	1,662	26	76	3.3	1,028.7	1,028.7	1,029.7	1.0

<sup>1</sup> Feet above confluence with Beulah Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**CARROLL COUNTY, GA**  
 AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: BEULAH CREEK TRIBUTARY**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	19,535	350	3,395	1.3	1,004.8	1,004.8	1,005.8	1.0
B	19,735	424	4,440	1.0	1,004.8	1,004.8	1,005.8	1.0

<sup>1</sup> Feet above confluence with Possum Branch

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**CARROLL COUNTY, GA**  
 AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: BUCK CREEK**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A-G <sup>2</sup>								
H	41,143	586	5,450	0.6	997.5	997.5	998.5	1.0
I	42,114	719	1,405	1.6	997.7	997.7	998.7	1.0
J	42,475	65	216	10.3	998.5	998.5	998.5	0.0
K	43,725	85	470	4.7	1006.6	1006.6	1007.4	0.8
L	45,806	431	1,787	1.2	1009.6	1009.6	1010.6	1.0
M	46,019	716	5,206	0.4	1013.6	1013.6	1014.6	1.0
N	46,557	603	3,369	0.5	1013.6	1013.6	1014.6	1.0
O	46,761	657	4,196	0.4	1017.2	1017.2	1018.2	1.0
P	48,831	241	320	4.4	1020.1	1020.1	1020.1	0.0
Q	48,962	32	263	5.4	1021.9	1021.9	1021.9	0.0
R	49,364	209	1,423	1.0	1023.3	1023.3	1024.3	1.0
S	49,762	318	1,096	1.2	1028.1	1028.1	1029.1	1.0
T	50,165	19	273	5.2	1030.2	1030.2	1031.2	1.0
U	50,810	18	346	3.8	1036.0	1036.0	1037.0	1.0
V	51,017	258	2,538	0.5	1036.3	1036.3	1037.3	1.0
W	51,372	300	4,172	0.3	1036.3	1036.3	1037.3	1.0
X	56,074	24	73	10.0	1043.9	1043.9	1043.9	0.0
Y	57,819	27	146	5.0	1,049.7	1,049.7	1,050.7	1.0

<sup>1</sup> Feet above confluence with Little Tallapoosa River

<sup>2</sup> No floodway computed

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**CARROLL COUNTY, GA**  
 AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: BUFFALO CREEK**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,700	32	114	5.4	1,047.9	1,047.9	1,048.9	1.0
B	2,150	46	155	4.0	1,053.2	1,053.2	1,054.1	0.9

<sup>1</sup> Feet above Strickland Road

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**CARROLL COUNTY, GA**  
 AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: BUFFALO CREEK TRIBUTARY 1**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	230	287	885	1.2	1,043.0	1,043.0	1,044.0	1.0
B	545	212	849	1.2	1,043.2	1,043.2	1,044.2	1.0

<sup>1</sup> Feet above confluence with Richards Lake

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**CARROLL COUNTY, GA**  
 AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: BUFFALO CREEK TRIBUTARY 2**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,095	431	4,373	0.1	992.1	989.3 <sup>2</sup>	990.3	1.0
B	2,260	142	763	0.8	992.1	991.9 <sup>2</sup>	992.0	0.1
C	3,350	30	153	4.1	1,007.9	1,007.9	1,008.3	0.4
D	4,565	19	48	9.1	1,045.8	1,045.8	1,045.8	0.0

<sup>1</sup> Feet above confluence with Little Tallapoosa River

<sup>2</sup> Elevation computed without consideration of backwater effects from Little Tallapoosa River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**CARROLL COUNTY, GA**  
 AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: CHANDLER'S SPRING CREEK**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET) <sup>2</sup>	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	255,130	790/190	12,954	5.1	688.1	688.1	688.7	0.6
B	264,000	663/523	11,392	5.8	690.9	690.9	691.5	0.6
C	275,352	2,202/1,271	25,737	2.6	694.8	694.8	695.4	0.6
D	279,523	1,465/882	18,740	3.5	695.8	695.8	696.3	0.5
E	283,378	1,065/172	13,148	5.1	697.1	697.1	697.6	0.5
F	287,866	687/486	13,057	4.9	699.2	699.2	699.6	0.4
G	289,925	501/180	7,908	8.1	699.3	699.3	699.7	0.4
H	293,304	985/826	12,817	5.0	702.3	702.3	702.7	0.4
I	299,746	492/178	10,521	6.1	706.3	706.3	706.8	0.5
J	302,544	646/530	11,688	5.5	707.6	707.6	708.1	0.5
K	305,712	665/365	11,372	5.6	709.0	709.0	709.4	0.4
L	306,662	853/593	15,162	4.2	711.1	711.1	711.7	0.6
M	308,141	760/415	17,339	3.7	711.7	711.7	712.2	0.5
N	309,514	901/495	16,606	3.9	712.5	712.5	712.9	0.4
O	313,896	1,160/414	20,761	3.1	713.9	713.9	714.4	0.5
P	326,146	1,248/255	20,548	3.0	716.0	716.0	716.6	0.6
Q	333,168	819/294	15,630	3.9	718.0	718.0	718.6	0.6
R	341,088	853/757	14,093	4.3	719.8	719.8	720.5	0.7
S	346,368	1,477/664	23,249	2.6	721.8	721.8	722.5	0.7
T	355,872	1,515/1,165	23,340	2.6	724.9	724.9	725.8	0.9
U	356,928	1,221/870	16,978	3.5	725.2	725.2	726.1	0.9
V	359,568	1,003/742	15,975	3.7	726.4	726.4	727.2	0.8

<sup>1</sup> Feet above West Point Dam

<sup>2</sup> Total floodway width / width within jurisdiction

**TABLE 24**

**FEDERAL EMERGENCY MANAGEMENT AGENCY**

**CARROLL COUNTY, GA**

**AND INCORPORATED AREAS**

**FLOODWAY DATA**

**FLOODING SOURCE: CHATTAHOOCHEE RIVER**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	3,272	137	863	0.7	993.7	990.8 <sup>2</sup>	991.8	1.0
B	3,832	35	268	2.3	993.7	990.8 <sup>2</sup>	991.8	1.0

<sup>1</sup> Feet above confluence with Little Tallapoosa River

<sup>2</sup> Elevation computed without consideration of backwater effects from Little Tallapoosa River

<b>TABLE 24</b>	<b>FEDERAL EMERGENCY MANAGEMENT AGENCY</b>	<b>FLOODWAY DATA</b>
	<b>CARROLL COUNTY, GA</b> <b>AND INCORPORATED AREAS</b>	<b>FLOODING SOURCE: CURTIS CREEK</b>

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	30	171	1,258	0.6	1,010.6	1,010.6	1,011.6	1.0
B	1,095	32	136	5.1	1,014.1	1,014.1	1,014.2	0.1
C	2,919	23	80	7.3	1,023.2	1,023.2	1,023.9	0.7
D	3,980	57	241	2.2	1,037.4	1,037.4	1,038.0	0.6
E	5,200	22	63	8.4	1,053.3	1,053.3	1,054.2	0.9
F	5,901	22	56	9.5	1,068.5	1,068.5	1,069.2	0.7

<sup>1</sup> Feet above confluence with Curtis Creek

<b>TABLE 24</b>	<b>FEDERAL EMERGENCY MANAGEMENT AGENCY</b>	<b>FLOODWAY DATA</b>
	<b>CARROLL COUNTY, GA</b> <b>AND INCORPORATED AREAS</b>	<b>FLOODING SOURCE: CURTIS CREEK TRIBUTARY 1</b>

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	40	300	1,195	0.2	1,012.5	1,012.5	1,013.5	1.0
B	134	122	607	0.3	1,012.5	1,012.5	1,013.5	1.0

<sup>1</sup> Feet above confluence with Curtis Creek

<b>TABLE 24</b>	<b>FEDERAL EMERGENCY MANAGEMENT AGENCY</b>	<b>FLOODWAY DATA</b>
	<b>CARROLL COUNTY, GA</b> <b>AND INCORPORATED AREAS</b>	<b>FLOODING SOURCE: CURTIS CREEK TRIBUTARY 3</b>

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	40	300	1,195	0.2	1,012.5	1,012.5	1,013.5	1.0
B	134	122	607	0.3	1,012.5	1,012.5	1,013.5	1.0

<sup>1</sup>Feet above confluence with Curtis Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

**CARROLL COUNTY, GA**

AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: KEATON CREEK**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,895	39	390	10.0	1,014.5	1,014.5	1,014.7	0.2
B	8,790	65	320	5.4	1,077.5	1,077.5	1,077.7	0.2

<sup>1</sup>Feet above confluence with Keaton Creek

\*Confluence is 643 feet downstream of zero stationing

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

**CARROLL COUNTY, GA**

AND INCORPORATED AREAS

**FLOODWAY DATA**

FLOODING SOURCE: KEATON CREEK TRIBUTARY 1

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,213	111/105 <sup>2</sup>	1,164	4.5	988.9	988.9	989.5	0.6
B	5,197	40	315	16.6	1,017.3	1,017.3	1,017.3	0.0

<sup>1</sup>Feet above confluence with Keaton Creek

<sup>2</sup>Total floodway width / width within jurisdiction

\*Confluence is 576 feet downstream of zero stationing

TABLE 24	<b>FEDERAL EMERGENCY MANAGEMENT AGENCY</b> <b>CARROLL COUNTY, GA</b> <b>AND INCORPORATED AREAS</b>	<b>FLOODWAY DATA</b>
		<b>FLOODING SOURCE: KEATON CREEK TRIBUTARY 2</b>

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	540	472	4,917	2.2	970.6	970.6	971.3	0.7
B	3,055	1,457	10,593	1.0	971.1	971.1	972.1	1.0
C	4,220	980	6,471	1.7	971.5	971.5	972.3	0.8
D	6,315	615	4,802	2.2	972.9	972.9	973.5	0.6
E	6,950	390	3,663	2.9	973.4	973.4	973.9	0.5
F	8,020	814	7,326	1.5	974.2	974.2	974.7	0.5
G	10,385	1,375	10,694	0.8	974.6	974.6	975.1	0.5
H	17,675	438	2,966	3.0	975.7	975.7	976.4	0.7
I	20,510	256	2,197	4.1	978.7	978.7	979.2	0.5
J	21,700	495	4,736	1.9	980.1	980.1	980.9	0.8
K	25,760	422	4,448	2.0	981.5	981.5	982.3	0.8
L	32,635	454	3,424	2.6	985.4	985.4	986.0	0.6
M	33,940	152	1,837	4.9	986.7	986.7	987.3	0.6
N	34,530	442	3,677	2.4	987.0	987.0	987.9	0.9
O	36,170	161	1,747	5.1	988.0	988.0	998.6	0.6
P	36,760	214	2,014	4.4	988.1	988.1	998.7	0.6
Q	38,915	149	2,184	4.1	990.2	990.2	990.7	0.5
R	40,195	350	4,183	2.1	991.0	991.0	991.8	0.8
S	41,555	663	8,411	1.1	992.0	992.0	992.7	0.7
T	43,730	661	8,297	1.1	992.1	992.1	992.9	0.8
U	44,785	240	2,359	3.5	992.1	992.1	992.9	0.8
V	46,705	598	6,143	1.3	993.3	993.3	994.2	0.9
W	48,305	773	9,933	0.8	993.6	993.6	994.5	0.9

<sup>1</sup> Feet above limit of detailed study (limit of detailed study is approximately 300 feet downstream from State Highway 166)

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**CARROLL COUNTY, GA**  
 AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: LITTLE TALLAPOOSA RIVER**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
X	49,690	905	11,781	0.7	993.8	993.8	994.7	0.9
Y	50,455	630	7,945	1.0	993.8	993.8	994.7	0.9
Z	51,310	630	6,927	1.2	993.8	993.8	994.7	0.9
AA	52,565	815	8,571	0.9	994.0	994.0	994.9	0.9
AB	54,710	815	8,618	0.9	994.3	994.3	995.1	0.8
AC	56,070	598	7,163	1.1	994.4	994.4	995.3	0.9
AD-AP <sup>2</sup>								

<sup>1</sup> Feet above limit of detailed study (limit of detailed study is approximately 300 feet downstream from State Highway 166)

<sup>2</sup> No floodway computed

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

**CARROLL COUNTY, GA**

AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: LITTLE TALLAPOOSA RIVER**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	3,360	15	51	10.6	1,022.5	1,022.5	1,022.8	0.3
B	4,510	17	58	5.1	1,034.9	1,034.9	1,035.3	0.4
C	4,620	132	847	0.3	1,042.1	1,042.1	1,042.1	0.0
D	5,630	11	26	8.9	1,053.5	1,053.5	1,053.5	0.0

<sup>1</sup> Feet above confluence with Little Tallapoosa River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**CARROLL COUNTY, GA**  
 AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: LITTLE TALLAPOOSA RIVER TRIBUTARY**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	8,043 <sup>2</sup>	59/59	172	6.4	1,097.7	1,097.7	1,098.5	0.8
B	9,267 <sup>2</sup>	64/0	185	5.9	1,108.3	1,108.3	1,108.5	0.2

<sup>1</sup>Feet above confluence with Keaton Creek\*

<sup>2</sup>Total floodway width / width within jurisdiction

\*Confluence is 128 feet downstream of zero stationing

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

**CARROLL COUNTY, GA**

AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: NALLEY CREEK**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	29	330/96 <sup>2</sup>	1,470	2.0	979.3	979.3	980.3	1.0

<sup>1</sup> Feet above County Boundary

<sup>2</sup> Total width/width within county

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**CARROLL COUNTY, GA**  
 AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: SWEETWATER CREEK**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,400	537	4,478	0.1	991.6	988.8 <sup>2</sup>	989.8	1.0
B	1,600	514	4,004	0.1	991.6	988.8 <sup>2</sup>	989.8	1.0
C	2,131	40	222	2.6	991.6	988.8 <sup>2</sup>	989.8	1.0
D	2,237	27	134	4.3	991.6	990.6 <sup>2</sup>	990.6	0.0
E	3,686	28	66	8.8	1,003.2	1,003.2	1,003.2	0.0
F	4,167	70	314	1.7	1,015.2	1,015.2	1,016.0	0.8
G	5,387	30	65	8.4	1,036.9	1,036.9	1,036.9	0.0

<sup>1</sup> Feet above confluence with Little Tallapoosa River

<sup>2</sup> Elevation computed without consideration of backwater effects from Little Tallapoosa River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**CARROLL COUNTY, GA**  
 AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: TANYARD BRANCH**

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	13,188	90	670	2.9	995.0	995.0	996	1.0
B	15,438	60	490	4.0	1,000.2	1,000.2	1,000.8	0.6
C-E <sup>2</sup>								

<sup>1</sup> Feet above confluence with Mud Creek

<sup>2</sup> No floodway computed

<b>TABLE 24</b>	<b>FEDERAL EMERGENCY MANAGEMENT AGENCY CARROLL COUNTY, GA AND INCORPORATED AREAS</b>	<b>FLOODWAY DATA</b>
		<b>FLOODING SOURCE: TOWN BRANCH</b>

LOCATION		FLOODWAY			1% ANNUAL CHANGE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,245	283	2,410	0.2	1,104.2	1,104.2	1,104.2	0.0

<sup>1</sup>Feet above confluence with Nalley Creek

<b>TABLE 24</b>	<b>FEDERAL EMERGENCY MANAGEMENT AGENCY</b>	<b>FLOODWAY DATA</b>
	<b>CARROLL COUNTY, GA</b> AND INCORPORATED AREAS	<b>FLOODING SOURCE: TRIBUTARY A TO NALLEY CREEK</b>

## **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](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](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 Carroll 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](http://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 Carroll County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBM) and/or Flood Boundary and Floodway Maps (FBFM) 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 Carroll County FIRMs in countywide format was 09/19/2007.

**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)
Bowdon, City of	11/15/1974	11/15/1974	08/08/1975 12/19/1975	06/17/1986	09/19/2007
Bremen, City of <sup>2</sup>	04/18/1975	04/18/1975	N/A	08/01/1986	09/26/2008
Carroll County Unincorporated Areas	08/11/1978	08/11/1978	N/A	12/15/1990	TBD 09/19/2007
Carrollton, City of	05/24/1974	05/24/1974	01/23/1976	04/03/1978	09/19/2007
Mount Zion, City of	07/01/1977	07/01/1977	N/A	09/01/1987	09/19/2007
Roopville, City of <sup>1</sup>	09/19/2007	N/A	N/A	09/19/2007	N/A
Temple, City of	04/11/1975	04/11/1975	N/A	09/18/1987	09/19/2007
Villa Rica, City of	06/27/1975	6/27/1975	N/A	09/01/1986	09/19/2007
Whitesburg, City of <sup>1</sup>	09/19/2007	N/A	N/A	09/19/2007	TBD

<sup>1</sup> No Special Flood Hazard Areas Identified

<sup>2</sup> Area Not Included

## 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 Zone A Streams in HUC-8 03130002	12/01/1976	USACE, Mobile District	Inter-Agency Agreement No. IAA-H-16-75, Project Order No. 19	November 1976	Carroll County and Incorporated Areas
All Zone A Streams in HUC-8 03150108	12/01/1976	USACE, Mobile District	Inter-Agency Agreement No. IAA-H-16-75, Project Order No. 19	November 1976	Carroll County and Incorporated Areas
Beulah Creek	12/01/1976	USACE, Mobile District	Inter-Agency Agreement No. IAA-H-16-75, Project Order No. 19	November 1976	City of Carrollton

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

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Beulah Creek Tributary	12/01/1976	USACE, Mobile District	Inter-Agency Agreement No. IAA-H-16-75, Project Order No. 19	November 1976	City of Carrollton
Buck Creek	12/01/1976	USACE, Mobile District	Inter-Agency Agreement No. IAA-H-16-75, Project Order No. 19	November 1976	Carroll County Unincorporated Areas, City of Carrollton
Buffalo Creek	12/01/1976	USACE, Mobile District	Inter-Agency Agreement No. IAA-H-16-75, Project Order No. 19	November 1976	Carroll County Unincorporated Areas, City of Carrollton
Buffalo Creek Tributary 1	12/01/1976	USACE, Mobile District	Inter-Agency Agreement No. IAA-H-16-75, Project Order No. 19	November 1976	City of Carrollton
Buffalo Creek Tributary 2	12/01/1976	USACE, Mobile District	Inter-Agency Agreement No. IAA-H-16-75, Project Order No. 19	November 1976	City of Carrollton
Chandler's Spring Creek	12/01/1976	USACE, Mobile District	Inter-Agency Agreement No. IAA-H-16-75, Project Order No. 19	November 1976	City of Carrollton
Chattahoochee River <sup>1</sup>	02/06/2013	Dewberry and Davis LLC	Contract No. EMA-2009-CA-5930	July 2011	Carroll County Unincorporated Areas, City of Whitesburg
Chattahoochee River <sup>2</sup>	06/18/2010	Braswell Engineering, Inc.	Case No. 09-04-0014S	July 2007	Carroll County Unincorporated Areas
Curtis Creek	12/01/1976	USACE, Mobile District	Inter-Agency Agreement No. IAA-H-16-75, Project Order No. 19	November 1976	City of Carrollton
Curtis Creek Tributary 1	12/01/1976	USACE, Mobile District	Inter-Agency Agreement No. IAA-H-16-75, Project Order No. 19	November 1976	City of Carrollton

<sup>1</sup> Data taken from the effective Coweta County FIS (02/06/2013)

<sup>2</sup> Data taken from the effective Fulton County FIS (09/18/2013)

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

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Curtis Creek Tributary 3	12/01/1976	USACE, Mobile District	Inter-Agency Agreement No. IAA-H-16-75, Project Order No. 19	November 1976	City of Carrollton
Keaton Creek	09/19/2007	Georgia Dept. of Natural Resources (DNR)	Contract No. EMA-2005-GR-5369	April 2006	Carroll County Unincorporated Areas, City of Villa Rica
Keaton Creek Tributary 1	TBD	AECOM	HSFE60-15-D-0003 HSFE60-15-J-0002	December 1, 2012	City of Villa Rica, Douglas County
Keaton Creek Tributary 2	09/19/2007	Georgia Dept. of Natural Resources (DNR)	Contract No. EMA-2005-GR-5369	April 2006	City of Villa Rica, Douglas County
Keaton Creek Tributary 2	TBD	AECOM	HSFE60-15-D-0003 HSFE60-15-J-0002	December 1, 2012	City of Villa Rica, Douglas County
Little Tallapoosa River	12/01/1976	USACE, Mobile District	Inter-Agency Agreement No. IAA-H-16-75, Project Order No. 19	November 1976	Carroll County Unincorporated Areas, City of Carrollton
Little Tallapoosa River Tributary	12/01/1976	USACE, Mobile District	Inter-Agency Agreement No. IAA-H-16-75, Project Order No. 19	November 1976	City of Carrollton
Nalley Creek	TBD	AECOM	HSFE60-15-D-0003 HSFE60-15-J-0002	December 1, 2012	City of Villa Rica, Douglas County
Sweetwater Creek <sup>3</sup>	10/01/1978	Roy F. Weston, Inc.	Contract No. H-3798	April 1977	Carroll County Unincorporated Areas
Tanyard Branch	12/01/1976	USACE, Mobile District	Inter-Agency Agreement No. IAA-H-16-75, Project Order No. 19	November 1976	City of Carrollton
Town Branch	12/01/1976	USACE, Mobile District	Inter-Agency Agreement No. IAA-H-16-75, Project Order No. 19	November 1976	City of Villa Rica
Town Branch	09/19/2007	Georgia Dept. of Natural Resources (DNR)	Contract No. EMA-2005-GR-5369	April 2006	City of Villa Rica
Tributary A to Nalley Creek	TBD	AECOM	HSFE60-15-D-0003 HSFE60-15-J-0002	December 1, 2012	City of Villa Rica, Douglas County

<sup>3</sup> Data taken from the effective Paulding County FIS (09/29/2006)

## **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
Bowdon, City of	TBD	02/27/2012	Discovery	Georgia DNR, FEMA, GEMA, Dewberry, Atkins, Bender Consulting, and community officials
		TBD	Resilience	TBD
		TBD	CCO Open House	TBD
Carroll County and Incorporated Areas	TBD	02/27/2012	Discovery	Georgia DNR, FEMA, GEMA, Dewberry, Atkins, Bender Consulting, and community officials
		TBD	Resilience	TBD
		TBD	CCO Open House	TBD
Carrollton, City of	TBD	02/27/2012	Discovery	Georgia DNR, FEMA, GEMA, Dewberry, Atkins, Bender Consulting, and community officials
		TBD	Resilience	TBD
		TBD	CCO Open House	TBD
Mount Zion, City of	TBD	02/27/2012	Discovery	Georgia DNR, FEMA, GEMA, Dewberry, Atkins, Bender Consulting, and community officials
		TBD	Resilience	TBD
		TBD	CCO Open House	TBD
Roopville, City of <sup>1</sup>	TBD	02/27/2012	Discovery	Georgia DNR, FEMA, GEMA, Dewberry, Atkins, Bender Consulting, and community officials
		TBD	Resilience	TBD

<sup>1</sup> No Special Flood Hazard Areas Identified

**Table 30: Community Meetings continued**

Roopville, City of <sup>1</sup>	TBD	TBD	CCO Open House	TBD
Temple, City of	TBD	02/27/2012	Discovery	Georgia DNR, FEMA, GEMA, Dewberry, Atkins, Bender Consulting, and community officials
		TBD	Resilience	TBD
		TBD	CCO Open House	TBD
Villa Rica, City of	TBD	02/27/2012	Discovery	Georgia DNR, FEMA, GEMA, Dewberry, Atkins, Bender Consulting, and community officials
		TBD	Resilience	TBD
		TBD	CCO Open House	TBD
Whitesburg, City of <sup>1</sup>	TBD	02/27/2012	Discovery	Georgia DNR, FEMA, GEMA, Dewberry, Atkins, Bender Consulting, and community officials
		TBD	Resilience	TBD
		TBD	CCO Open House	TBD

<sup>1</sup> No Special Flood Hazard Areas Identified

## 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 Carroll 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
Bowdon, City of	City Hall 136 City Hall Avenue	Bowdon	GA	30108
Carroll County, Unincorporated Areas	Carroll County Administration Building Community Development Office 423 College Street	Carrollton	GA	30117
Carrollton, City of	City Hall 315 Bradley Street	Carrollton	GA	30117
Mount Zion, City of	City Hall 4455 Mount Zion Road	Carrollton	GA	30117
Roopville, City of <sup>1</sup>	Mayor's Office 165 South Highway 27	Roopville	GA	30170
Temple, City of	City Hall 337 Sage Street	Temple	GA	30179
Villa Rica, City of	City Hall 571 West Bankhead Highway	Villa Rica	GA	30180
Whitesburg, City of <sup>1</sup>	City Hall 788 Main Street	Whitesburg	GA	30185

<sup>1</sup> No Special Flood Hazard Areas Identified

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	<a href="http://www.fema.gov">http://www.fema.gov</a>
NFIP website	<a href="http://www.fema.gov/business/nfip">http://www.fema.gov/business/nfip</a>
NFHL Dataset	<a href="http://msc.fema.gov">http://msc.fema.gov</a>
FEMA Region IV	Federal Emergency Management Agency 3003 Chamblee Tucker Road Atlanta, GA 30341 (770) 220-5200
Other Federal Agencies	
USGS website	<a href="http://www.usgs.gov">http://www.usgs.gov</a>
Hydraulic Engineering Center website	<a href="http://www.hec.usace.army.mil">http://www.hec.usace.army.mil</a>
State Agencies and Organizations	
State NFIP Coordinator	Mork Winn Interim Program Manager 4220 International Parkway, Suite 101 Atlanta, GA 30354 Phone: 404-362-2606 Mork.Winn@dnr.state.ga.us
State GIS Coordinator	Lisa Westin Senior GIS Specialist 60 Executive Park South, NE Atlanta, GA 30329 Phone: 404-679-3125 LWestin@dca.state.ga.us
Statewide Regulatory Coordinator	Tom Shillock, CFM Georgia Statewide Regulatory Coordinator 4220 International Parkway, Suite 101 Atlanta, GA 30354 Phone: 404-675-1607 Tom.Shillock@dnr.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	<i>Publication Title, "Article,"</i> Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Carroll County, GA	Carroll County, Georgia	Digital Topographic Data, Carroll County, Georgia, Contour Interval 2 feet		Carroll County, GA	2003	
Carroll County, GA	Carroll County, Georgia	<i>Hydrology Study for Unincorporated Carroll County</i>	Post, Buckley, Schuh & Jernigan	Atlanta, GA	March 1988	
FEMA 1990	Federal Emergency Management Agency	<i>Flood Insurance Study, Carroll County, Georgia (Unincorporated Areas)</i>		Washington, D.C.	12/15/1990	FEMA Map Service Center <a href="http://msc.fema.gov">http://msc.fema.gov</a>
FEMA 1978	Federal Emergency Management Agency	<i>Flood Insurance Study, City of Carrollton, Carroll County, Georgia</i>		Washington, D.C.	FIS December 1976, FIRM 4/3/1978	FEMA Map Service Center <a href="http://msc.fema.gov">http://msc.fema.gov</a>
FEMA 2013	Federal Emergency Management Agency	<i>Flood Insurance Study, Fulton County, Georgia and Incorporated Areas</i>		Washington, D.C.	09/18/2013	FEMA Map Service Center <a href="http://msc.fema.gov">http://msc.fema.gov</a>
FEMA 2006	Federal Emergency Management Agency	<i>Flood Insurance Study, Paulding County, Georgia and Incorporated Areas</i>		Washington, D.C.	09/26/2006	FEMA Map Service Center <a href="http://msc.fema.gov">http://msc.fema.gov</a>
FEMA 1978	Federal Emergency Management Agency	<i>Flood Insurance Study, Paulding County, Georgia (Unincorporated Areas)</i>		Washington, D.C.	10/02/1978	FEMA Map Service Center <a href="http://msc.fema.gov">http://msc.fema.gov</a>
IACWD 1982	Interagency Advisory Committee on Water Data	<i>Guidelines for Determining Flood Flow Frequency: Bulletin 17B of the Hydrology Subcommittee</i>	Office of Water Data Coordination, U.S. Geological Survey	Reston, VA	1982	

**Table 33: Bibliography and References continued**

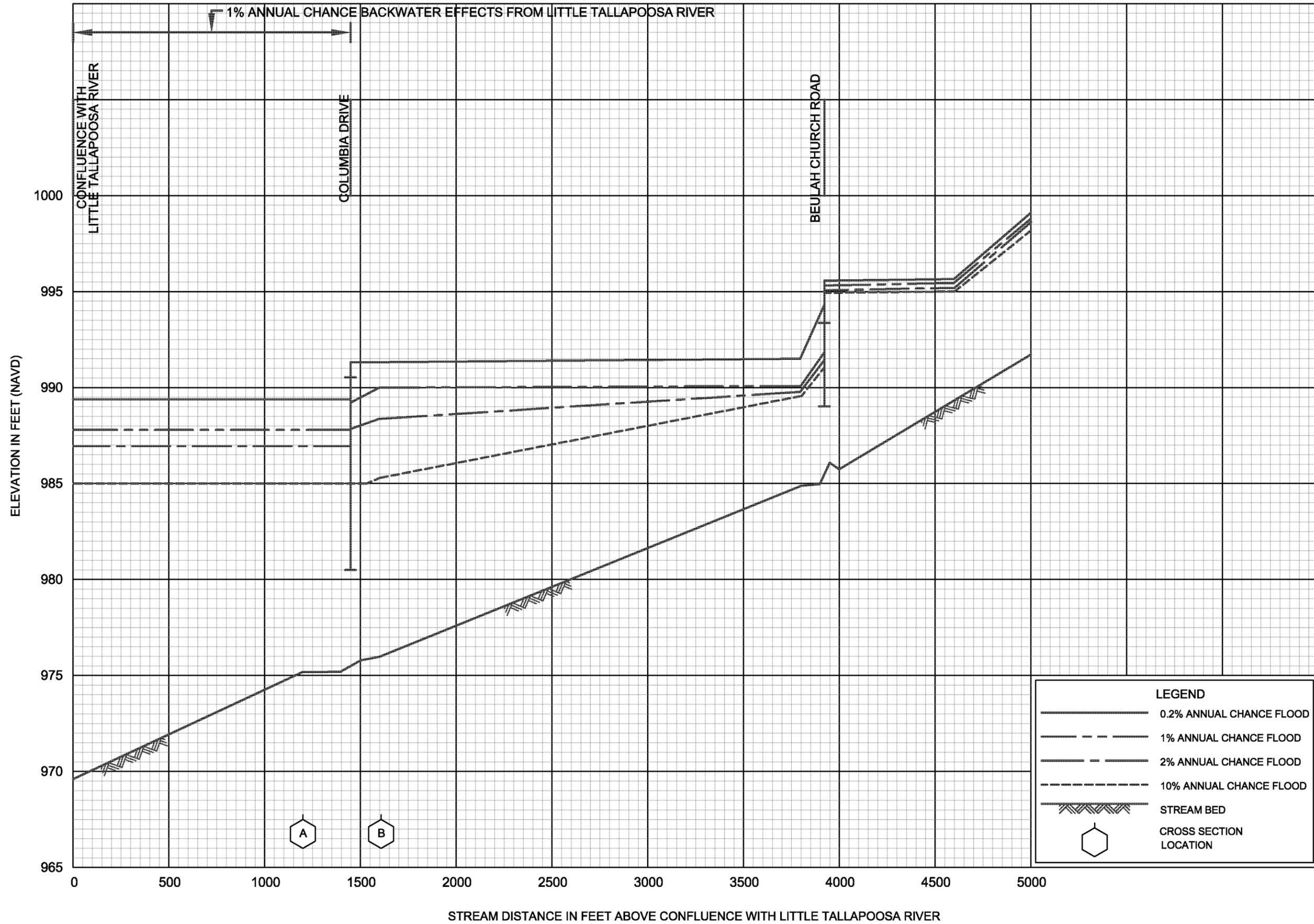
Citation in this FIS	Publisher/ Issuer	<i>Publication Title</i> , "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Photo Science 2005	Photo Science, Inc.	LiDAR data and Aerial Photographs		Douglas County, GA	2005	
SCS 1973	U.S. Department of Agriculture, Soil Conservation Service	Technical Release No. 20, Computer Program, Project Formulation, Hydrology		Washington, D.C.	1973	
USACE 1973	U.S. Army Corps of Engineers, Hydrologic Engineering Center	HEC-1 Flood Hydrograph Package, Computer Program 723-X6-12010	U.S. Army Corps of Engineers	Davis, CA	January 1973	
USACE 1984	U.S. Army Corps of Engineers, Hydrologic Engineering Center	HEC-2 Water Surface Profiles, Generalized Computer Program 723-X6-L202A	U.S. Army Corps of Engineers	Davis, CA	April 1984	
USACE 2005	U.S. Army Corps of Engineers	<i>HEC-RAS River Analysis System, Version 3.1.3</i>	U.S. Army Corps of Engineers	Davis, CA	May 2005	
USACE 2008	U.S. Army Corps of Engineers, Hydrologic Engineering Center	<i>HEC-RAS River Analysis System, Version 4.0.0</i>	U.S. Army Corps of Engineers	Davis, CA	March 2008	
USACE	U.S. Army Corps of Engineers, Hydrologic Engineering Center	<i>HEC-HMS Hydrologic Modeling System 3.4</i>	U.S. Army Corps of Engineers	Davis, CA	August 2009	
USACE 1991	U.S. Army Corps of Engineers, Hydrologic Engineering Center	<i>HEC-2 Water-Surface Profiles</i>	U.S. Army Corps of Engineers	Davis, CA	May 1991	
USACE 1973	U.S. Army Corps of Engineers, Hydrologic Engineering Center	<i>HEC-2 Water-Surface Profiles</i>	U.S. Army Corps of Engineers	Davis, CA	October 1973	

**Table 33: Bibliography and References continued**

Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
USACE 1984	U.S. Army Corps of Engineers, Hydrologic Engineering Center	<i>HEC-1 Flood Hydrograph Package</i>	U.S. Army Corps of Engineers	Davis, CA	January 1984	
USGS	U.S. Department of the Interior, Geological Survey	<i>Floods in Georgia, Magnitude and Frequency; Techniques for Estimating the Magnitude and Frequency of Floods in Georgia, Water Resources Investigation 78-137</i>	McGlone Price		October 1979	
USGS	U.S. Department of the Interior, Geological Survey	<i>Flood Characteristics of Urban Watersheds in the United States, Techniques for Estimating Magnitude and Frequency of Urban Floods, Water Supply Paper 2207</i>	V.B. Saur, W.O. Thomas, Jr., V.A. Stricker, and K.V. Wilson		1983	
USGS	U.S. Department of the Interior, Geological Survey	<i>Preliminary Flood-Frequency Relations for Urban Streams in Metropolitan Atlanta, Georgia, Open File Report 77-57</i>	Golden, H.G.		1977	
USGS	U.S. Department of the Interior, Geological Survey	<i>Flood Frequency Analysis for Small Natural Streams in Georgia</i>	Golden, H.G. and Price, McGlone		July 1976	
USGS	U.S. Department of the Interior, Geological Survey	<i>The National Flood-Frequency Program-Methods for Estimating Flood Magnitude and Frequency in Rural and Urban Areas in Georgia, USGS Fact Sheet 169-98</i>			August 1999	

**Table 33: Bibliography and References continued**

Citation in this FIS	Publisher/ Issuer	<i>Publication Title</i> , "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
USGS 1973	U.S. Department of the Interior, Geological Survey	<i>Preliminary Flood Frequency Relationships for Small Streams in Georgia</i>	H.G. Golden		April 1973	
USGS	U.S. Department of the Interior, Geological Survey	15-Minute Series Topographic Maps, Scale 1:9,600, Contour Interval 20 feet		Carrollton, GA	1973	
USGS	U.S. Department of the Interior, Geological Survey	7.5-Minute Topographic Maps		Villa Rica, GA	1973	



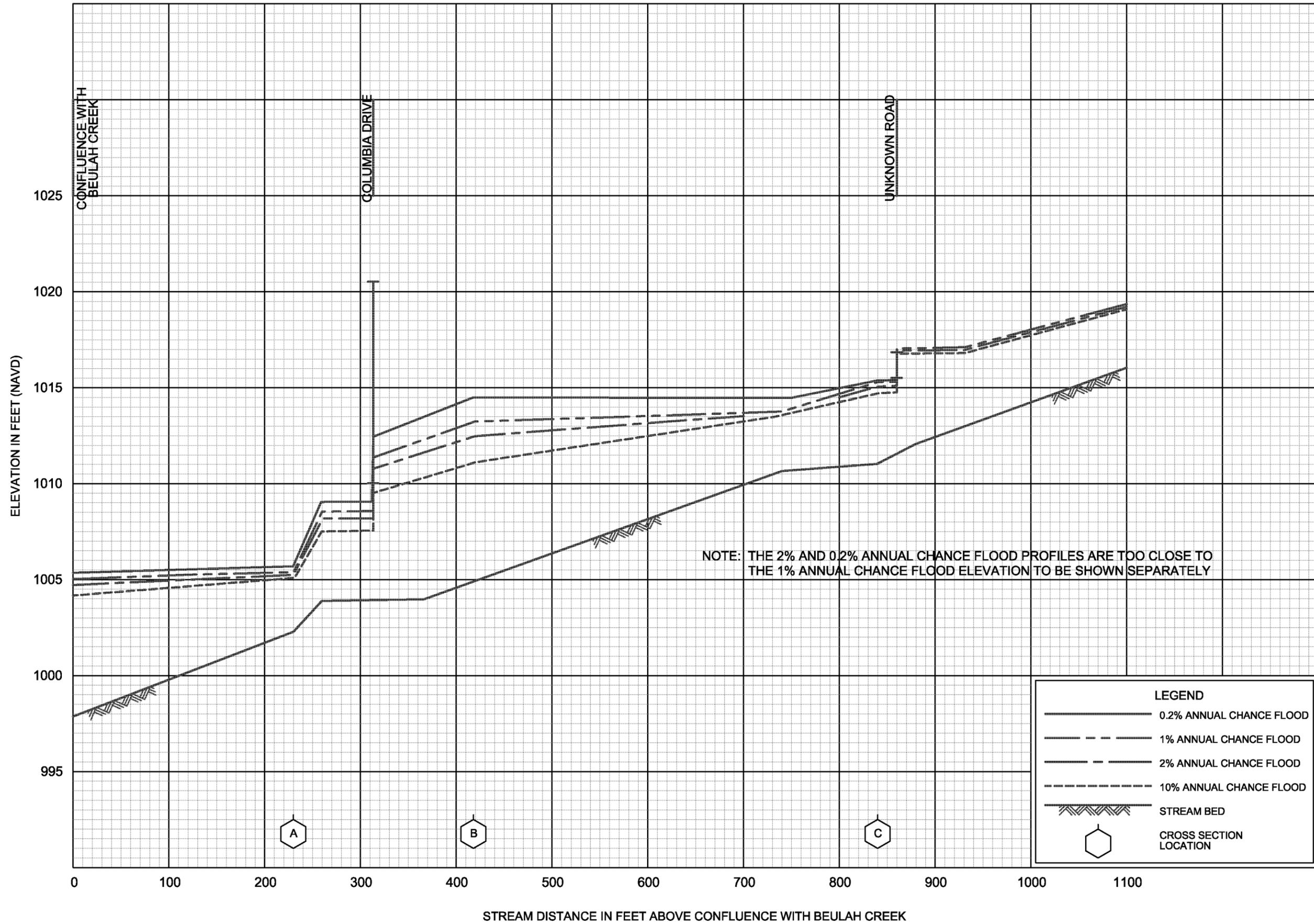
FLOOD PROFILES

BEULAH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
AND INCORPORATED AREAS





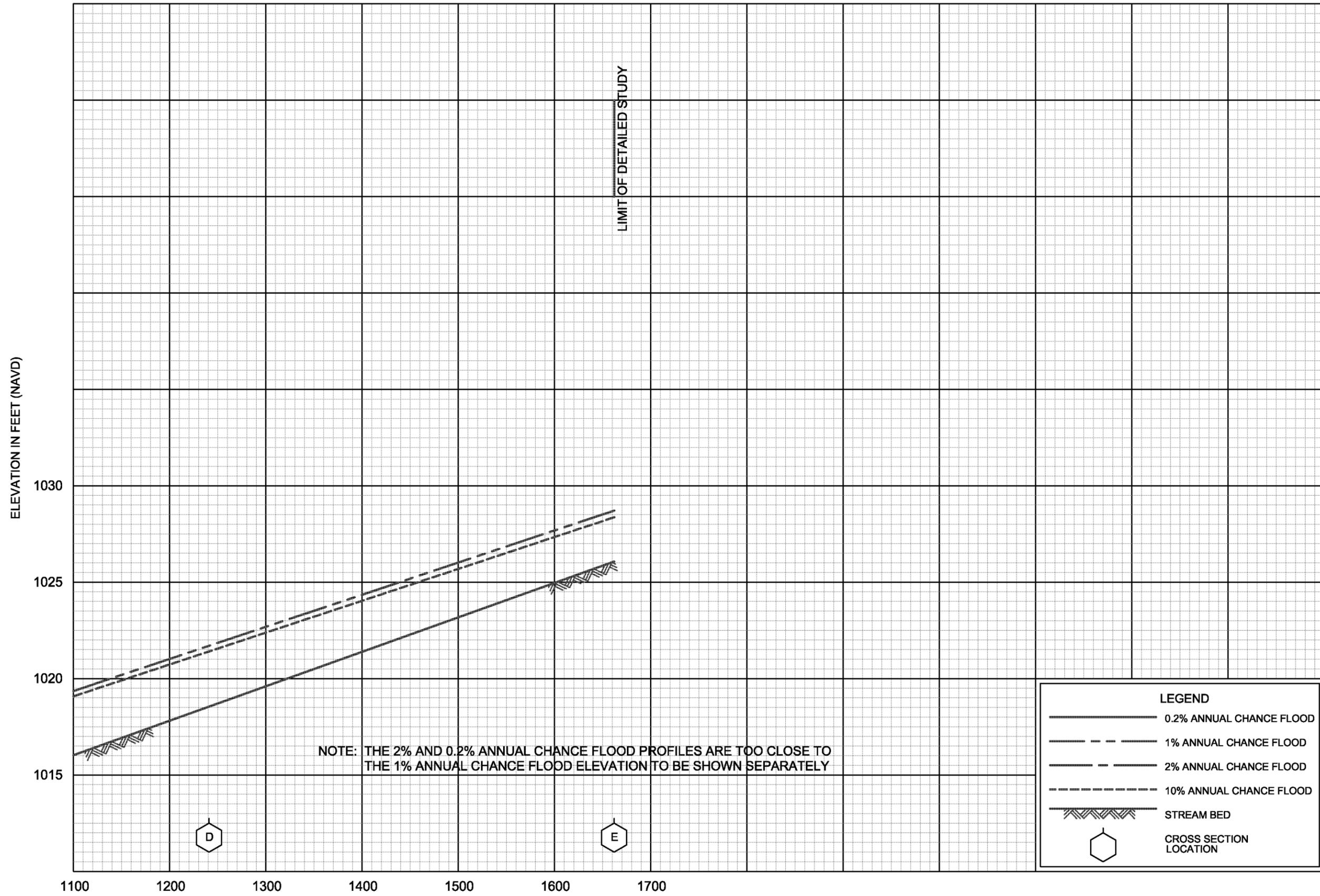
FLOOD PROFILES

BEULAH CREEK TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA

AND INCORPORATED AREAS

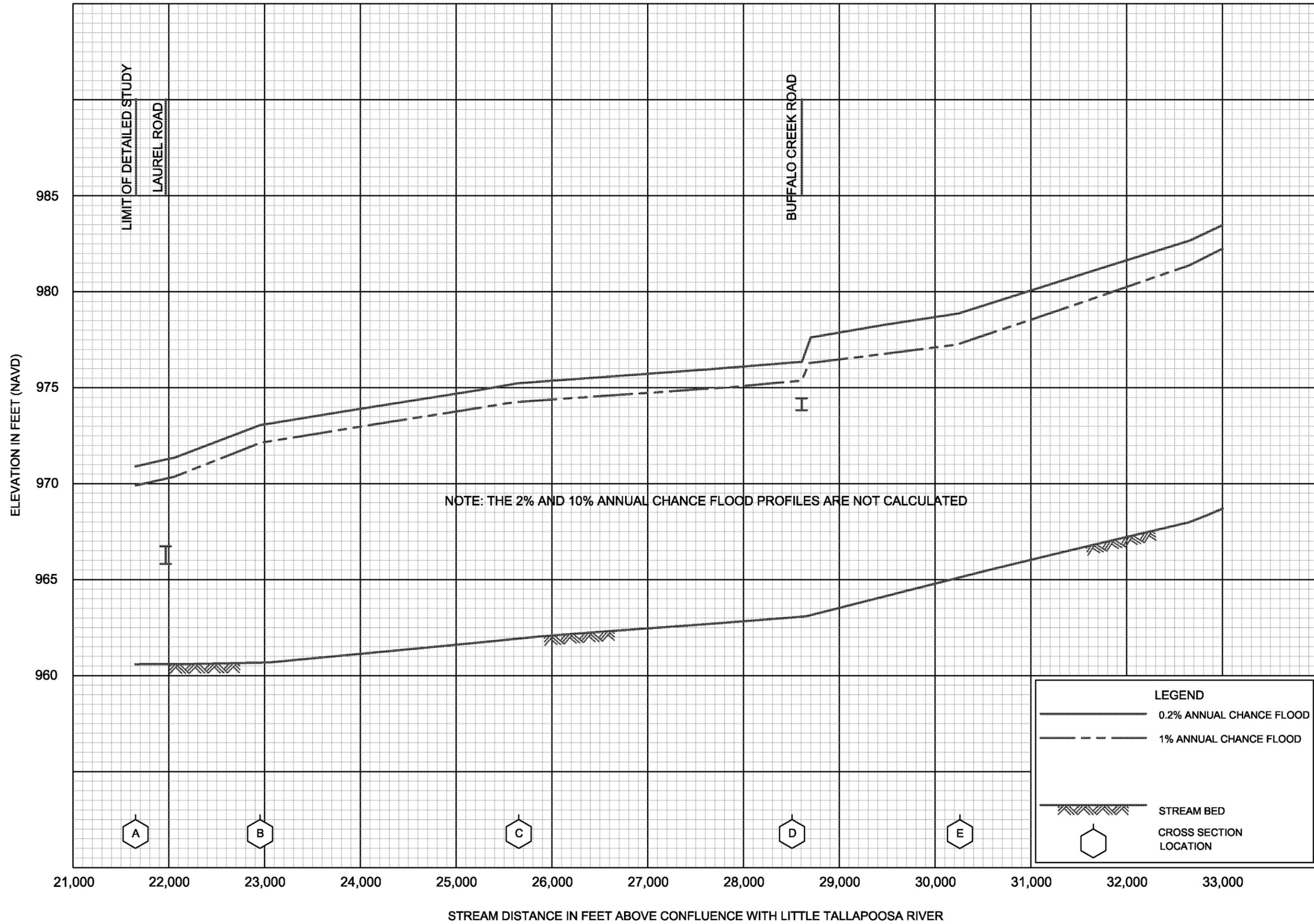


FLOOD PROFILES

BEULAH CREEK TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY  
 CARROLL COUNTY, GA  
 AND INCORPORATED AREAS



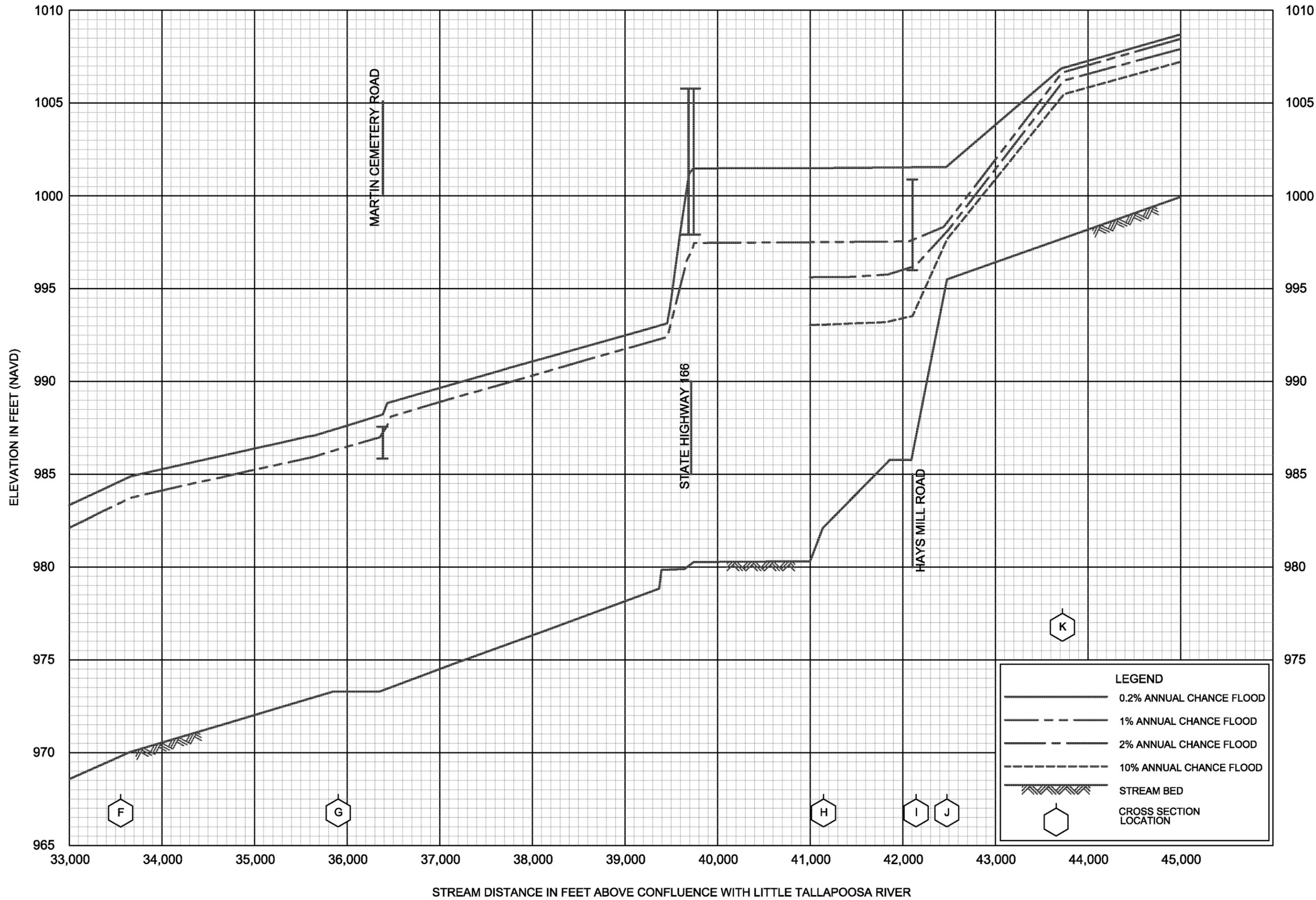


FLOOD PROFILES

BUFFALO CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

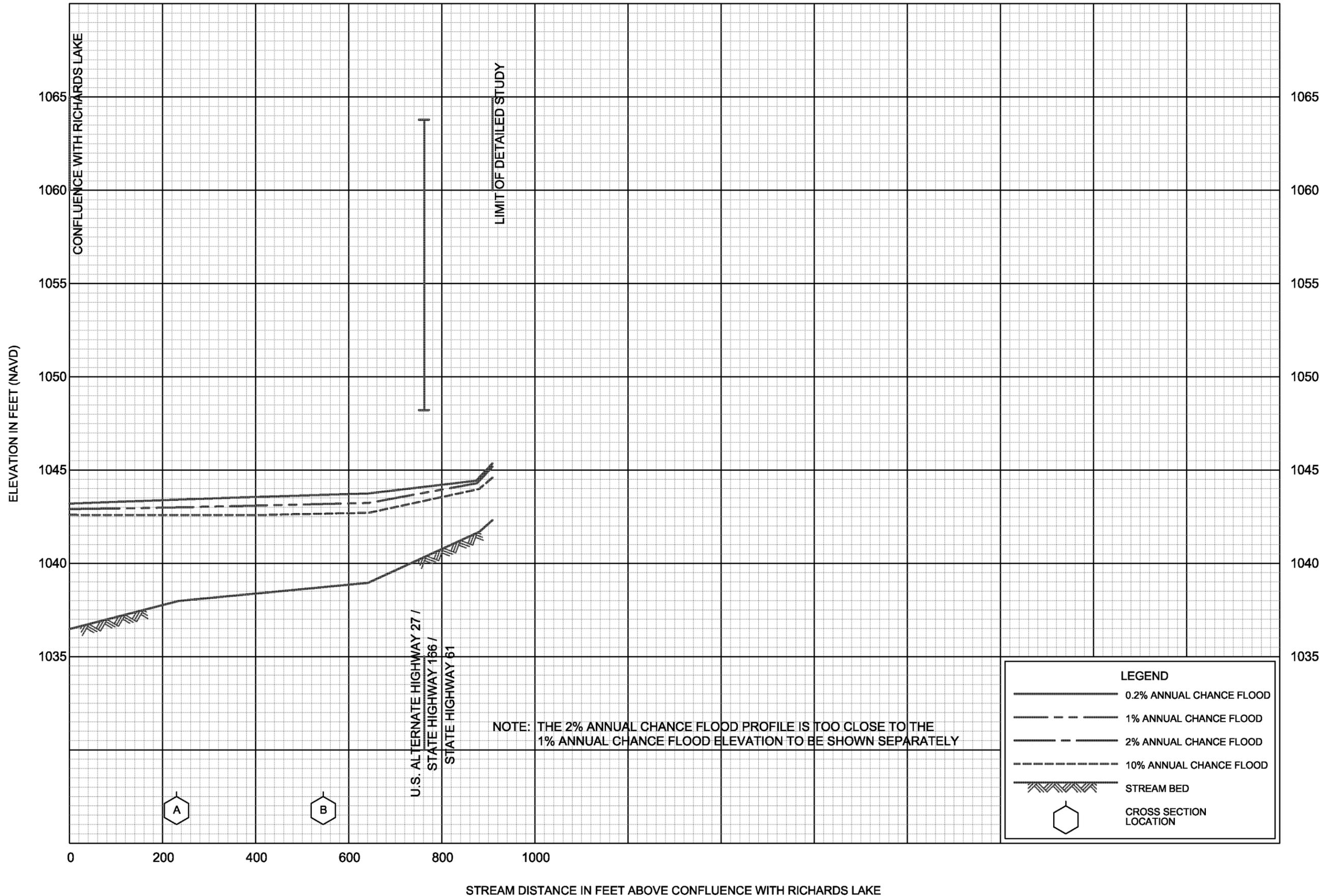
CARROLL COUNTY, GA  
AND INCORPORATED AREAS









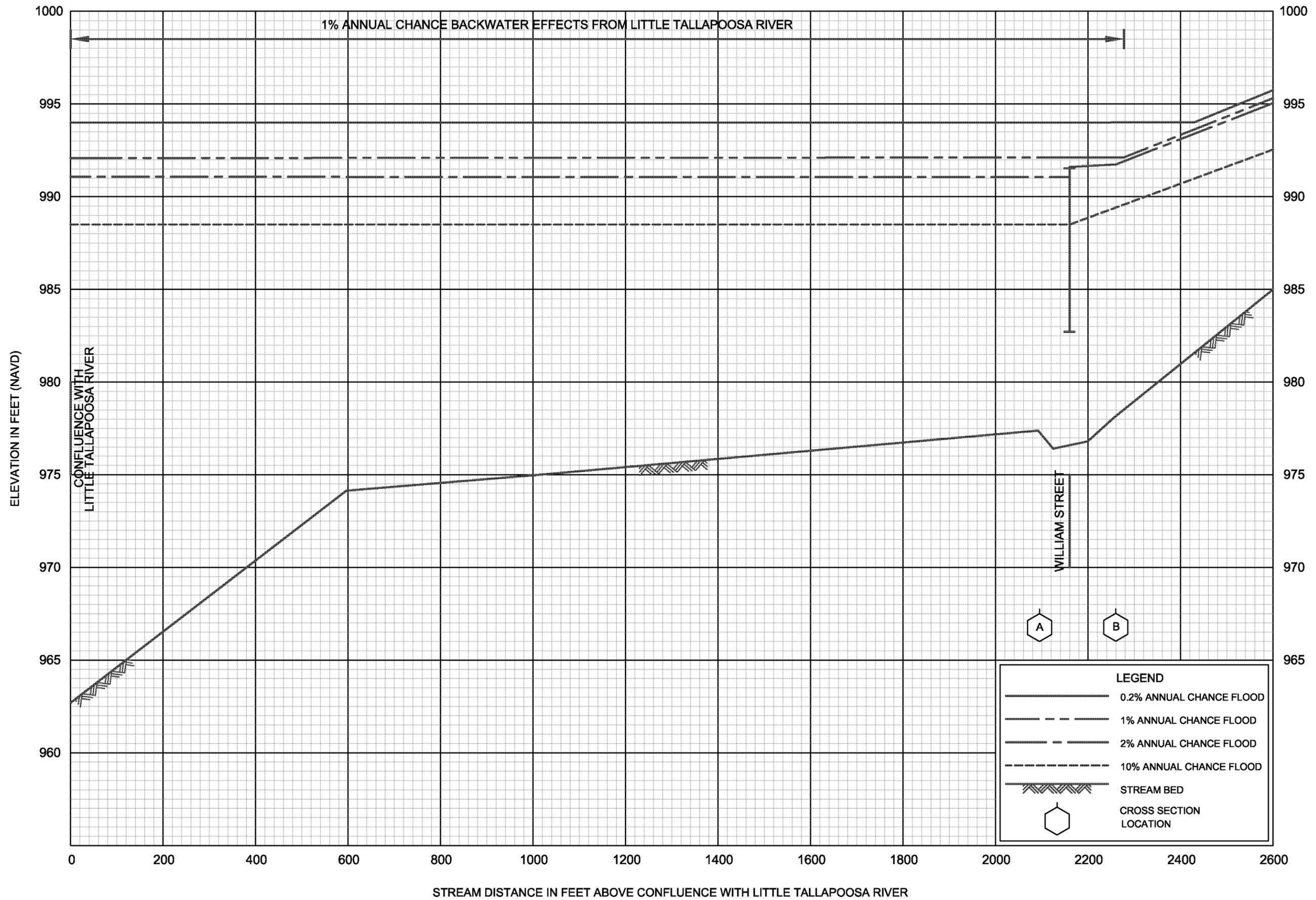


**FLOOD PROFILES**

**BUFFALO CREEK TRIBUTARY 2**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**CARROLL COUNTY, GA**  
AND INCORPORATED AREAS

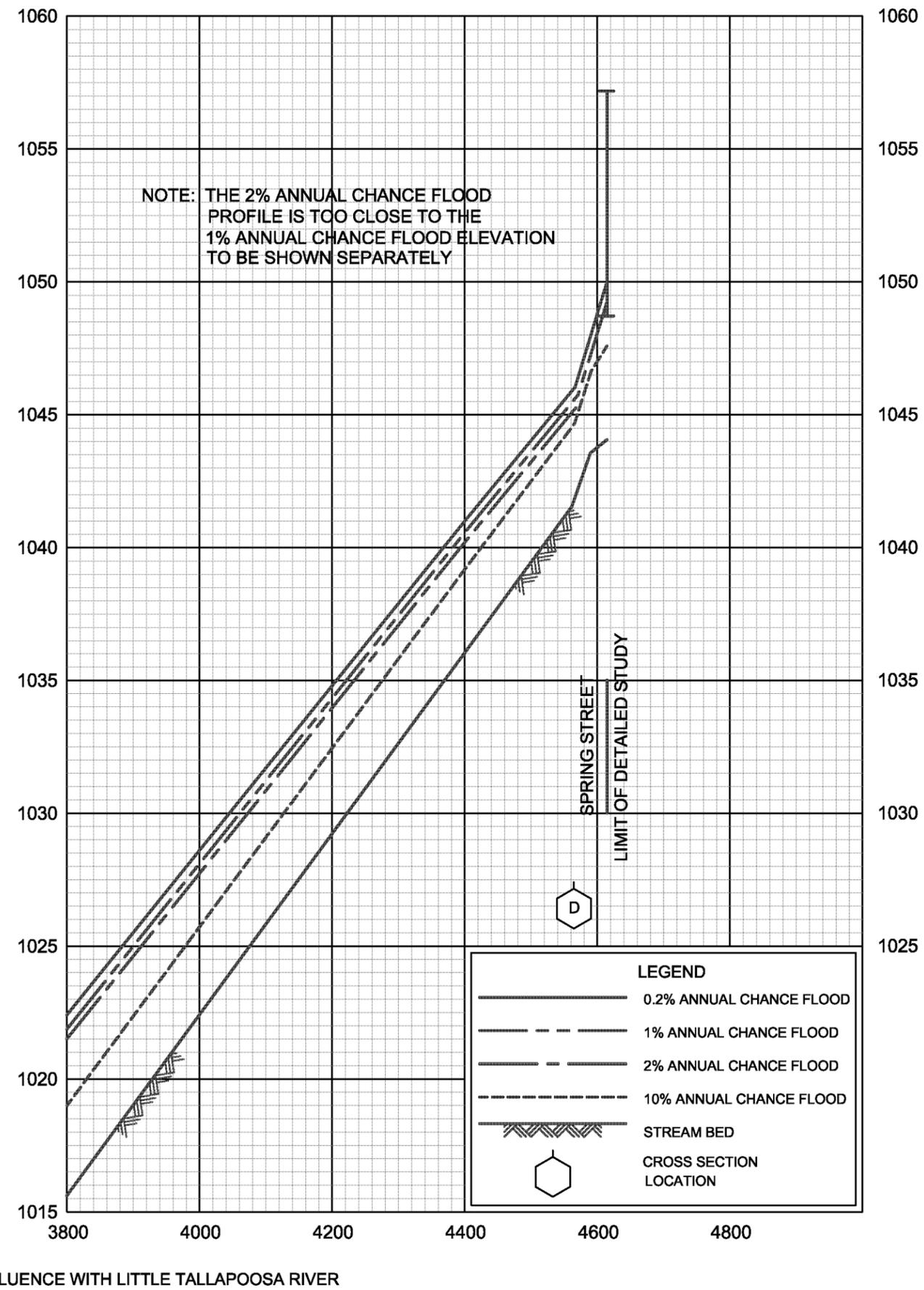
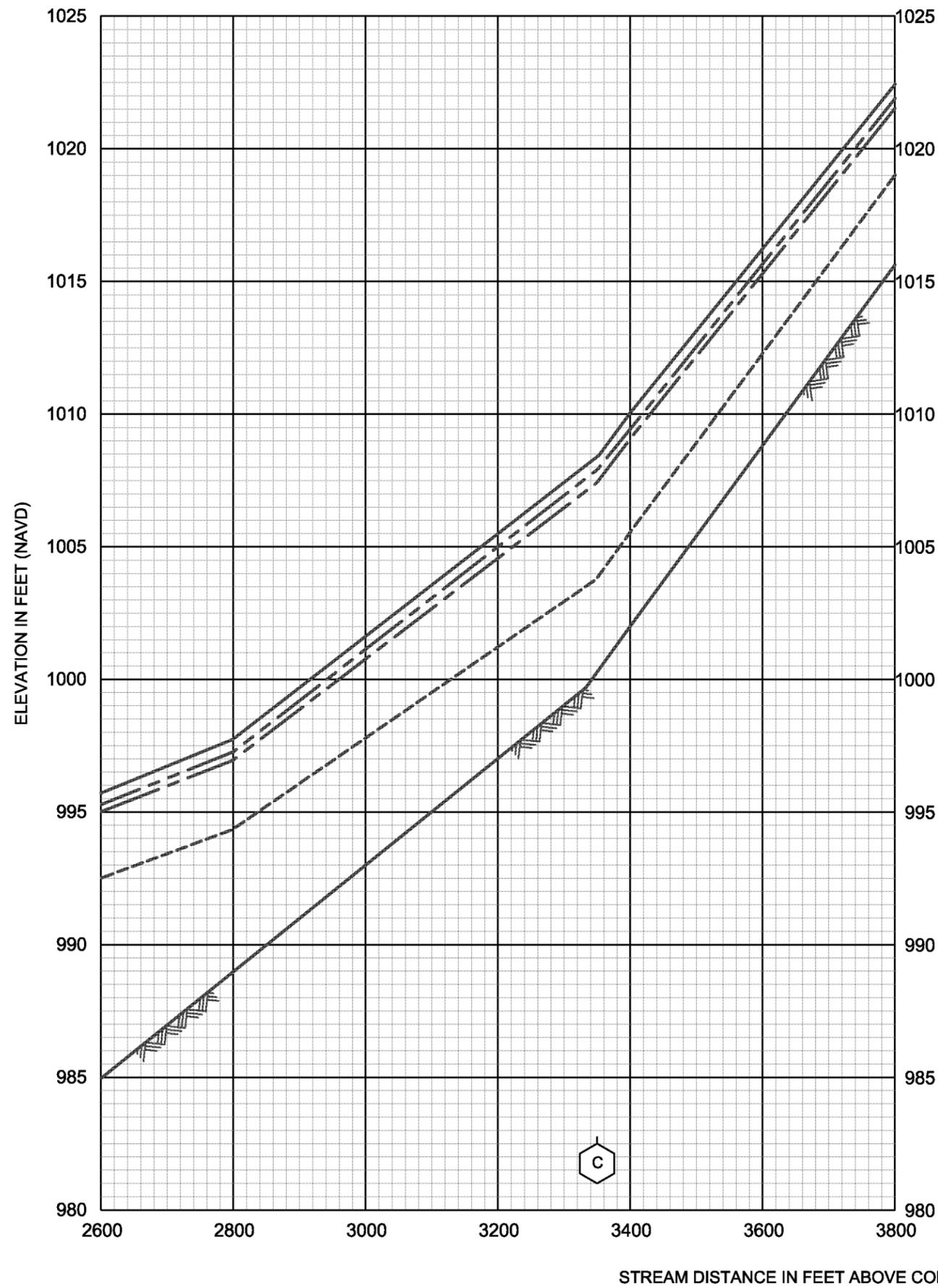


FLOOD PROFILES

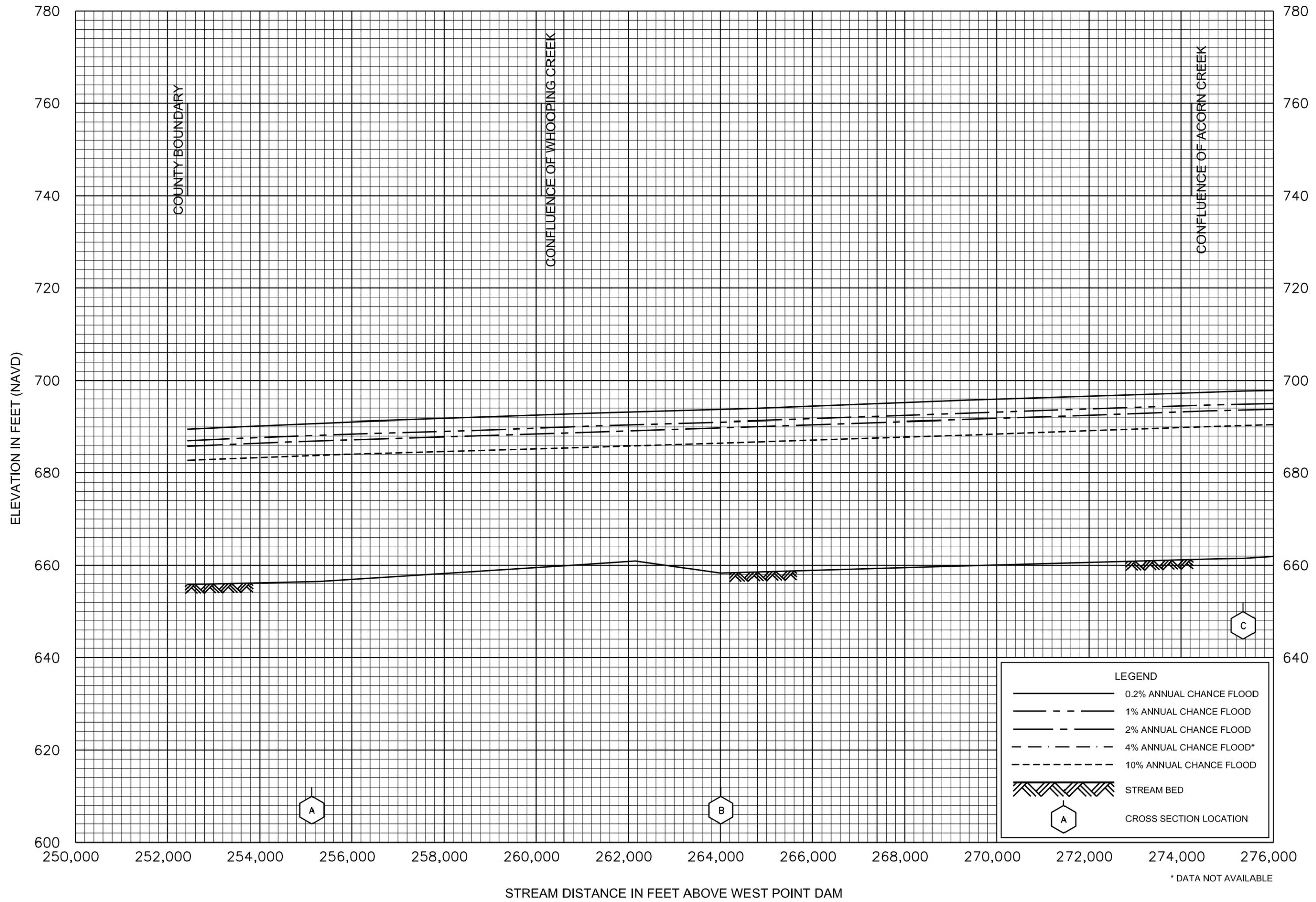
CHANDLER'S SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
AND INCORPORATED AREAS



LEGEND	
	0.2% ANNUAL CHANCE FLOOD
	1% ANNUAL CHANCE FLOOD
	2% ANNUAL CHANCE FLOOD
	10% ANNUAL CHANCE FLOOD
	STREAM BED
	CROSS SECTION LOCATION

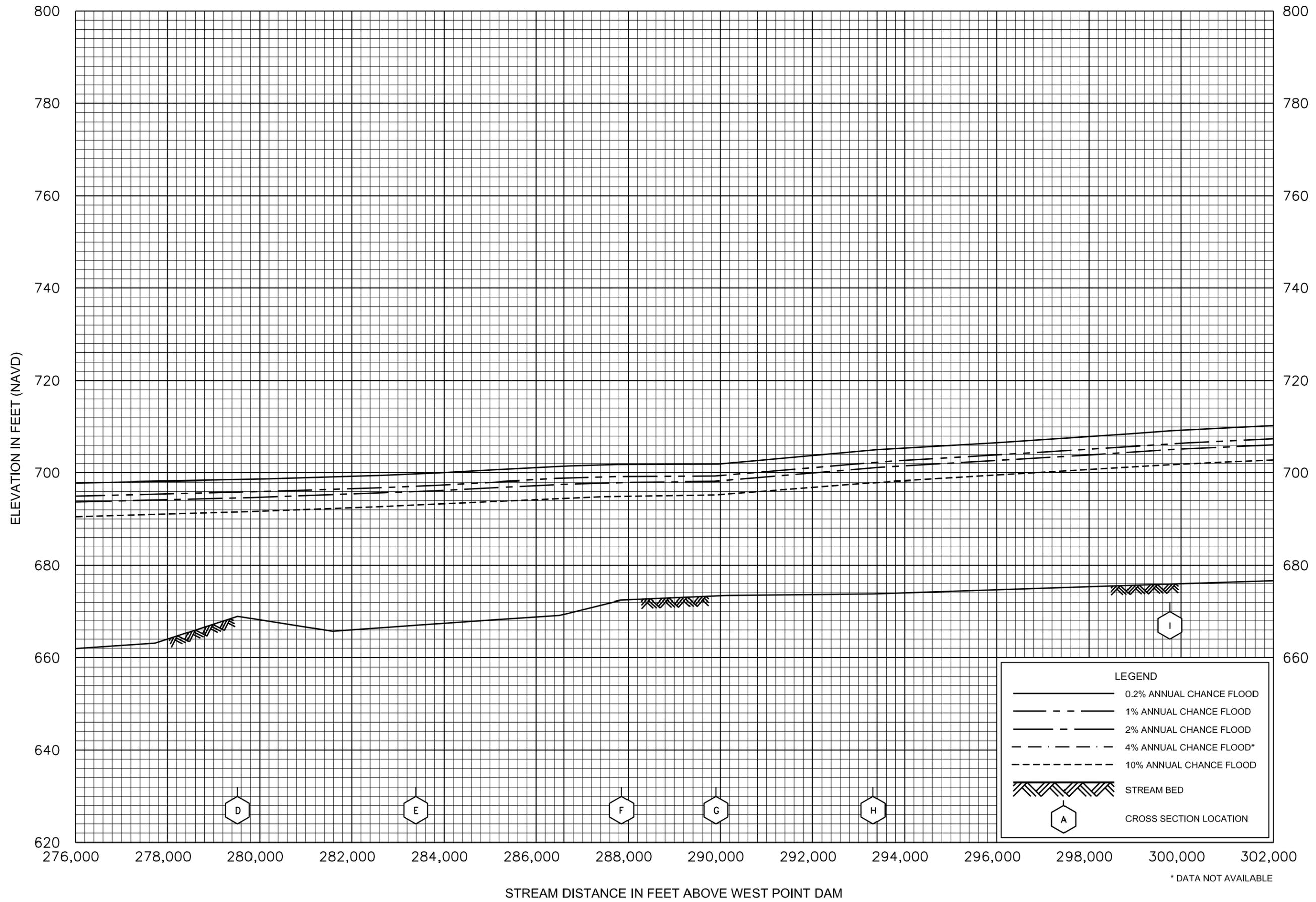


FLOOD PROFILES

CHATTAHOOCHEE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
AND INCORPORATED AREAS



FLOOD PROFILES

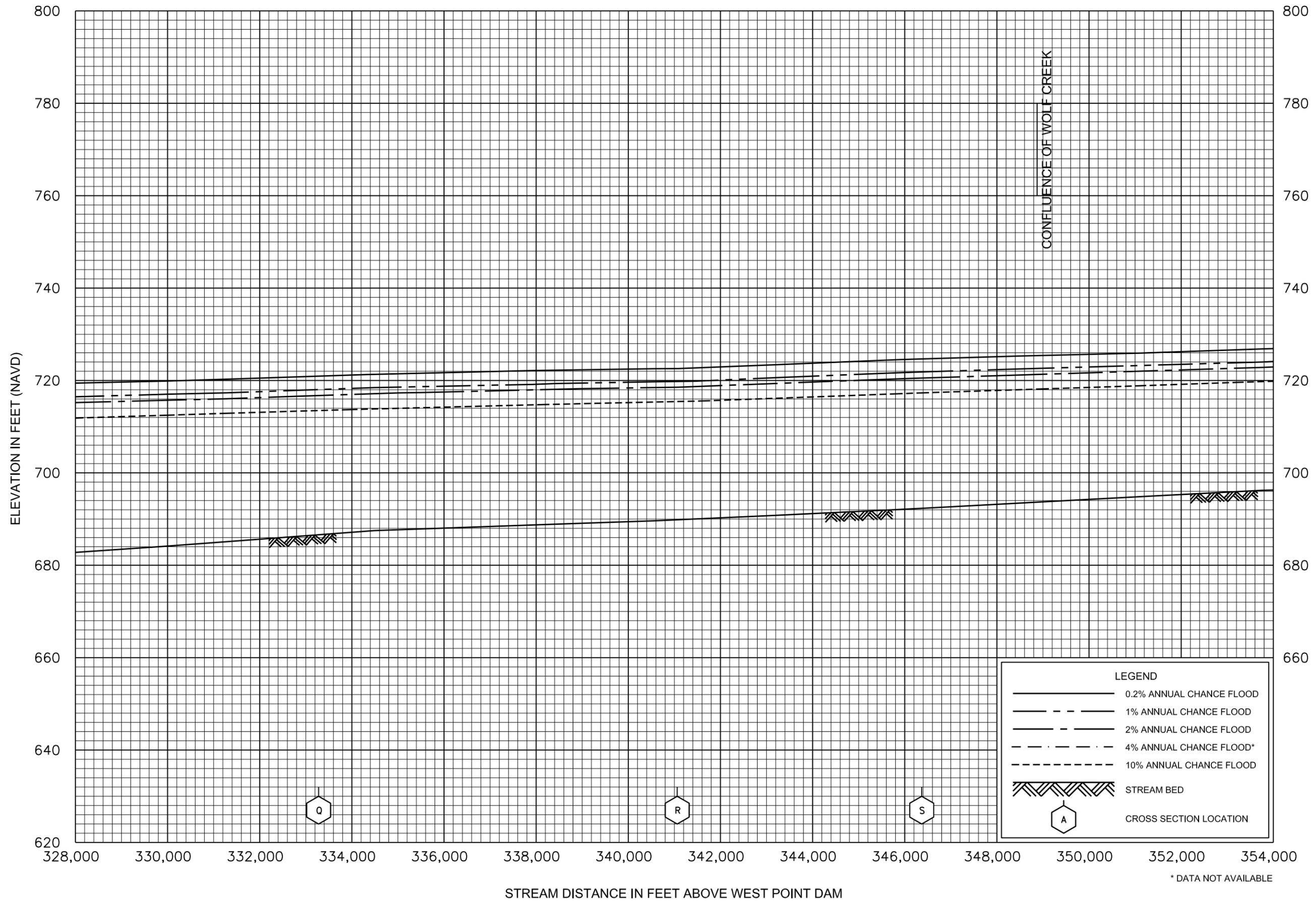
CHATTAHOOCHEE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
AND INCORPORATED AREAS

\* DATA NOT AVAILABLE





\* DATA NOT AVAILABLE

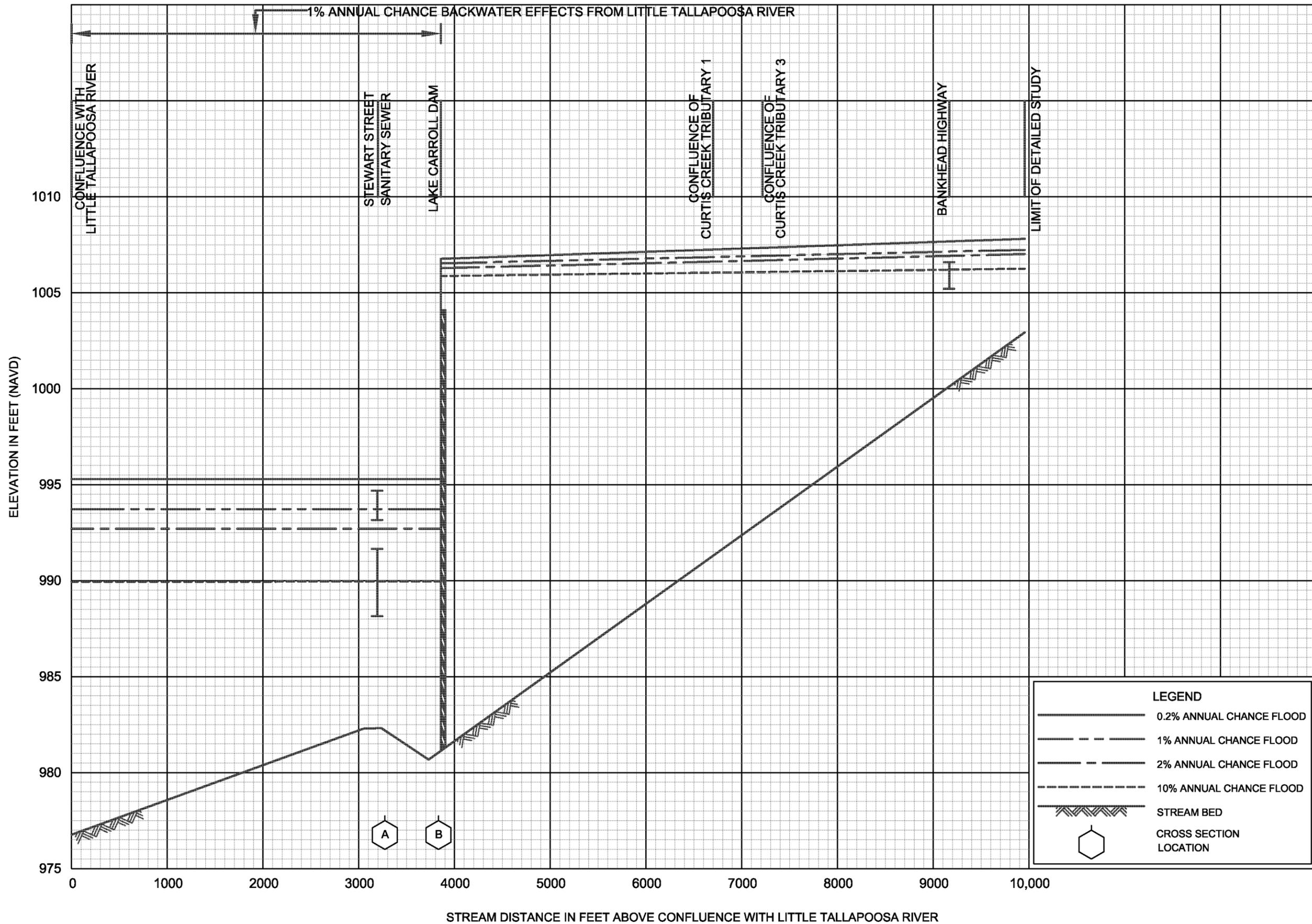
FLOOD PROFILES

CHATTAHOOCHEE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
AND INCORPORATED AREAS

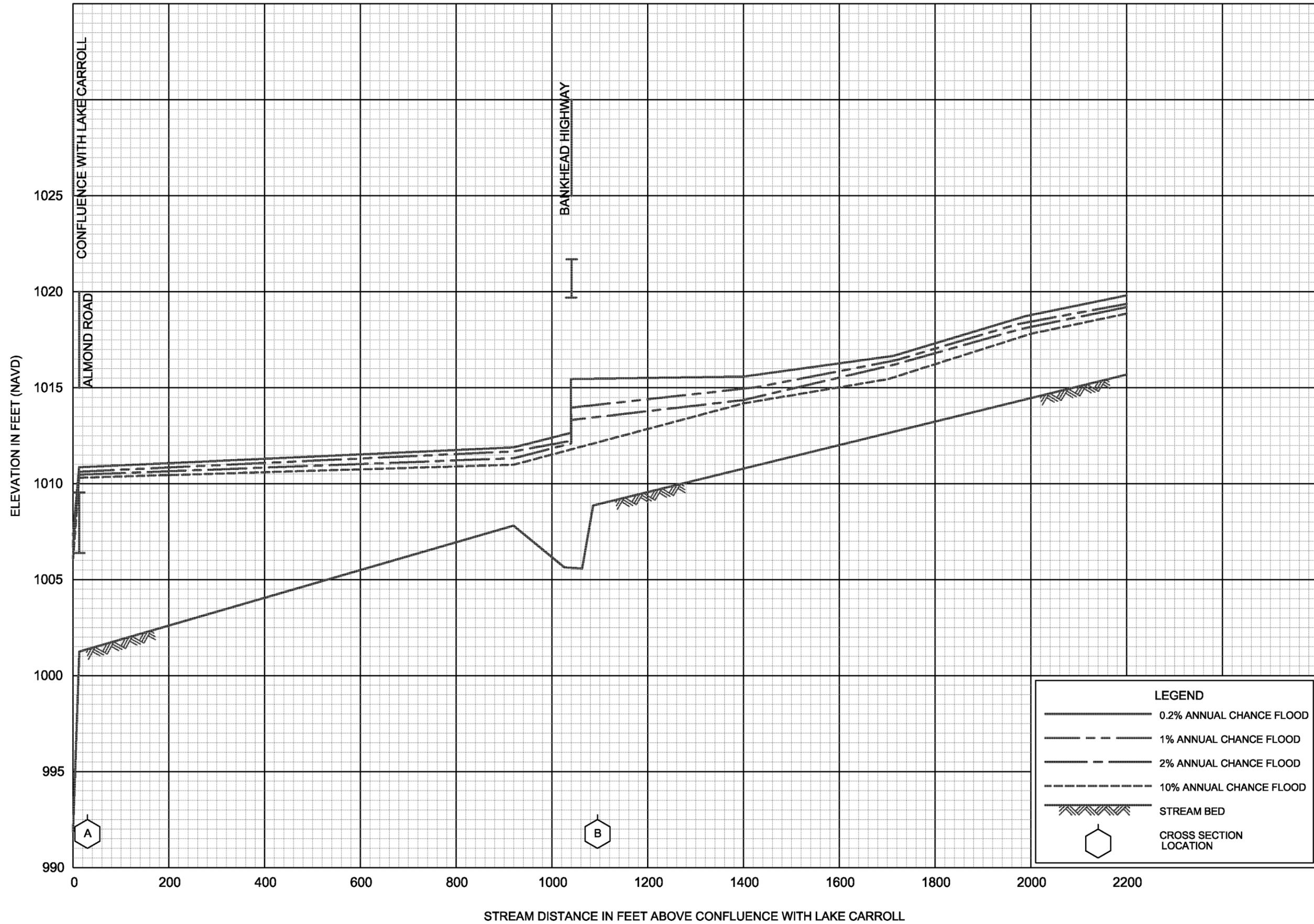




**FLOOD PROFILES**

**CURTIS CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**CARROLL COUNTY, GA**  
 AND INCORPORATED AREAS



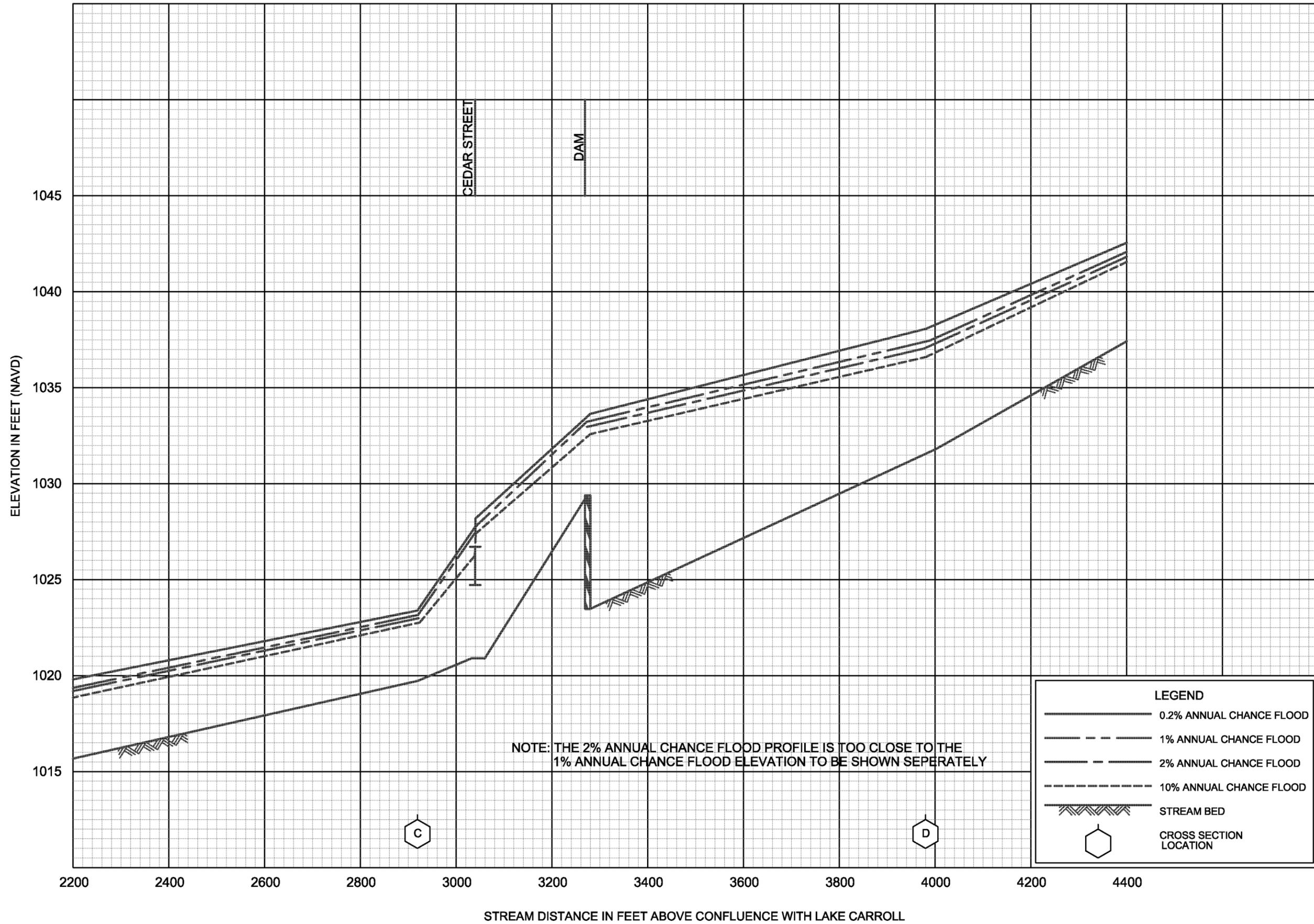
FLOOD PROFILES

CURTIS CREEK TRIBUTARY 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA

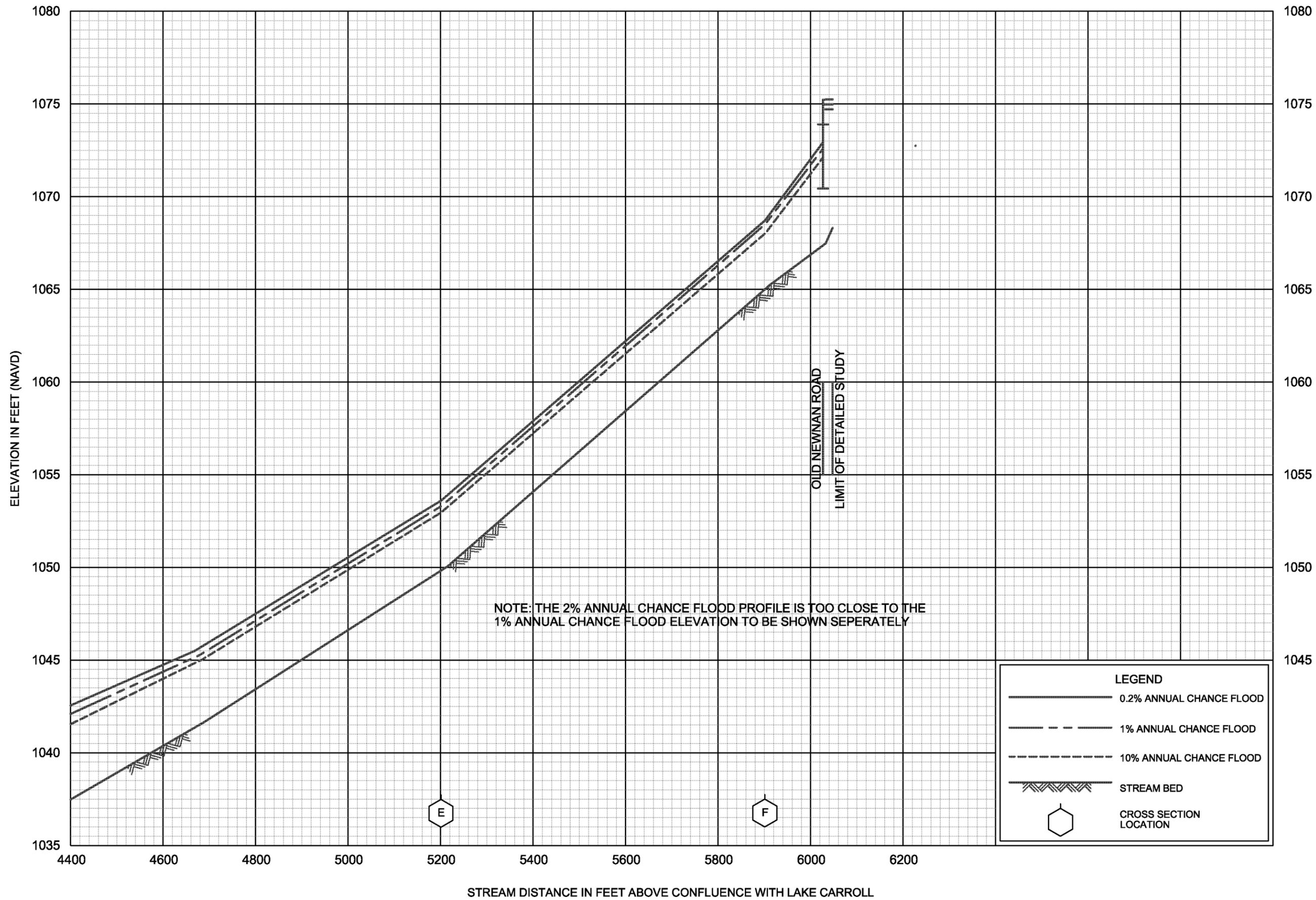
AND INCORPORATED AREAS



**FLOOD PROFILES**

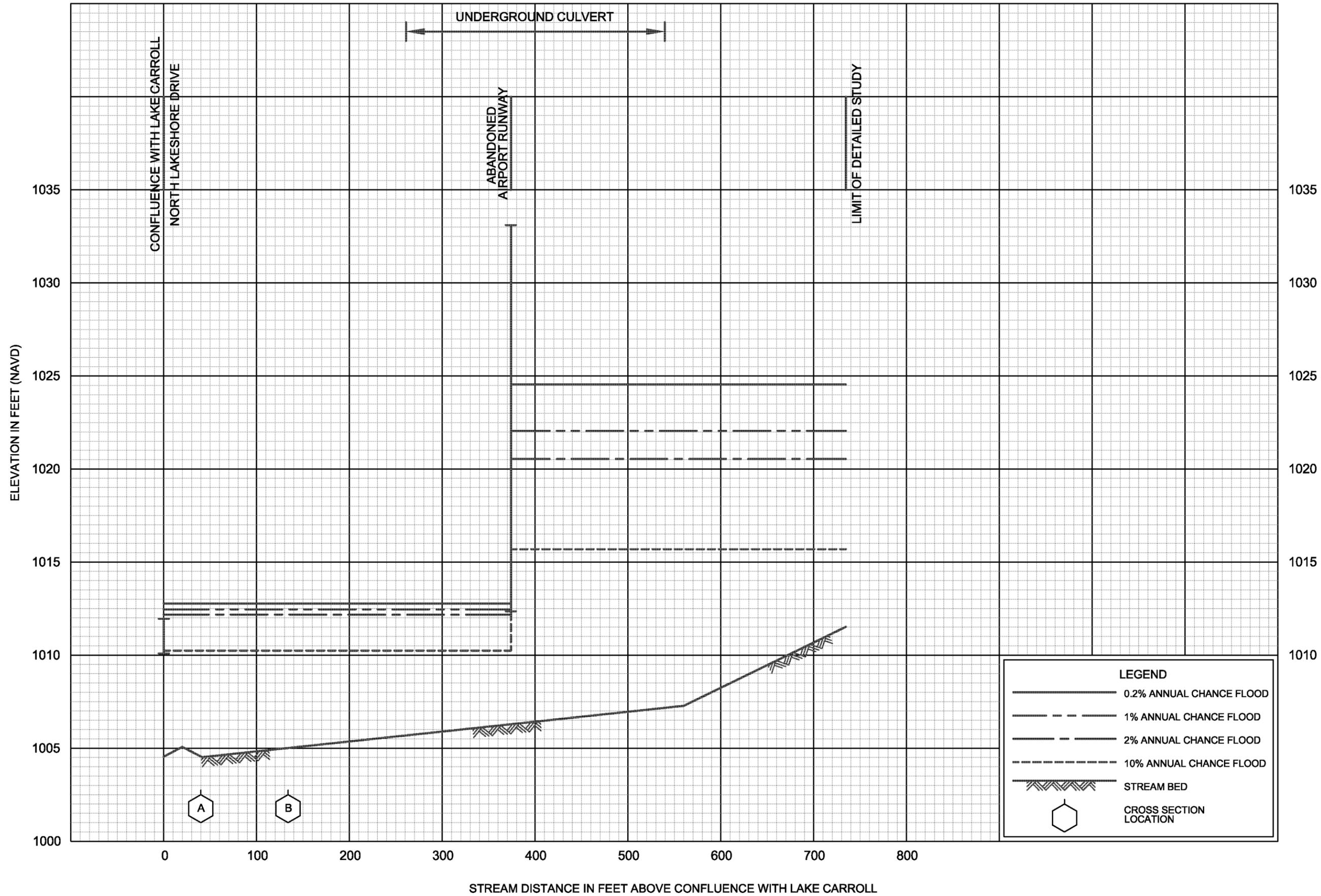
**CURTIS CREEK TRIBUTARY 1**

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**CARROLL COUNTY, GA**  
 AND INCORPORATED AREAS



**FLOOD PROFILES**  
**CURTIS CREEK TRIBUTARY 1**

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**CARROLL COUNTY, GA**  
 AND INCORPORATED AREAS



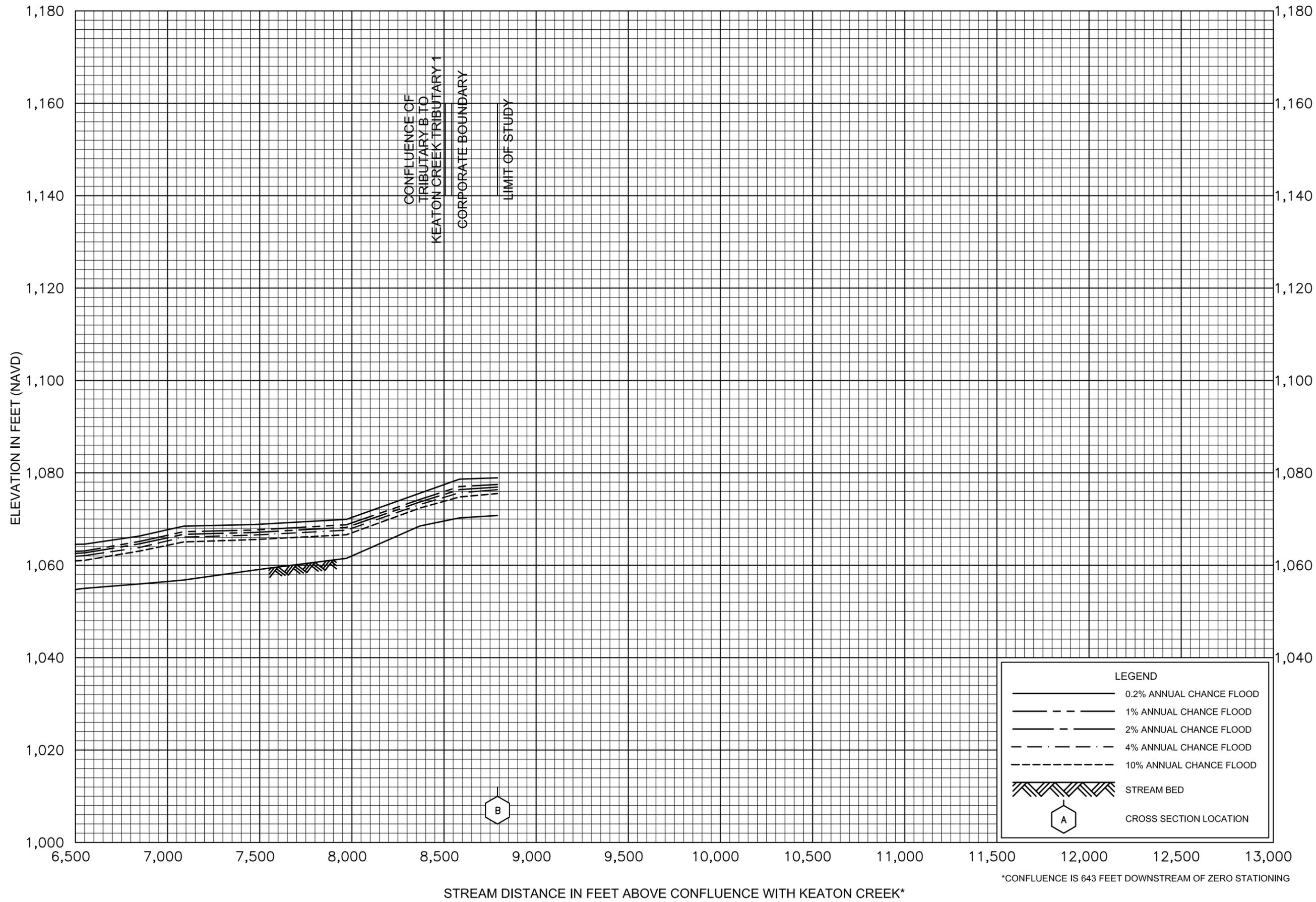
FLOOD PROFILES

CURTIS CREEK TRIBUTARY 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
AND INCORPORATED AREAS





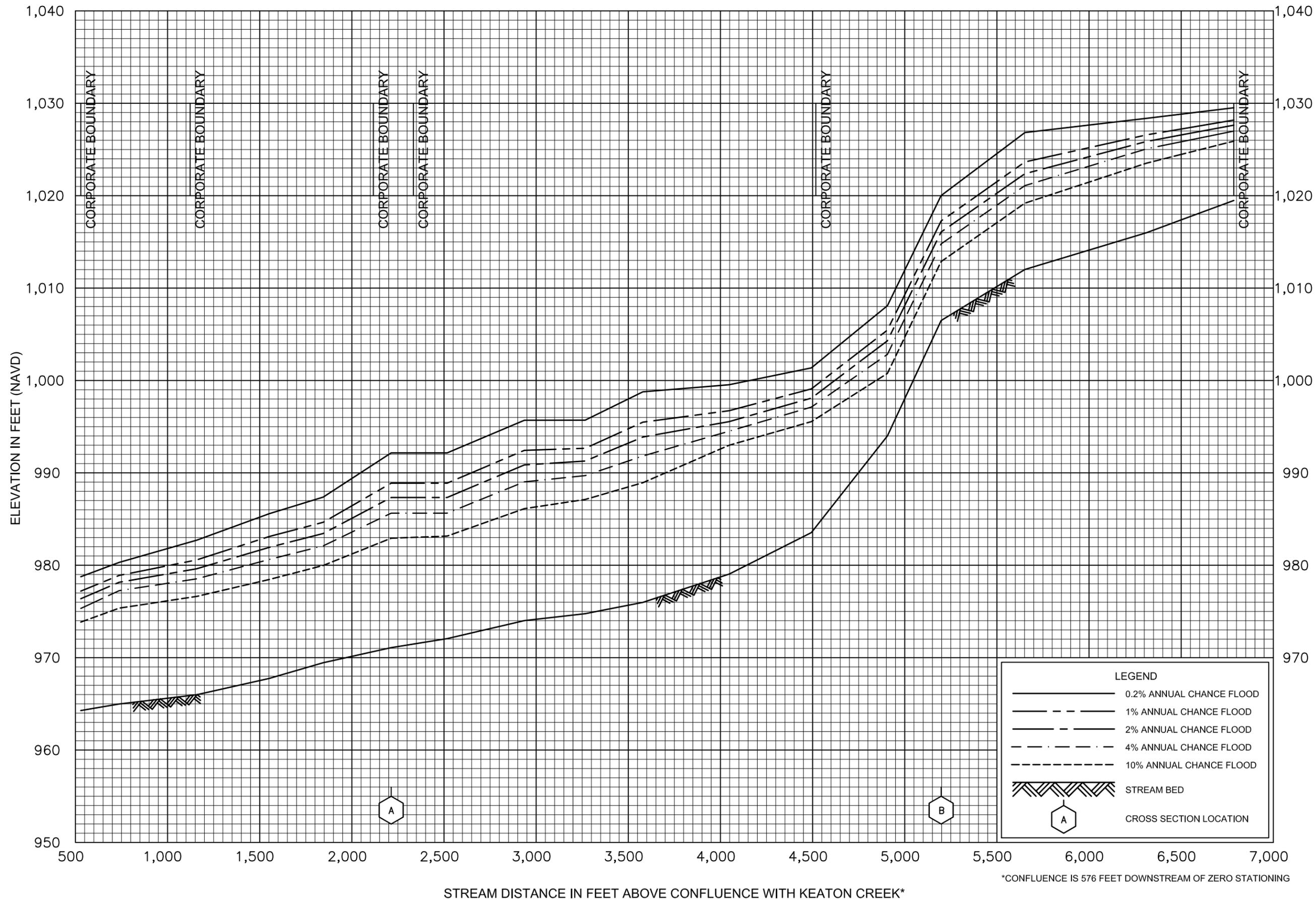
\*CONFLUENCE IS 643 FEET DOWNSTREAM OF ZERO STATIONING

FLOOD PROFILES

KEATON CREEK TRIBUTARY 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
AND INCORPORATED AREAS

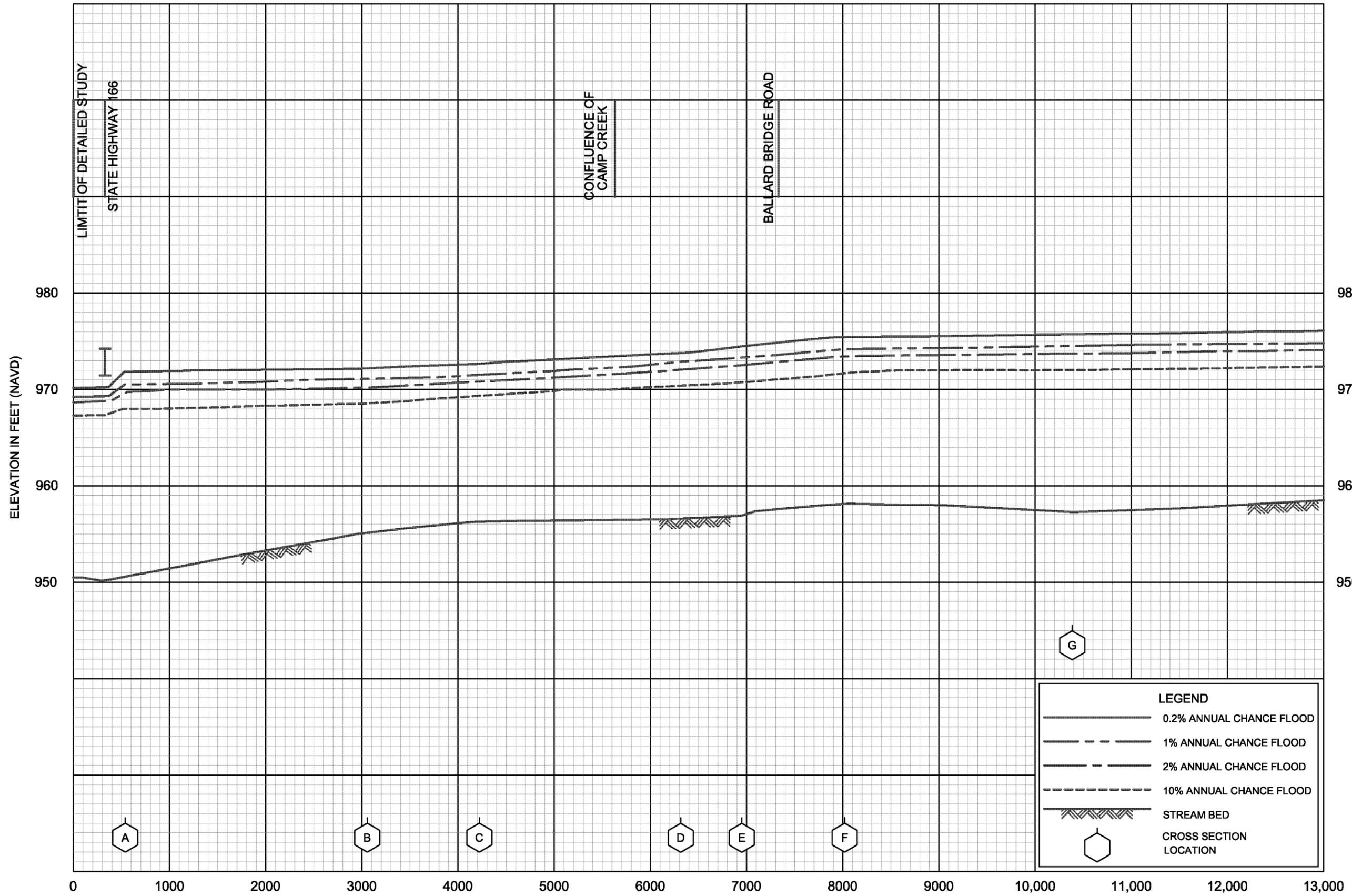


FLOOD PROFILES

KEATON CREEK TRIBUTARY 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
AND INCORPORATED AREAS



STREAM DISTANCE IN FEET ABOVE LIMIT OF DETAILED STUDY  
 (LIMIT OF DETAILED STUDY IS 300 FEET DOWNSTREAM FROM STATE HIGHWAY 166)

LEGEND	
	0.2% ANNUAL CHANCE FLOOD
	1% ANNUAL CHANCE FLOOD
	2% ANNUAL CHANCE FLOOD
	10% ANNUAL CHANCE FLOOD
	STREAM BED
	CROSS SECTION LOCATION

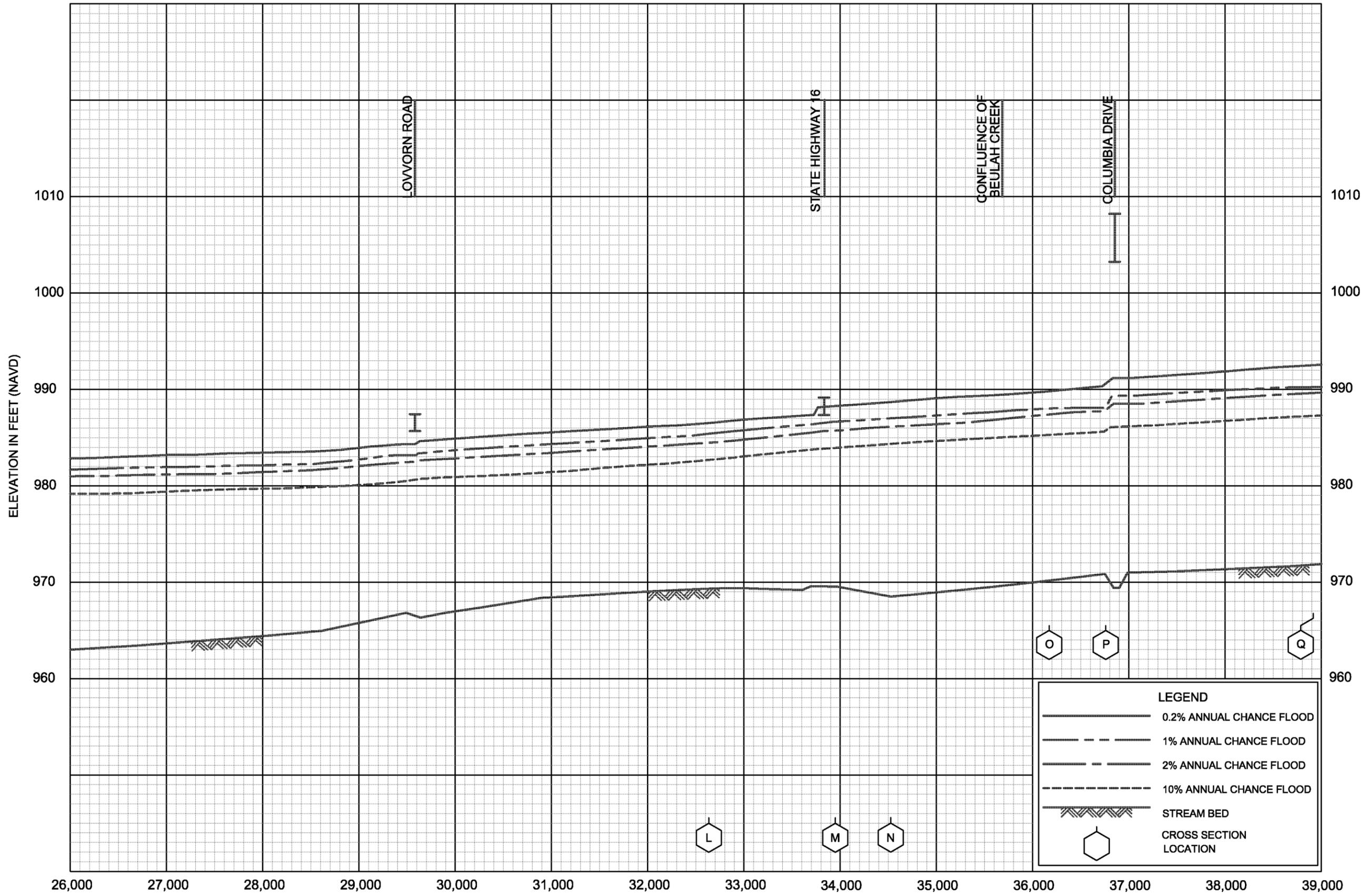
FLOOD PROFILES

LITTLE TALLAPOOSA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
 AND INCORPORATED AREAS





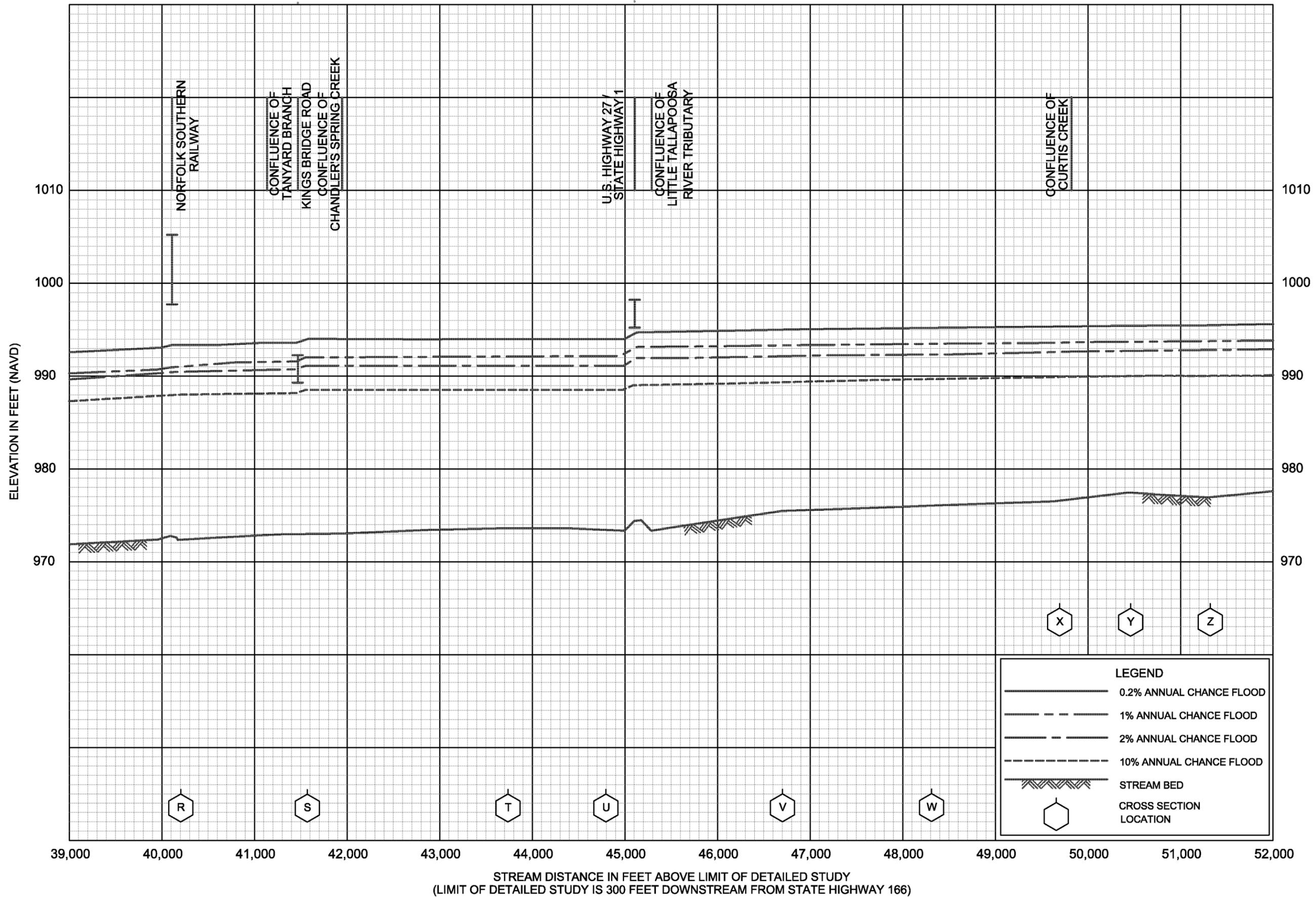
STREAM DISTANCE IN FEET ABOVE LIMIT OF DETAILED STUDY  
 (LIMIT OF DETAILED STUDY IS 300 FEET DOWNSTREAM FROM STATE HIGHWAY 166)

FLOOD PROFILES

LITTLE TALLAPOOSA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
 AND INCORPORATED AREAS

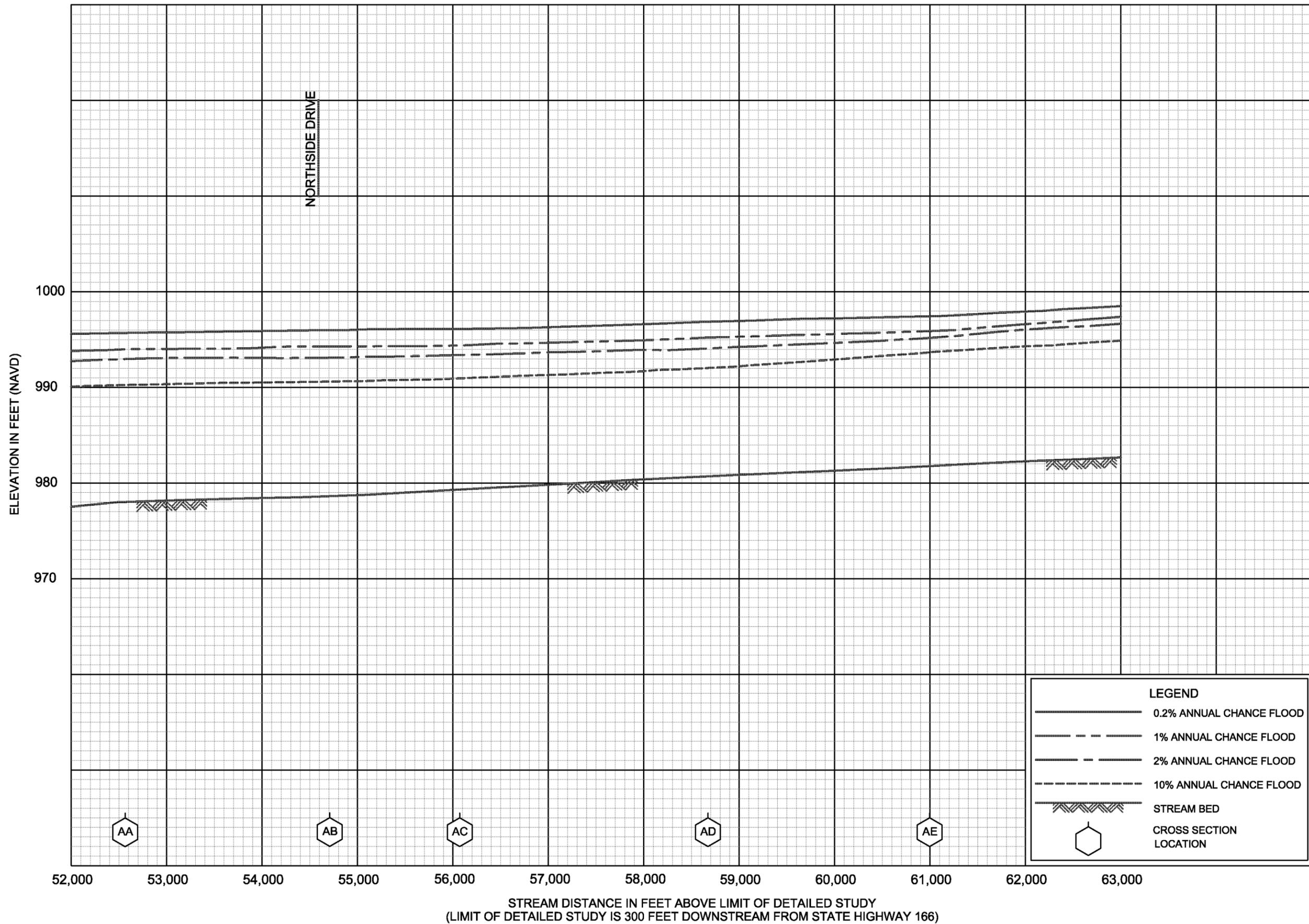


FLOOD PROFILES

LITTLE TALLAPOOSA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
AND INCORPORATED AREAS



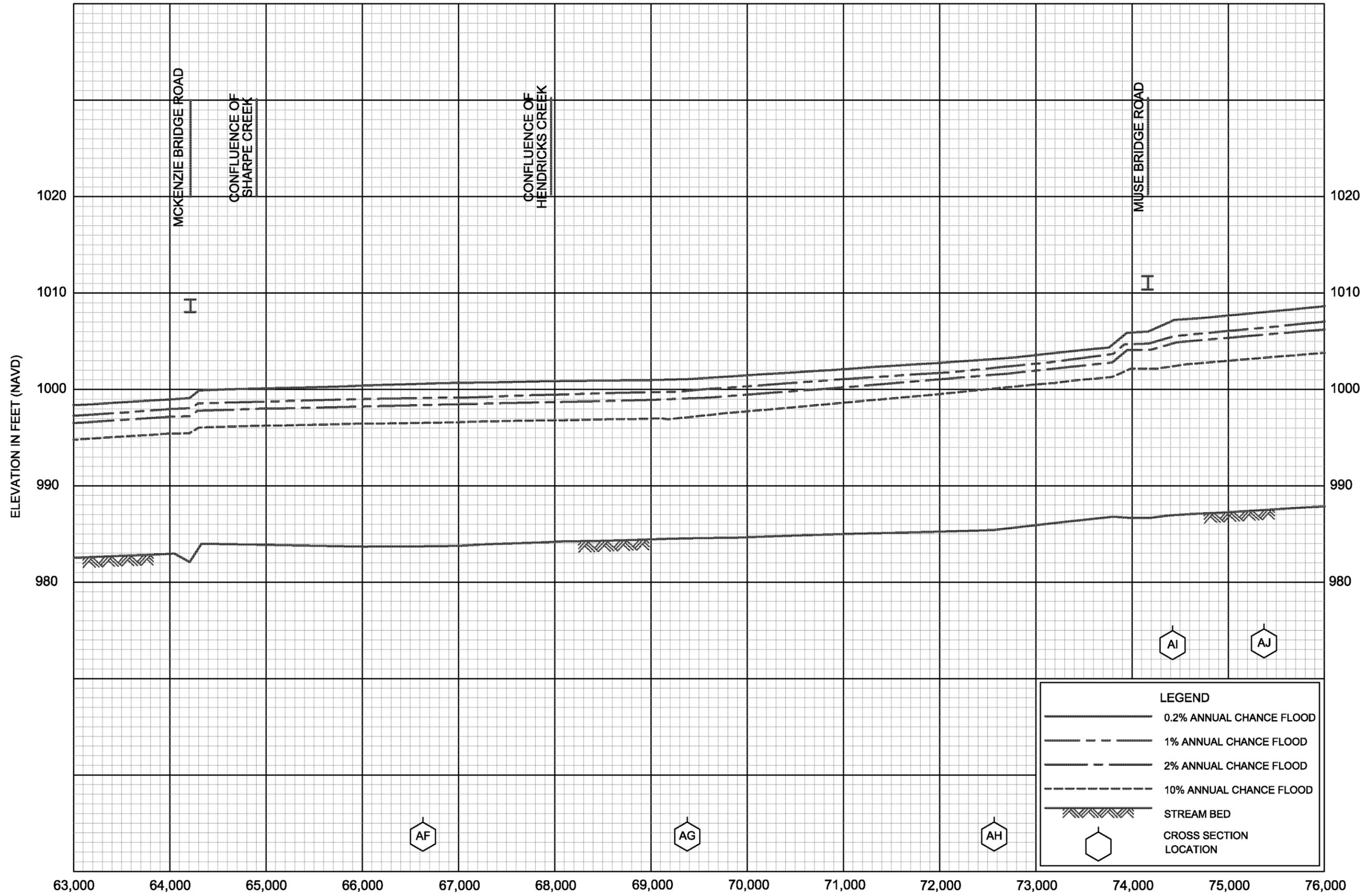
STREAM DISTANCE IN FEET ABOVE LIMIT OF DETAILED STUDY  
 (LIMIT OF DETAILED STUDY IS 300 FEET DOWNSTREAM FROM STATE HIGHWAY 166)

FLOOD PROFILES

LITTLE TALLAPOOSA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
 AND INCORPORATED AREAS



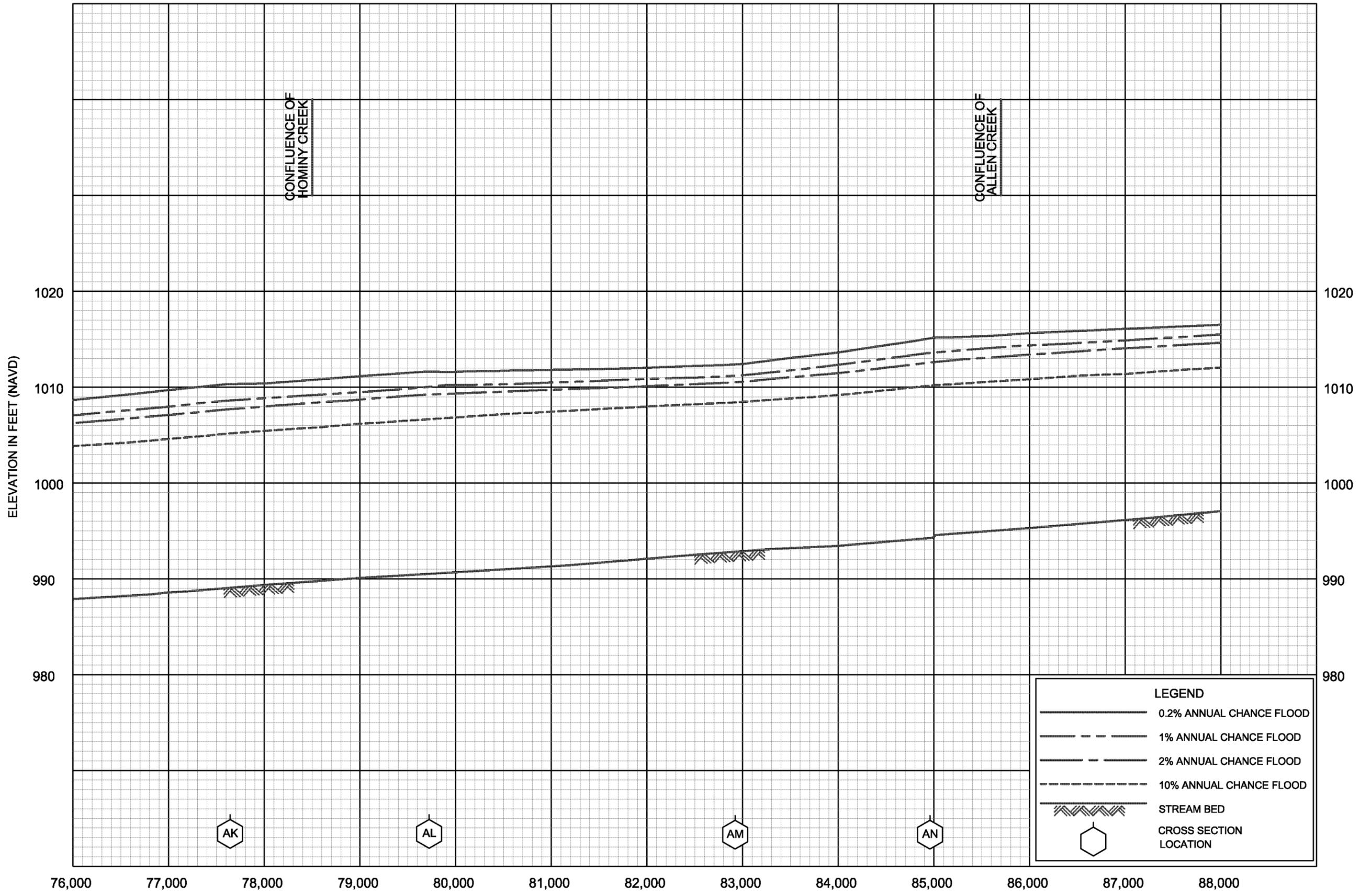
STREAM DISTANCE IN FEET ABOVE LIMIT OF DETAILED STUDY  
 (LIMIT OF DETAILED STUDY IS 300 FEET DOWNSTREAM FROM STATE HIGHWAY 166)

FLOOD PROFILES

LITTLE TALLAPOOSA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
 AND INCORPORATED AREAS



STREAM DISTANCE IN FEET ABOVE LIMIT OF DETAILED STUDY  
 (LIMIT OF DETAILED STUDY IS 300 FEET DOWNSTREAM FROM STATE HIGHWAY 166)

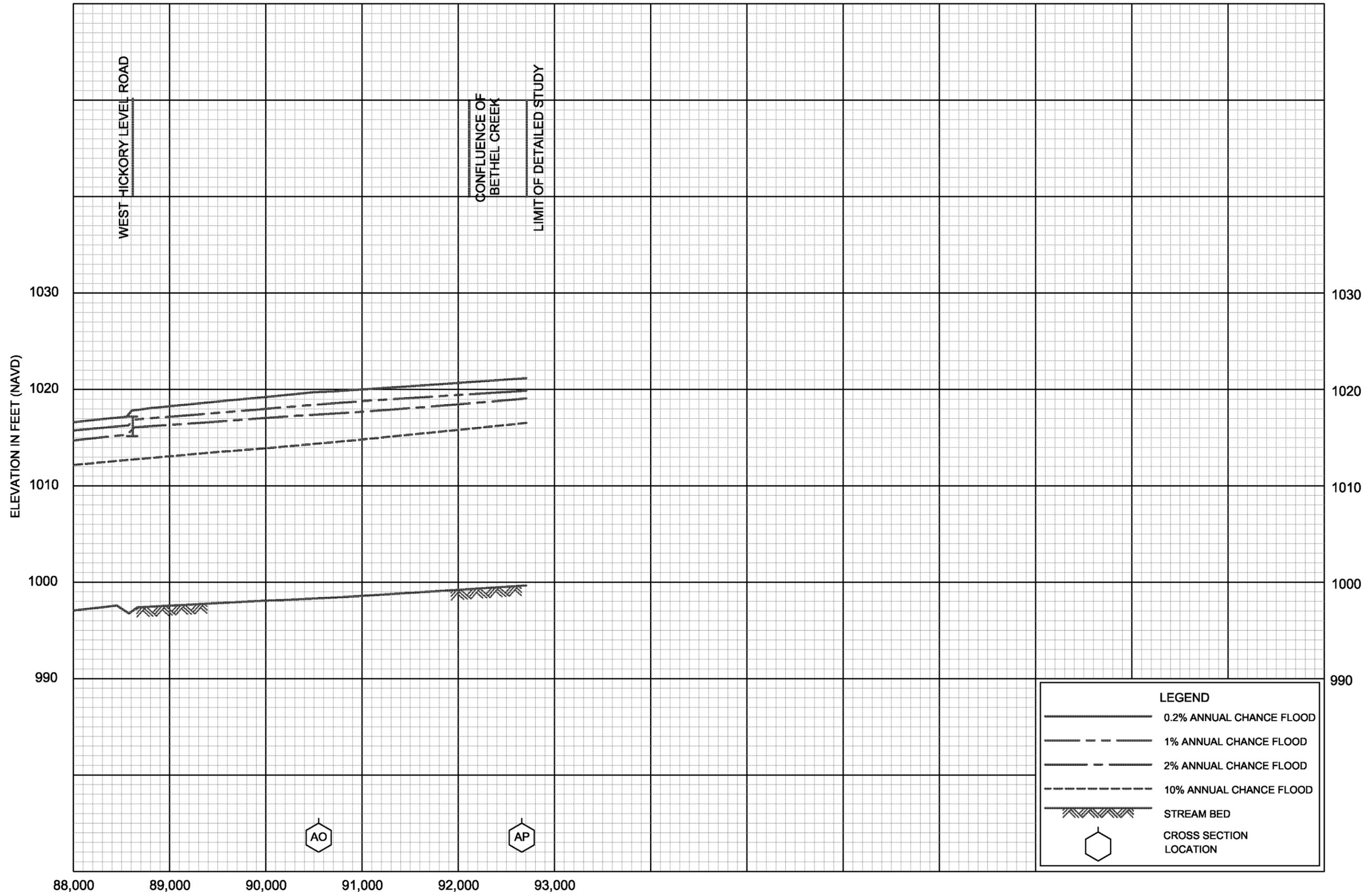
FLOOD PROFILES

LITTLE TALLAPOOSA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA

AND INCORPORATED AREAS



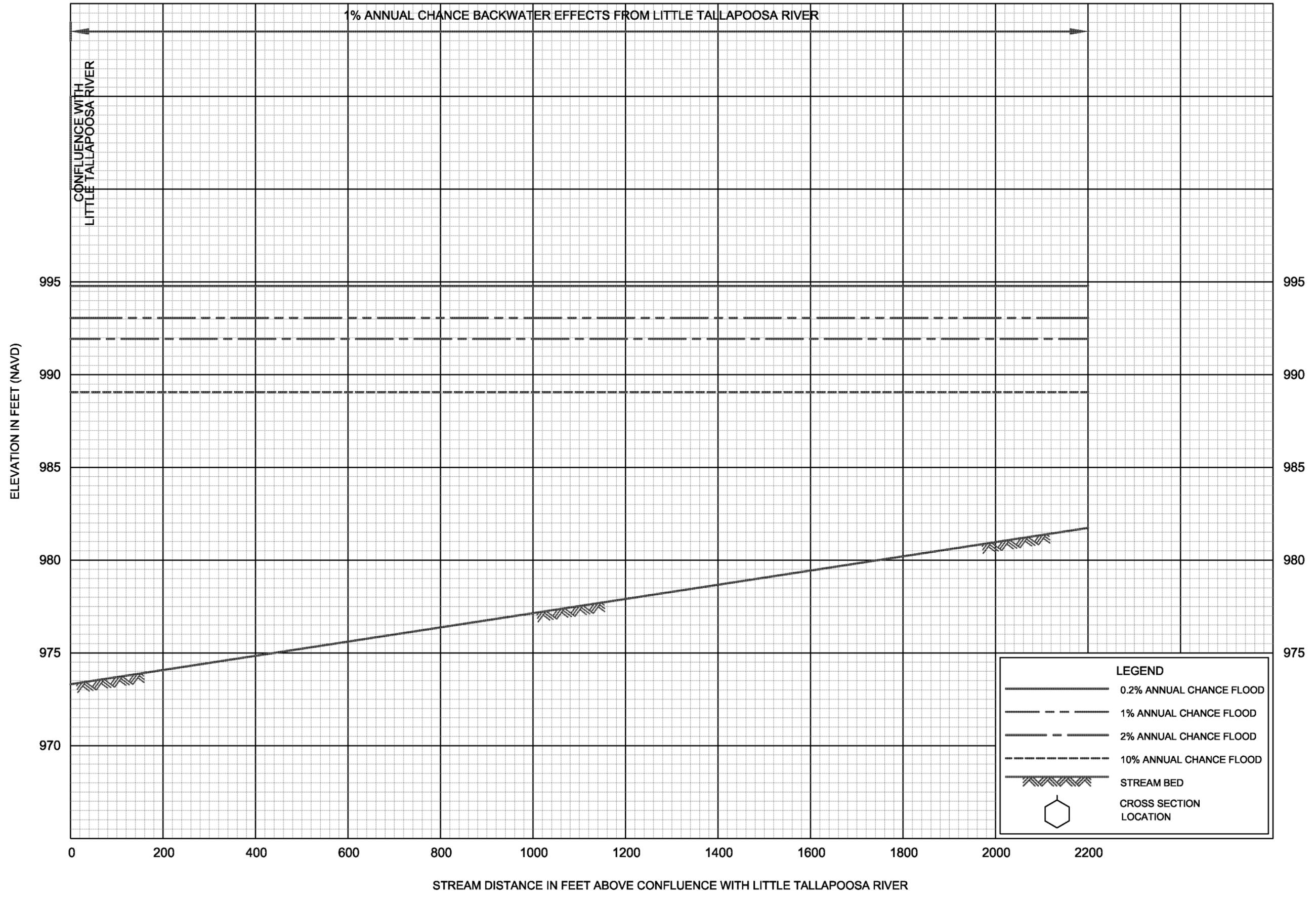
STREAM DISTANCE IN FEET ABOVE LIMIT OF DETAILED STUDY  
 (LIMIT OF DETAILED STUDY IS 300 FEET DOWNSTREAM FROM STATE HIGHWAY 166)

FLOOD PROFILES

LITTLE TALLAPOOSA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
 AND INCORPORATED AREAS

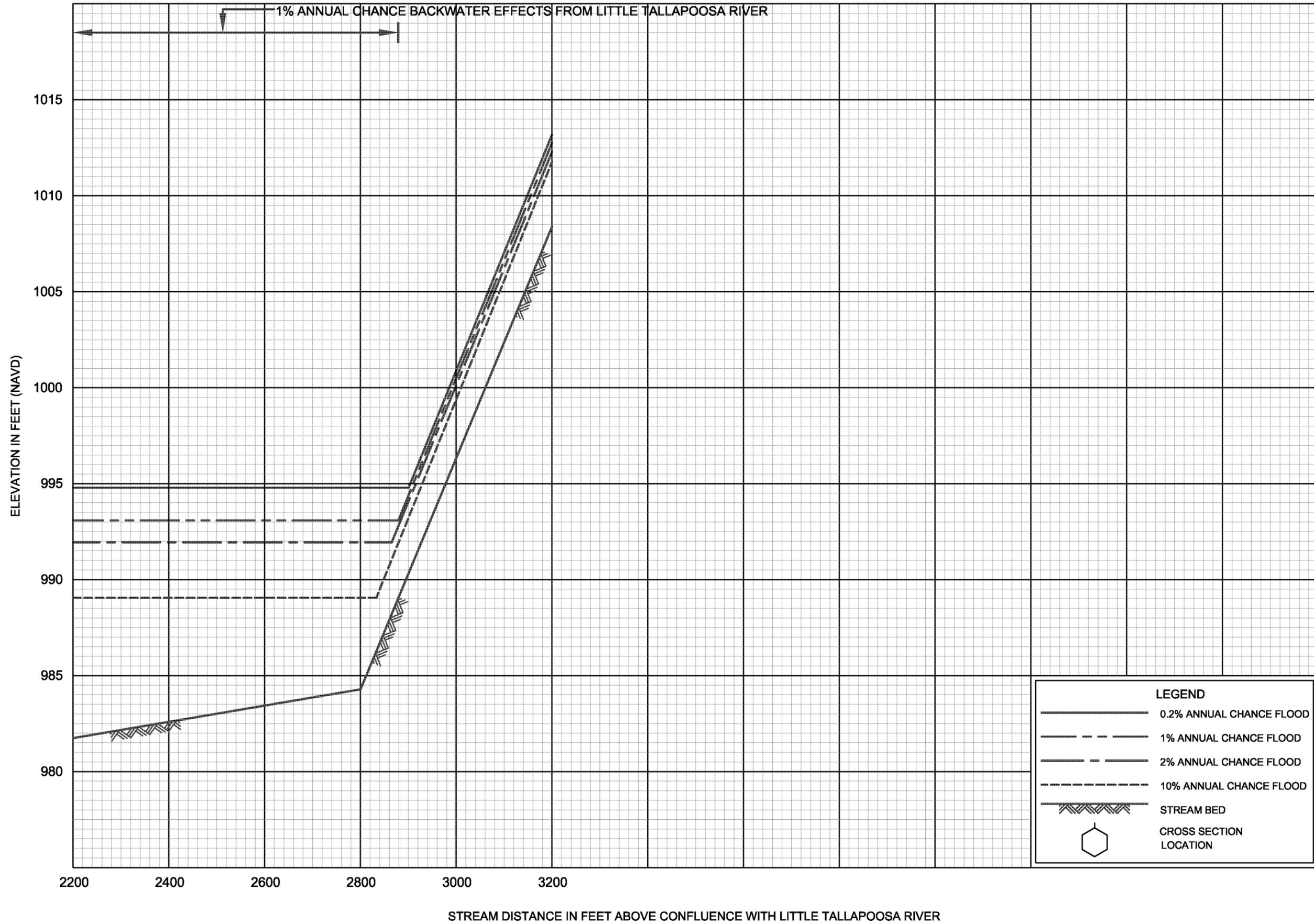


FLOOD PROFILES

LITTLE TALLAPOOSA RIVER TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
AND INCORPORATED AREAS



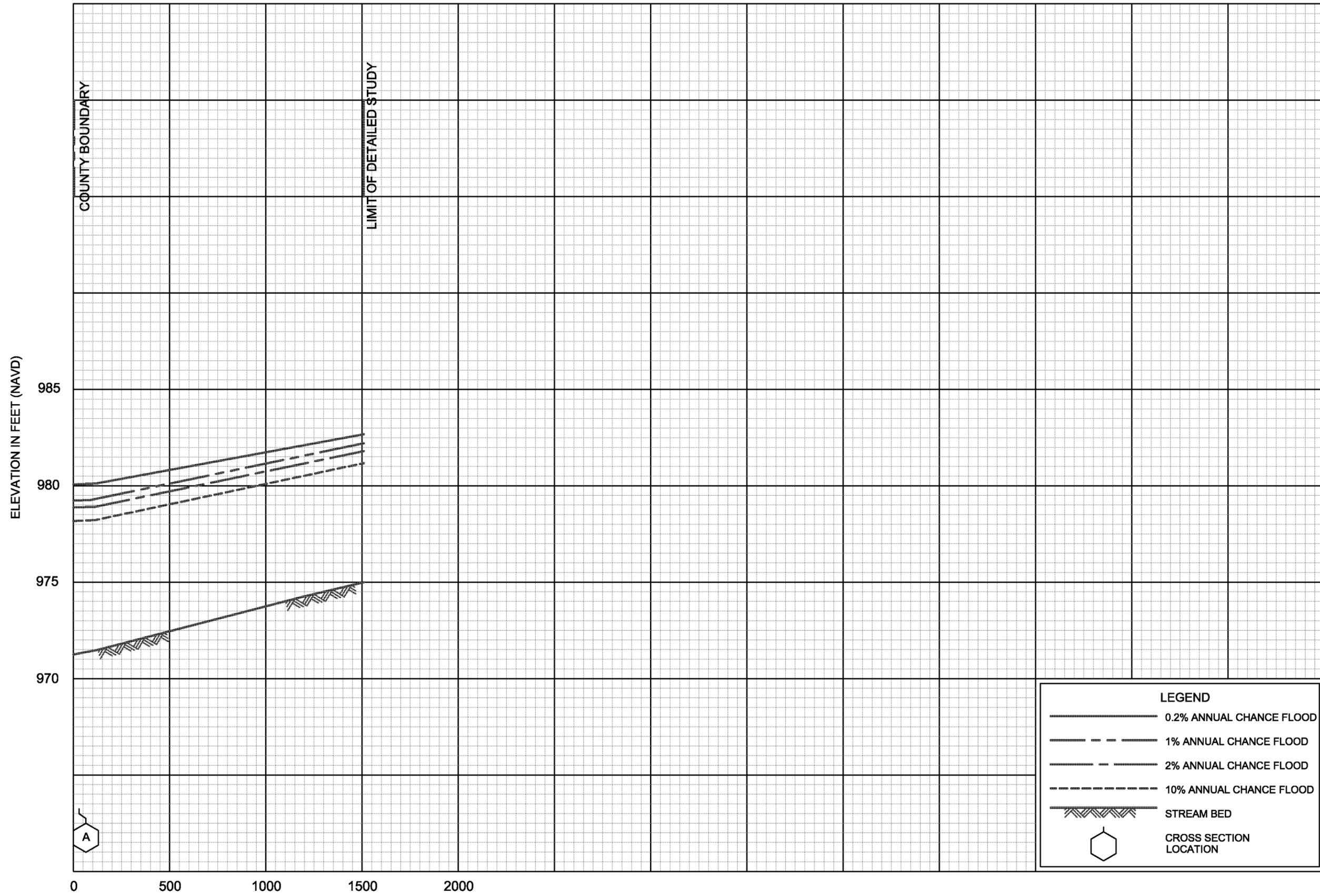
FLOOD PROFILES  
LITTLE TALLAPOOSA RIVER TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY  
CARROLL COUNTY, GA  
AND INCORPORATED AREAS



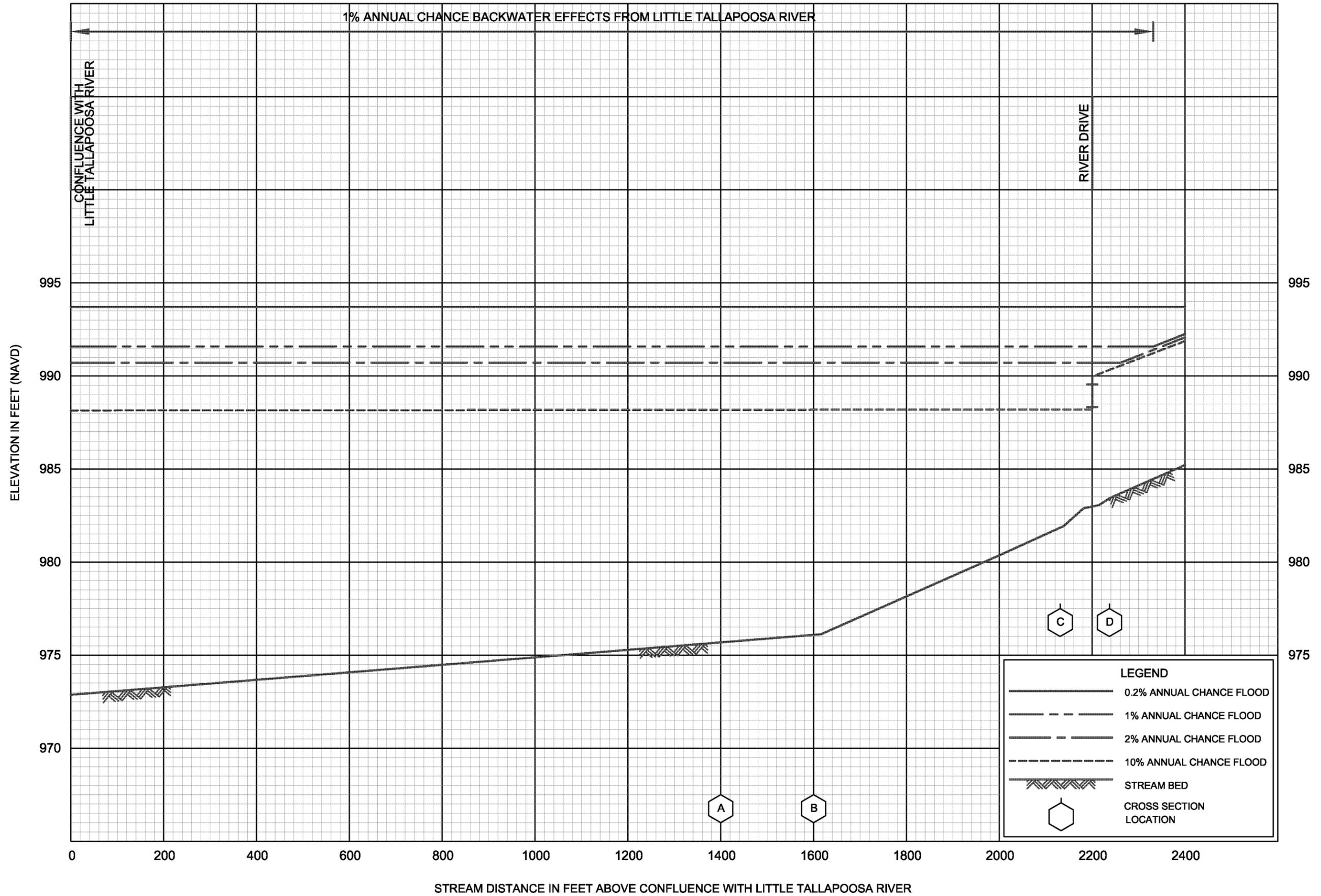






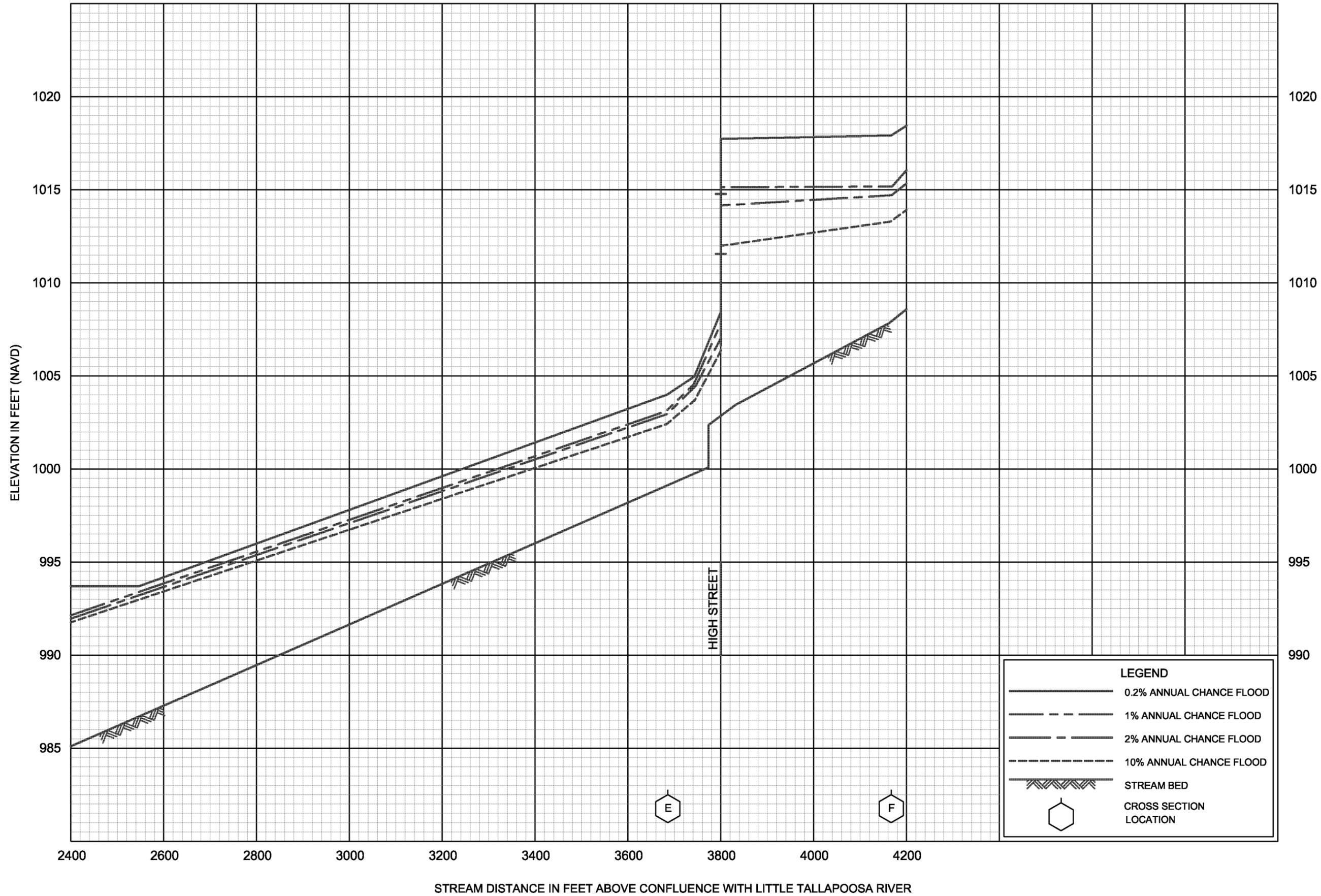
FLOOD PROFILES  
SWEETWATER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY  
CARROLL COUNTY, GA  
AND INCORPORATED AREAS



**FLOOD PROFILES**  
TANYARD BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**CARROLL COUNTY, GA**  
AND INCORPORATED AREAS



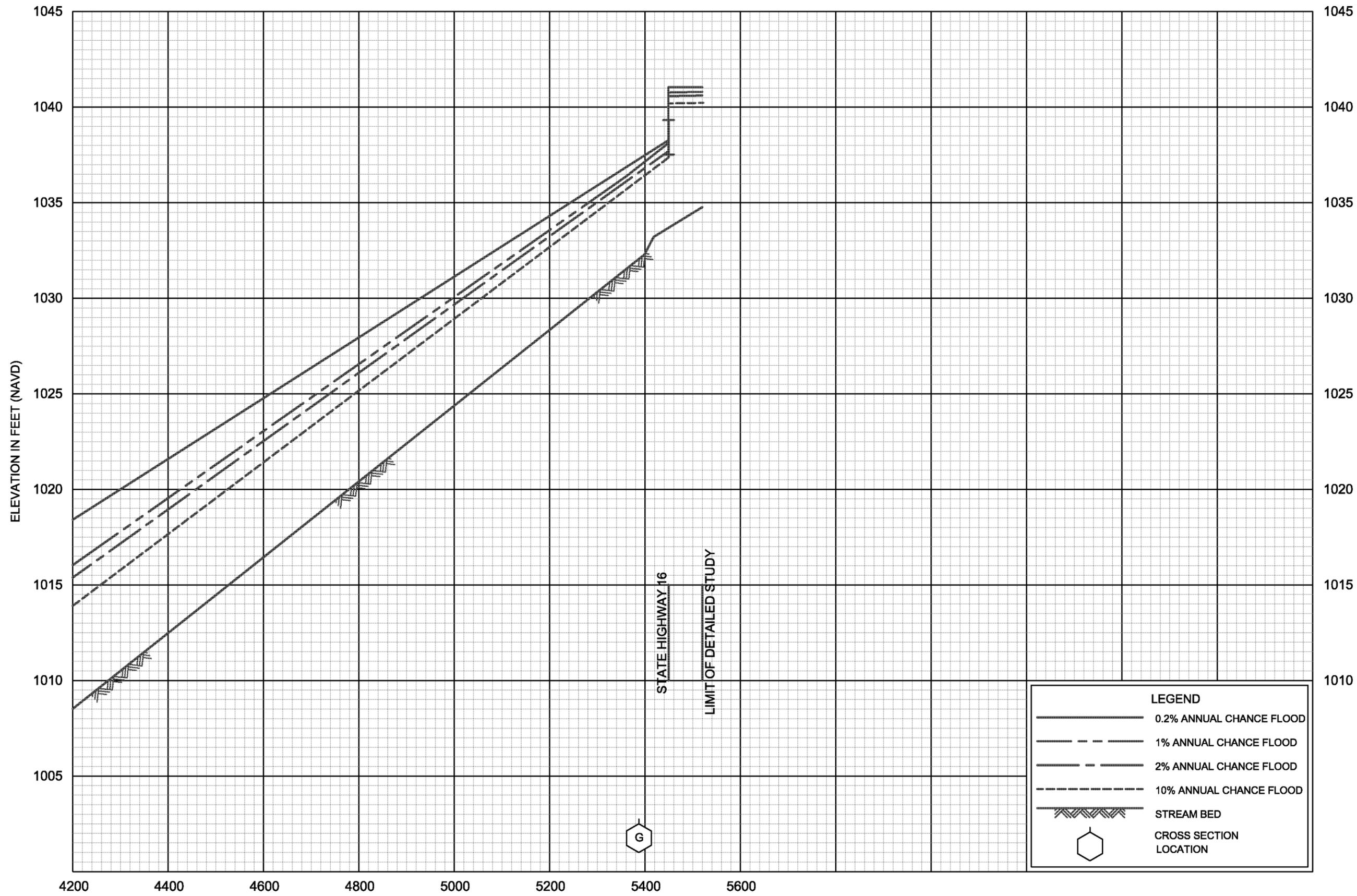
FLOOD PROFILES

TANYARD BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

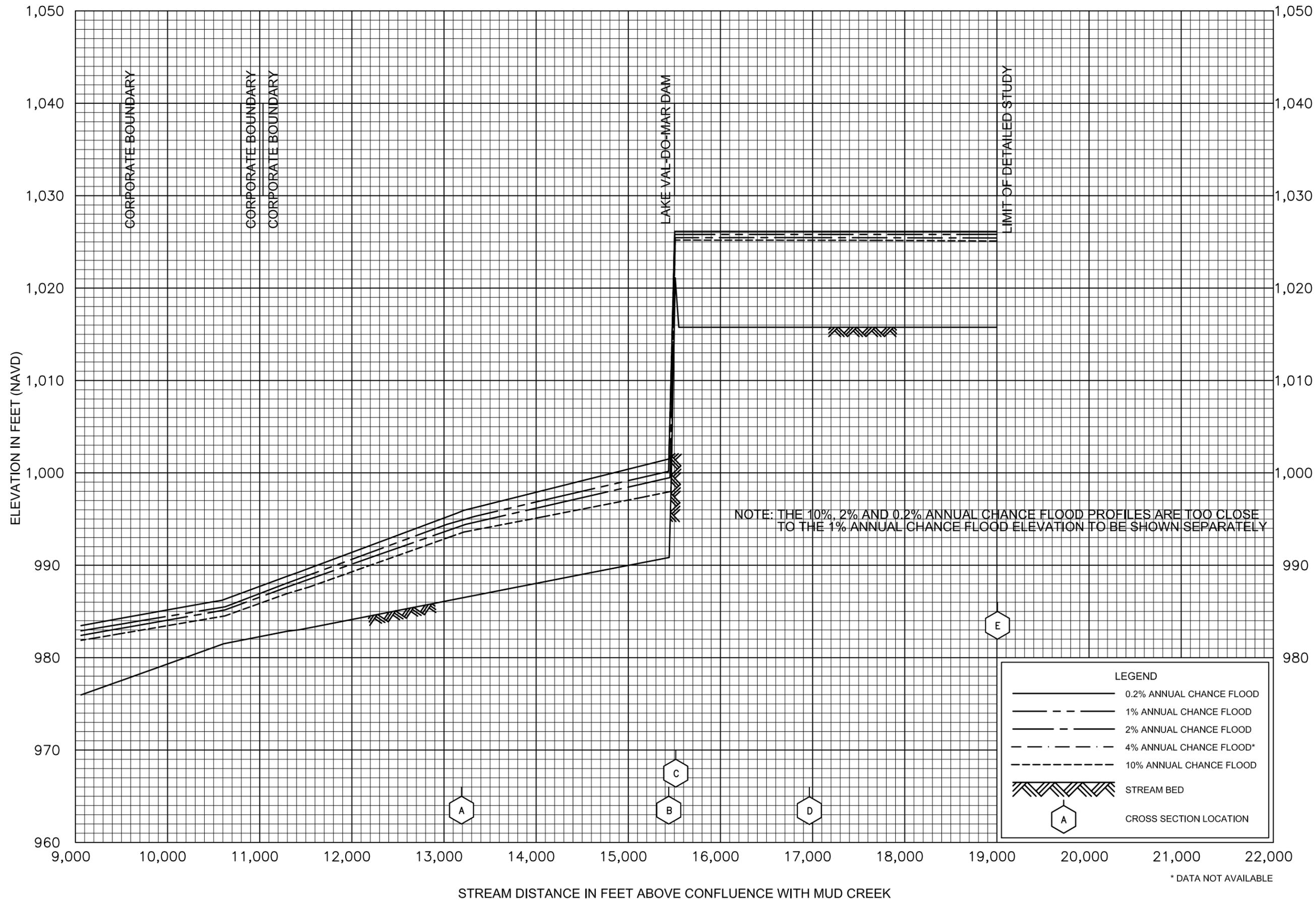
CARROLL COUNTY, GA

AND INCORPORATED AREAS



**FLOOD PROFILES**  
**TANYARD BRANCH**

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**CARROLL COUNTY, GA**  
AND INCORPORATED AREAS



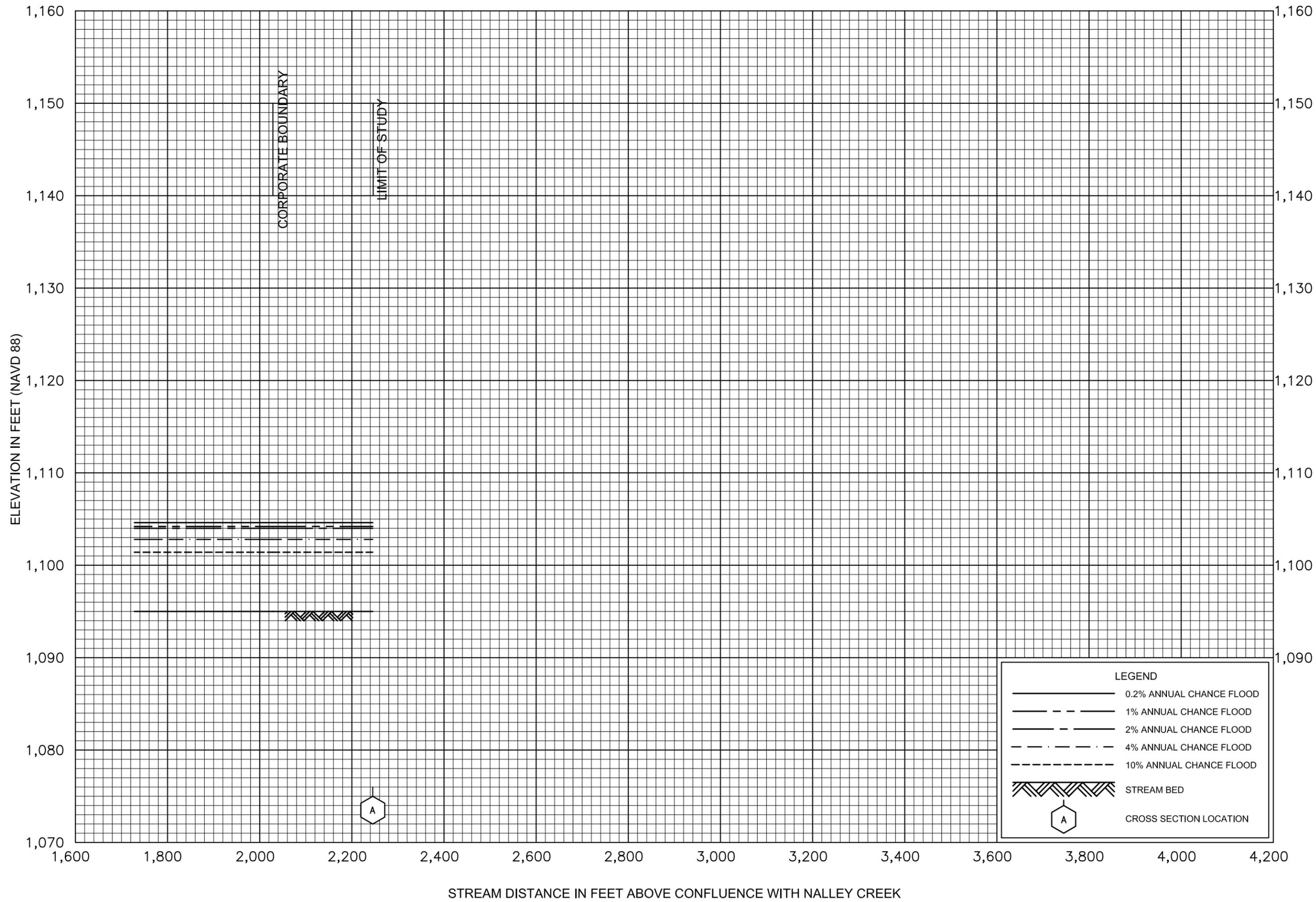
**FLOOD PROFILES**

**TOWN BRANCH**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**CARROLL COUNTY, GA**

AND INCORPORATED AREAS



FLOOD PROFILES

TRIBUTARY A TO NALLEY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CARROLL COUNTY, GA  
AND INCORPORATED AREAS