FLOOD INSURANCE STUDY

SHELBY COUNTY, INDIANA
AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
*EDINBURGH, TOWN OF	180113
*FAIRLAND, TOWN OF	185234
MORRISTOWN, TOWN OF	180393
SHELBY COUNTY (UNINCORPORATED AREAS)	180235
SHELBYVILLE, CITY OF	180236

*No Special Flood Hazard Areas Identified

PRELIMINARY

July 30, 2014

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
18145CV000B

NOTICE TO FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) report may not contain all data available within the Community Map Repository. Please contact the Community Map Repository for any additional data.

The Federal Emergency Management Agency (FEMA) may revise and republish part or all of this FIS report at any time. In addition, FEMA may revise part of this FIS report by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS report. Therefore, users should consult with community officials and check the Community Map Repository to obtain the most current FIS report components.

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

Old Zone:	New Zone:
A1 through A30	AE
B	X
C	X

Initial Countywide FIS Effective Date: November 05, 2014

Revised Countywide FIS Effective Date: To be Determined

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*Exhibit 2 - Flood Insurance Rate Map Index
Flood Insurance Rate Map

* Published Separately

FLOOD INSURANCE STUDY
SHELBY COUNTY, INDIANA AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and supersedes the FIS reports and Flood Insurance Rate Maps (FIRMs) in the geographic area of Shelby County, Indiana, including the City of Shelbyville, the Towns of Edinburgh, Fairland, and Morristown, and the unincorporated areas of Shelby County (hereinafter referred to collectively as Shelby County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. The Town of Edinburgh is a multi-county community and the FIS and FIRMs show the portion of the Town of Edinburgh in Shelby County. The remaining portions of this community lie within Johnson and Bartholomew Counties. The Town of St. Paul is also a multi-county community, but it is included entirely in the FIS and FIRMs for Decatur County. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. This information will also be used by Shelby County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

The Digital Flood Insurance Rate Map (DFIRM) and FIS Report for this countywide study have been produced in a digital format. Flood hazard information was converted to meet the Federal Emergency Management Agency (FEMA) DFIRM database specifications and Geographic Information System (GIS) format requirements. The flood hazard information was created and is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community.

1.2 Authority and Acknowledgments

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

Information of the authority and acknowledgements for each of the new studies and previously printed FIS reports and Flood Insurance Rate Maps (FIRMs) for communities within Shelby County was compiled and is shown below:

Shelby County
(Unincorporated Areas):

Pre-Countywide Analysis: The previously effective FIS for the Unincorporated Areas of Shelby County is dated April 15, 1982. The hydrologic and hydraulic analyses for this study were performed by Snell Environmental Group, Inc. for the Federal Emergency Management Agency under Contract No. EMW-C-0093. This study was completed in May 1981.

Initial Countywide Analysis: For the first time countywide FIS, dated November 05, 2014, updated hydrologic and hydraulic analyses were prepared. The hydrologic and hydraulic analyses for approximate stream reaches of Shelby County were performed by AMEC Earth and Environmental, Inc., on behalf of the Indiana Department of Natural Resources, under Indiana Public Works Project Number E400201B. The Indiana Department of Natural Resources managed the production of this study as part of their Cooperating Technical Partner agreement with the Federal Emergency Management Agency dated April 29, 2004, which was defined by the Indiana DNR Mapping Activity Statement 06-14 dated June 22, 2006 and funded under agreement number EMC-2005-GR-7022.

Revised Countywide Analysis: Redelineation of the previously effective flood hazard information for the November 05, 2014 FIS report, correction to the North American Vertical Datum of 1988, and conversion of the unincorporated and incorporated areas of Shelby County into the

Countywide format was performed by AMEC Earth and Environmental, Inc., on behalf of the Indiana Department of Natural Resources, under Indiana Public Works Project Number E400201B.

Shelbyville, City of: The previously effective FIS for the City of Shelbyville is dated October 1, 1981. The hydrologic and hydraulic analyses for this study were performed by the U.S. Army Corps of Engineers, Louisville District, and Snell Environmental Group, Inc. for the Federal Insurance Administration under Contract No. H-4777. This study was completed in May 1979.

New Studies: The hydrologic and hydraulic analyses for this restudy were performed by AMEC Earth and Environmental, Inc. on behalf of the Indiana Department of Natural Resources. This work, which was completed in October 2013, covered Lewis Creek and portions of Haw Creek. The Indiana Department of Natural Resources managed the production of this study as part of their Cooperating Technical Partner agreement with the Federal Emergency Management Agency dated April 29, 2004, which was defined by the Indiana DNR Mapping Activity Statement dated September 22, 2009 and funded under agreement number EMC-2009-CA-7008.

1.3 Coordination

The purpose of an initial Consultation Coordinated Officer's (CCO's) meeting is to discuss the scope of the FIS. A final CCO meeting is held to review the results of the study. The dates of the initial and final CCO meetings held for the previously effective FIS reports covering the geographic area of Shelby County, Indiana are shown in Table 1. The initial and final CCO meetings were attended by the study contractor, FEMA (or the Federal Insurance Administration), the Indiana Department of Natural Resources (IDNR), and the affected communities.

Table 1: CCO Meeting Dates for Pre-Countywide FIS

Community Name	Initial CCO Date	Final CCO Date
Shelby County (Unincorporated Areas)	April 1978	December 9, 1981
Shelbyville, City of	April, 1978	April 1, 1981

For this countywide FIS, an initial CCO meeting was held on August 10, 2005, and was attended by representatives from Morristown and Shelby County.

The results of the countywide study were reviewed at the final CCO meeting held on August 25, 2011, and attended by representatives of FEMA, IDNR, City of Shelbyville, and Shelby County. All problems raised at that meeting have been addressed.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Shelby County, Indiana, including the incorporated communities listed in Section 1.1

All FIRM panels for Shelby County have been revised, updated, and republished in countywide format as a part of this FIS. The FIRM panel index, provided as Exhibit 2, illustrates the revised FIRM panel layout.

Approximate methods of analysis were used to study those areas having a low development potential or minimal flood hazards as identified during the initial CCO meeting. For this study, no new stream reaches were studied using approximate methods.

The areas studied by detailed methods were selected with priority given to all known flood hazards areas and areas of projected development of proposed construction. This study incorporates new detailed studies of Haw Creek and Lewis Creek, performed for and approved by IDNR. For detailed stream reaches that were studied in previous FIS reports, flood hazard areas remained the same.

This FIS update also incorporates the determination of letters issued by FEMA resulting in map changes (Letters of Map Change, or LOMC's). No Letters of Map Revisions (LOMRs) have been issued for Shelby County. Letters of Map Amendment (LOMA's) incorporated for this study are summarized in the Summary of Map Actions (SOMA) included in the Technical Support Data Notebook (TSDN) associated with this FIS update. Copies of the TSDN may be obtained from the Community Map Repository.

Table 2: Streams Previously Studied by Detailed Methods

Big Blue River	Little Sugar Creek
Brandywine Creek	Snail Creek
Dry Fork	Snodgrass Ditch
Flatrock River	Sugar Creek
Little Blue River	

Table 3: Streams Previously Studied by Redelineation Methods

Big Blue River	Little Sugar Creek
Brandywine Creek	Snail Creek
Dry Fork	Sugar Creek
Little Blue River	

Table 4: Streams Previously Studied by Approximate Methods

Bass Fox Ditch	Gibson Ditch
Big Blue River	Haw Creek
Big Slough	Hawkins Ditch
Big Tough Creek	Hills Branch
Brandywine Creek	Howell Ditch Sweet Creek
Buck Creek	Lewis Creek
Conns Creek	Little Blue River
Cotton River	Little Conns Creek
Deer Creek	Little Slough Creek
DePrez Ditch	Major Ditch
Dry Fork	Parrish Ditch
Dry Fork Trib 2	Shaw Ditch
Duck Creek	Sidney Creek
East Fork	Slash Creek
Ed Clark Ditch	Sugar Creek
Flatrock River	Sulphur Run
Ferris Ditch	Thompson Ditch
Fisher Ditch	Van Pelt Ditch
Foreman Branch	West Little Sugar Creek

Table 5: Scope of Study

Stream	Limits of Detailed Study
Haw Creek	Shelby-Bartholomew County Line to upstream of CR 350 East
Lewis Creek	Mouth at Flatrock River to upstream of CR 600 East

2.2 Community Description

Shelby County is located in central Indiana and is bordered by Hancock County to the north, Rush County to the east, Decatur County to the southeast, Bartholomew County to the south, Johnson County to the west, and Marion County to the northwest. Shelby County is located approximately 30 miles southeast of

Indianapolis. The entire land area within the county is 420.5 square miles (Reference 1). Shelby County is served by Interstates 65 and 74, US route 52, and State Routes 9, 44, 244. According to STATS Indiana, the projected population of Shelby County in 2005 was 43,766.

The climate in central Indiana is classified as continental. It is primarily influenced by eastward moving masses of cold polar air from the north and warm gulf air from the south. According to the National Oceanic and Atmospheric Administration (NOAA), average daily temperatures for Shelby County range from 73 degrees Fahrenheit (F) in summer to 30 degrees F in winter. For the period of record between 1971 and 2000, annual average precipitation is approximately 40.0 inches (Reference 5).

The Town of Morristown is located in northeastern Shelby County. Morristown is surrounded in all directions by unincorporated Shelby County. According to STATS Indiana, the projected population of Morristown in 2005 was 1,218. The major route through Morristown is U.S. Route 52.

The City of Shelbyville is located in west-central Shelby County, 27 miles southeast of Indianapolis in central Indiana. Shelbyville is surrounded in all directions by unincorporated Shelby County. According to STATS Indiana, the projected population of Shelbyville in 2005 was 18,063. The major routes through Shelbyville are State Routes 9 and 44.

The Town of St. Paul is located in northwestern Decatur County and southeastern Shelby County in southeastern Indiana. St. Paul is bordered by unincorporated areas of Shelby County on the north, south, and west, and by unincorporated areas Decatur County on the north, south, and east. According to STATS Indiana, the projected population of St. Paul in 2005 was 1,016.

2.3 Principal Flood Problems

There have been a number of major floods in this century on the Big Blue River and Sugar Creek. The four highest floods on the Big Blue River occurred in 1913, March 1963, January 1949 and February 1950. The 1913 flood is the flood of record; however, no discharge was recorded. The discharges for the 1963, 1949, and 1950 floods are 15,800 cfs, 14,800 cfs, and 12,500 cfs, respectively. The estimated return period for floods of these magnitudes is 25 years, 20 years, and 10 years, respectively.

Major floods on Sugar Creek have occurred in 1956, 1968, 1994, and 2005. The discharge at the Edinburgh gaging stating (No. 03362500, years of record are 1942-present) for these floods is 27,600 cfs, 19,900 cfs, 20,500 cfs and 20,100 cfs, respectively. The May 1956 flood is the most recent severe flood occurring in Shelby County. Approximately six inches of rain fell over three days causing families to evacuate, levees and bridges to fail and highways to close. Upstream of Young's Creek, the Sugar Creek peak flow reached 25,000 cfs, that of a 100-year flood. While

no other tributaries to Sugar Creek had streamflow recorders at the time, a number of peak flow estimates were made for the 1956 flood by the USGS using the "method of width contractions". The estimated peak discharge for Little Sugar Creek at Pleasant View, where the drainage area is 14.2 square miles, is 6,900 cfs corresponding to a return period of 800 years. The 1956 flood peak for a 20.1 square mile drainage area of Snail Creek near Fairland is estimated to be 7,820 cfs which corresponds to a 350-year flood event.

Major floods on the Big and Little Blue Rivers are caused by excessive rainfall over the basin usually during the period of late winter through early summer; however, a flooding potential exists throughout the remainder of the year. Major floods on the Big Blue River have occurred in 1866, 1873, 1913, 1949, 1950, 1963, and 2005 (Reference 2,6). No state or discharge data is available for the record flood of 1913. The flood of March 1963 is the largest flood recorded by the U.S. Geological Survey (USGS) gage at Shelbyville. The March 1963 flood was a 25-year event with a peak discharge of 15,800 cfs recorded at the gage.

A number of major floods have occurred in the Town of St. Paul. No Stream gaging stations exist within St. Paul; however, there is a gage on the Flatrock River a short distance downstream of St. Paul. Records from this gaging station have been used to describe past flooding on the Flatrock River.

The largest historic flood in St. Paul occurred in 1913. According to newspaper accounts at the time, flooding on the Flatrock River at St. Paul was said to be at least 3.5 feet above the previous high water mark of 1898. The flood of 1913, a rare historic event, is generally considered to be greater than a 0.1-percent annual chance flood event.

Major flooding occurred on the Flatrock River in 1937, 1949, 1963, 1968, and 2005. The discharges for these stations at the St. Paul gaging station were 16,600 cfs, 18,500 cfs, 17,100 cfs, 17,600 cfs, and 16,500 cfs, respectively. Information covering the period from October 1930 to the present was obtained from records for the USGS gaging stating near St. Paul, 0.4 mile downstream on the study area.

2.4 Flood Protection Measures

There is a levee along the Big Blue River from the western corporate limit to the City Cemetery in the City of Shelbyville. However, for a 1% annual chance flood event, there is an insufficient clearance between the top of the levee and the corresponding flood crest necessary to assume levee stability. Please refer to the corresponding Flood Insurance Rate Map panels for the protection status of this levee system.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods in Shelby County, 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 once on the average during any 10-, 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-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent 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 1-percent-annual-chance flood in any 50-year period is approximately 40 percent (4 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.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied by detailed methods affecting Shelby County. Table 6 contains a summary of peak discharges for the 10-, 2-, 1-, and 0.2-percent annual chance floods, where applicable, for each flooding source studied in detail in Shelby County. Peak discharges in the table were compiled from previously effective FIS reports for Shelby County and incorporated areas. Peak discharges for the 0.2- and 1-percent annual chance floods for new detailed studies on Haw Creek and Lewis Creek are also included in the table. Source citations refer to the source of the detailed study.

Table 6. Summary of Discharges

Flooding Source And Location	Drainage Area (Square Miles)	Peak Discharge (cfs) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Big Blue River					
At State Road 44	544.0	14,780	19,900	21,940	26,150
Just upstream of confluence of Brandywine Creek	433.0	13,180	17,740	19,570	23,320

Table 6. Summary of Discharges (con'd)

Flooding Source And Location	Drainage Area (Square Miles)	Peak Discharge (cfs) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Big Blue River					
Just upstream of Confluence of DePrez Ditch	425.0	13,000	17,500	19,300	23,000
Just upstream of Confluence with Little Blue River	315.0	11,250	15,140	16,690	19,900
At Morristown Road	303.0	11,010	14,820	16,350	19,480
At U.S. Route 52	279.0	10,200	14,200	16,200	18,800
Just upstream of confluence of Prairie Branch	269.0	10,000	14,000	16,000	18,300
Brandywine Creek					
At Mouth	107.0	7,600	*	12,000	16,000
County Road 300 North	92.4	7,000	9,800	11,200	14,900
Just upstream of Confluence of Hills Branch	76.0	6,350	9,000	10,300	13,600
At U.S. Route 52	66.0	5,900	8,400	9,600	12,400
Dry Fork					
At mouth	10.4	2,350	3,450	4,050	5,570
At about 2200 feet Upstream of County Road 500 North	7.1	1,850	2,700	3,175	4,400
Haw Creek					
Above Little Haw Creek	11.6	1,250	2,100	2,550	3,400
Above Unnamed Tributary	3.1	400	650	800	1,000
Lewis Creek					
At mouth	81.5	5,470	11,140	16,640	23,170
Downstream of Thompson Ditch	51.5	5,930	10,400	12,500	17,300

Table 6. Summary of Discharges (con'd)

Flooding Source And Location	Drainage Area (Square Miles)	Peak Discharge (cfs) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Lewis Creek					
Downstream of South Fork	37.8	4,790	8,080	9,700	13,300
Downstream of Little Lewis Creek	29.1	3,940	6,600	7,600	10,200
Downstream of UNT Between I-74 and US 421	10.2	1,750	2,950	3,140	4,250
Below UNT upstream of I-74	8.4	1,470	2,480	2,640	3,570
Upstream of UNT and I-74	4.8	820	1,380	1,670	1,990
Little Blue River					
At mouth	105.0	6,200	7,700	8,800	10,000
Little Sugar Creek					
At mouth	32.0	4,700	6,900	8,150	11,000
Just upstream of confluence of Mulliner Ditch	28.0	4,400	6,400	7,550	10,200
Snail Creek					
At mouth	37.7	5,300	7,750	9,150	12,100
Just upstream of Confluence of Dry Fork	26.8	4,300	6,200	7,400	10,000
At Conrail	22.5	3,850	5,600	6,650	9,050
At Interstate Hwy. 74	19.0	3,400	5,000	5,900	8,000
About 0.5 mile Upstream of County Road 700 North	12.7	2,650	3,900	4,600	6,300
Snodgrass Ditch					
At mouth	4.4	1,375	2,000	2,400	3,250

Table 6. Summary of Discharges (con'd)

Flooding Source And Location	Drainage Area (Square Miles)	Peak Discharge (cfs) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Sugar Creek					
Just downstream of confluence of snail creek	237.0	13,000	19,100	21,800	28,700
Just upstream of confluence of Snail Creek	237.0	13,000	19,100	21,800	28,700
Just upstream of Confluence of Buck Creek	132.0	9,100	13,500	15,400	20,200
Just upstream of confluence of Little Sugar Creek	96.0	7,500	11,000	12,600	16,600
Sweet Creek					
At mouth	4.4	1,050	1,520	1,740	*
West Little Sugar Creek					
County Road 950 North	14.7	2,300	3,300	3,800	*
Just upstream of Confluence of Sweet Creek	7.6	1,450	2,100	2,400	*

*Data Not Available

Initial Countywide Analyses

Standard and accepted hydrologic methods were used to develop discharge data on the study streams in Shelby County. These data were coordinated with the Indiana Department of Natural Resources, the Natural Resources Conservation Service (formally the Soil Conservation Service), the U. S. Geological Survey and the Louisville District of the U. S. Army Corps of Engineers, through a Memorandum Of Understanding dated May 6, 1976. Discharge curves for the 10%, 2%, 1%, and 0.2% annual chance floods were developed for each study stream using several different procedures and compared for consistency.

Frequency-discharge data at the Flatrock River gaging station were developed by the IDNR using the log-Pearson Type III distribution and a regional skew value of -0.2. The regional skew value was developed in accordance with the U.S. Water Resources Bulletin No. 17.

The USGS Circular 710 was applied to develop flood discharges. Circular 710 describes a multiple-regression analysis, which uses the relationships between floods and drainage basin characteristics to develop frequency discharges. Other procedures applied to obtain discharges are found in the IDNR "Discharge Determination Manual". The discharges obtained from each method were then plotted by frequency against drainage area and a "best fit" line was drawn through the data. In developing the frequency curves, consideration was given to the relative locations of the stream gages to each study reach, the basin characteristics, and other hydrological parameters.

For the Big Blue River, the discharges are based on statistical analysis of discharge records at the Shelbyville (No. 03361500, years or record 1943-present) and Carthage (No. 0336100, years of record 1950-present) gaging stations. This analysis followed the standard log-Pearson Type III method as outlined by the Water Resources Council. Little Blue River flood discharges were previously coordinated flood flows from the IDNR. Upstream of Little Sugar Creek, Sugar Creek flood discharges were obtained by a regional stream gage analysis of similar watersheds, according to Bulletin No. 17. Flood discharges for Little Sugar Creek, Snail Creek, Dry Fork and Snodgrass Ditch were determined using the TR-20 computer program developed by the SCS. The TR-20 program determined peak flows from rainfall data based on the basin characteristics such as drainage area, stream slope, soil cover, vegetation and land use characteristics.

Revised Countywide Analyses

For Lewis Creek, discharges are based on a detailed hydrology study. The Lewis Creek Watershed was divided into 13 subbasins using the USGS HUC12 Watershed Boundary Dataset. Rainfalls for 6- and 12-hour duration events were selected from the Huff Midwest Bulletin 71 for 10%-, 2%-, and 1%-, Annual Chance Events. Subsequently these rainfalls were applied to the basin model in HEC-HMS using SCS Curve Number as the Transform Method. It was found by analyzing discharges from the HMS modeling runs that the Huff 6-hour duration 2nd Quartile data best represented the 1%-Annual Chance Storm. The 0.2%-Annual-Chance-Storm discharge was extrapolated from the lesser event discharges using a regression equation analysis based on return interval.

3.2 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. Users should be aware that flood elevations shown on the Flood Insurance Rate Map (FIRM) represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data table in the FIS report. 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.

Cross sections for the backwater analyses were obtained from a variety of sources including: physical survey data, IDNR contour mapping, USGS topographic mapping and local contour mapping.

Water-surface elevations for floods of the selected recurrence intervals were computed through use of the USACE HEC-2 step-backwater computer program. For the new detailed and approximate study reaches, the USACE HEC-RAS program was used. HEC-RAS is an updated version of the HEC-2 program used to perform step-backwater analyses.

Flood profiles were prepared for all streams studied by detailed methods and show computed water-surface elevations to an accuracy of 0.5 feet for floods of the selected recurrence intervals. For this countywide FIS, flood profiles and approved LOMRs have been consolidated into continuous stream reaches and adjusted to reflect the current vertical datum as described in Section 3.3. New profiles have been prepared for the new detailed studies and for the purposes of incorporating the LOMRs described in Section 2.1 above.

Channel and overbank roughness factors (Manning's "n" values) used in the hydraulic computations were chosen by engineering judgment and were based on field observations of the stream and floodplain areas. Channel and overbank roughness factors used in the detailed studies are summarized by stream in Table 7.

Table 7. Channel and Overbank Roughness Factors

	Roughness Coefficients	
Stream	Main Channel	Overbanks
Big Blue River		
Downstream of Foreman Branch	0.045-0.060	0.045-0.060
Upstream of Foreman Branch	0.030-0.060	0.050-0.120
Brandywine Creek	0.035-0.075	0.030-0.105
Dry Fork	0.035-0.070	0.030-0.105
Haw Creek	0.035-0.045	0.040-0.100

Table 7. Channel and Overbank Roughness Factors (con'd)

Stream	Roughness Coefficients Main Channel	Overbanks
Lewis Creek	0.040-0.048	0.040-0.100
Little Blue River	0.045-0.060	0.045-0.060
Little Sugar Creek	0.030-0.080	0.030-0.105
Snail Creek	0.035-0.070	0.030-0.105
Snodgrass Ditch	0.035-0.070	0.030-0.105
Sugar Creek	0.030-0.060	0.030-0.105
Sweet Creek	0.060-0.065	0.040-0.070
West Little Sugar Creek	0.035-0.070	0.045-0.060

Initial Countywide Analyses

For approximate study areas, analyses were based on field inspection and modeling of the stream reaches using simplified HEC-RAS models. Structural measurements or field surveying was not performed. Cross section geometry was derived from topographic mapping from the 2005 statewide orthophotography project. Starting elevations were assumed to be normal depth.

For the detailed study of Brandywine Creek, water surface elevations were computed using HEC-RAS version 3.1.3. The normal depth method was utilized to develop a boundary condition for the model. Cross section data was derived from a digital terrain model developed in 2007 with a vertical accuracy of 1.2 feet at 95% confidence level. Bridge and culvert geometry data was obtained from a field survey conducted in 2007.

For the existing detailed studies of Sweet Creek and West Little Sugar Creek, water surface elevations were computed using HEC-RAS version 3.0.1. The normal depth method was utilized to develop a boundary condition for the West Little Sugar Creek model. A know water surface elevation obtained from the results of the West Little Sugar Creek model was used as the boundary condition for the Sweet Creek model. Geometry data was derived from a digital terrain model developed in 1996 by the Division of Water, survey data obtained in 1993 from the Shelby County Surveyors' office, and survey data obtained in 1996 from the Division of Water.

Revised Countywide Analyses

For the detailed study of Lewis Creek, water surface elevations were computed using HEC-RAS version 4.1.0. The normal depth method was utilized to develop a boundary condition for the model. Cross section, bridge and culvert geometry data was obtained from a field survey conducted in 2010.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the Flood Profiles (Exhibit 1) are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

3.3 Vertical Datum

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 in use for newly created or revised FIS reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the finalization of the North American Vertical Datum of 1988 (NAVD88), many FIS reports and FIRMs are being prepared using NAVD88 as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD88. Structure and ground elevations in the community must, therefore, be referenced to NAVD88. It is important to note that adjacent communities may be referenced to NGVD29. This may result in differences in Base Flood Elevations (BFEs) across the corporate limits between the communities.

For the initial countywide FIS, a vertical datum conversion of -0.37 feet was calculated at the centroid of the county and used to convert all elevations in Shelby County from NGVD29 to NAVD88 using the National Geodetic Survey's VERTCON online utility (VERTCON, 2005).

$$(\text{NGVD29} - 0.37 = \text{NAVD88})$$

For more information on NAVD88, see the FEMA publication entitled Converting the National Flood Insurance Program to the North American Vertical Datum of 1988 (FEMA, June 1992), or contact the Vertical Network Branch, National Geodetic Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, Rockville, Maryland 20910 (Internet address http://www.ngs.noaa.gov).

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 Technical Support Data Notebook associated with the FIS report and FIRM for this community. Interested individuals may contact FEMA to access these data.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each FIS provides 1-percent-annual-chance flood elevations and delineations of the 1- and 0.2-percent-annual-chance floodplain boundaries and 1-percent-annual-chance floodway to assist communities in developing floodplain management measures. This information is presented on the FIRM and in many components of the FIS report, including Flood Profiles, and the Floodway Data table. Users should reference the data presented in the FIS report as well as additional information that may be available at the local map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance flood is employed to indicate additional areas of flood risk in the community. For each stream studied by detailed methods, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section.

The 1- and 0.2-percent-annual-chance floodplain boundaries are shown on the FIRM (Exhibit 2). On this map, the 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A, AE, V, and VE); and the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1- and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-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.

For the streams studied by approximate methods, only the 1-percent-annual chance floodplain boundary is shown on the FIRM (Exhibit 2).

4.2 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 this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent

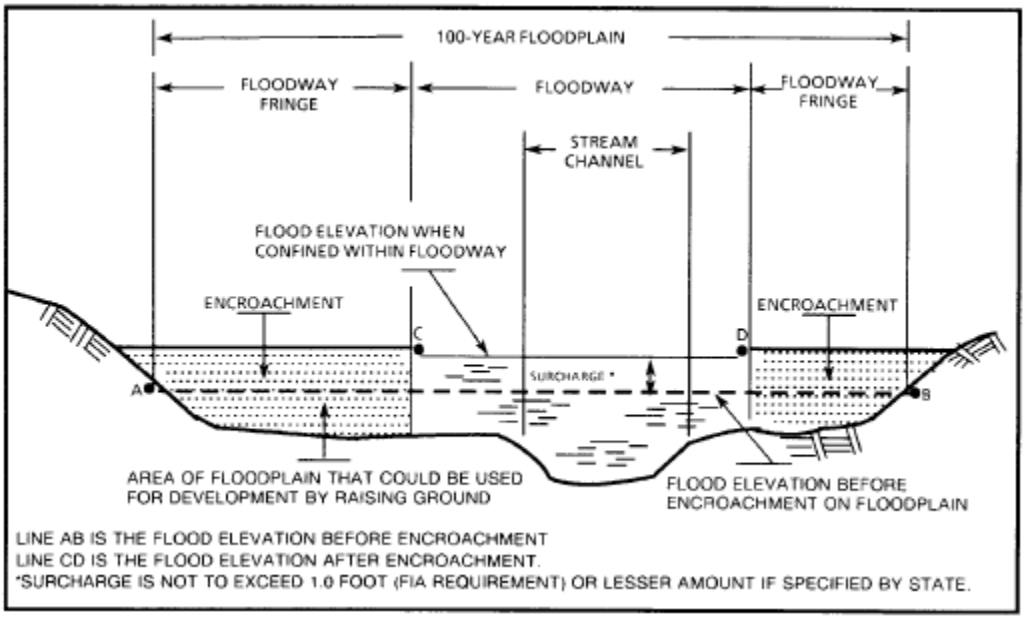
floodplain areas, that must be kept free of encroachment so that the 1-percent-annual-chance flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The State of Indiana, however, per Indiana Code IC 14-28-1 and Indiana Administrative Code 312 IAC 10, has designated that encroachment in the floodplain is limited to that which will cause no significant increase in flood height. As a result, floodways for this study are delineated based on a flood surcharge of less than 0.15 feet. The floodways in this study were approved by the IDNR, and are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodway presented in this FIS report and on the FIRM was computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations have been tabulated for selected cross sections (Table 8). In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent-annual-chance flood more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1.

Figure 1: Floodway Schematic



FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[3] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
BIG BLUE RIVER								
A	18.70	1,901	9,534	2.3	731.7	731.7	731.8	0.1
B	19.35	1,856	7,929	2.5	734.2	734.2	734.3	0.1
C	20.00	2,065	8,851	2.2	737.2	737.2	737.3	0.1
D	20.90	1,640	6,947	2.8	741.3	741.3	741.4	0.1
E	21.60	1,403	6,834	2.9	744.6	744.6	744.7	0.1
F	22.60	969	5,261	3.7	749.5	749.5	749.6	0.1
G	23.10	650	4,533	4.3	752.5	752.5	752.6	0.1
H	23.60	850/270[2]	5,336	3.6	754.8	754.8	754.9	0.1
I	23.80	546/346[2]	3,140	6.1	755.9	755.9	756.0	0.1
J	23.90	410/405[2]	4,035	4.8	757.2	757.2	757.3	0.1
K	24.15	260/180[2]	3,723	5.2	758.4	758.4	758.5	0.1
L	24.16	300/210[2]	3,815	5.1	758.6	758.6	758.7	0.1
M	24.26	355/285[2]	3,647	5.3	759.0	759.0	759.0	0.0
N	24.65	400/210[2]	3,128	5.3	761.0	761.0	761.1	0.1
O	25.00	610/390[2]	3,115	5.4	762.1	762.1	762.2	0.1
P	27.46	874	4,678	3.5	773.9	773.9	774.0	0.1
Q	27.47	874	4,838	3.4	774.5	774.5	774.6	0.1
R	28.10	870	4,597	3.6	776.9	776.9	777.0	0.1
S	36.15	2,761	8,215	2.0	813.5	813.5	813.5	0.0
T	36.44	2,689	8,056	2.0	815.0	815.0	815.0	0.0
U	36.76	2,437	6,968	2.4	816.5	816.5	816.5	0.0
V	36.98	2,105	8,056	2.0	818.1	818.1	818.1	0.0
W	37.20	2,836	17,984	0.9	819.1	819.1	819.1	0.0
X	37.50	2,257	12,756	1.3	819.8	819.8	819.8	0.0
Y	37.83	2,014	11,401	1.4	821.0	821.0	821.0	0.0
Z	38.33	2,200	12,993	1.3	822.1	822.1	822.1	0.0

[1] MILES ABOVE MOUTH
[2] TOTAL WIDTH / WIDTH WITHIN UNINCORPORATED AREAS
[3] FLOODWAY WIDTH MAY DIFFER FROM FIRM. SEE FIRM FOR REGULATORY WIDTH.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[3] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
BIG BLUE RIVER (continued)								
AA	38.51	2,400	10,462	1.6	823.1	823.1	823.1	0.0
AB	38.69	2,000	5,110	3.2	823.9	823.9	823.9	0.0
AC	39.23	2,700	16,059	1.0	827.1	827.1	827.1	0.0
AD	40.01	2,033	10,090	1.6	827.8	827.8	827.8	0.0
AE	40.40	1,718	8,072	2.0	829.0	829.0	829.0	0.0
AF	40.68	1,845	8,671	1.9	830.3	830.3	830.3	0.0
AG	40.95	1,869/645[2]	8,288	1.9	831.1	831.1	831.1	0.0
BRANDYWINE CREEK								
A	1.08	1,973	5,875	2.0	735.4	735.4	735.5	0.1
B	1.76	1,125	3,785	3.2	740.9	740.9	741.0	0.1
C	2.21	1,265	8,973	1.3	746.9	746.9	747.0	0.1
D	2.92	1,561	6,378	1.9	748.0	748.0	748.1	0.1
E	3.63	1,044	3,910	3.1	752.2	752.2	752.2	0.0
F	4.20	857	3,845	3.1	757.7	757.7	757.8	0.1
G	4.50	2,022	8,174	1.5	760.4	760.4	760.5	0.1
H	5.06	2,490	3,240	3.5	764.7	764.7	764.7	0.0
I	5.81	2,370	6,786	1.7	768.3	768.3	768.3	0.0
J	7.22	2,020	11,641	1.0	777.1	777.1	777.1	0.0
K	7.85	1,900	9,793	1.1	779.2	779.2	779.2	0.0
L	8.89	2,353	7,190	1.6	784.0	784.0	784.0	0.0
M	9.53	1,840	5,933	1.7	787.3	787.3	787.3	0.0
N	10.20	1,138	4,911	2.1	790.9	790.9	790.9	0.0
O	10.58	1,484	4,988	2.1	792.4	792.4	792.4	0.0
P	11.39	1,580	4,234	2.4	796.7	796.7	796.7	0.0
Q	11.72	1,320	3,001	3.4	797.4	797.4	797.4	0.0
R	12.45	1,310	7,884	1.3	803.9	803.9	803.9	0.0

[1] MILES ABOVE MOUTH
[2] TOTAL WIDTH / WIDTH WITHIN UNINCORPORATED AREAS
[3] FLOODWAY WIDTH MAY DIFFER FROM FIRM. SEE FIRM FOR REGULATORY WIDTH.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[3] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
BRANDYWINE CREEK(continued)								
S	13.54	911	3,628	2.8	807.6	807.6	807.6	0.0
T	13.83	894	3,306	3.1	809.2	809.2	809.2	0.0
U	14.59	1,570	4,343	2.4	813.6	813.6	813.6	0.0
V	15.25	1,160	4,042	2.5	817.6	817.6	817.6	0.0
W	16.20	1,168	3,839	2.7	823.1	823.1	823.1	0.0
X	16.74	950	2,801	3.7	826.9	826.9	826.9	0.0
Y	17.38	1,749	11,518	0.8	830.6	830.6	830.6	0.0
DRY FORK								
A	0.08	304	1,136	3.6	742.7	742.6 [2]	742.6	0.0
B	0.30	376	1,066	3.8	745.5	745.5	745.5	0.0
C	0.95	397	1,519	2.7	753.4	753.4	753.4	0.0
D	1.22	284	853	4.7	755.3	755.3	755.3	0.0
E	1.44	425	1,154	3.5	757.9	757.9	757.9	0.0
F	2.07	525	1,493	2.7	762.7	762.7	762.7	0.0
G	2.56	590	2,488	1.6	767.1	767.1	767.1	0.0
H	3.27	490	1,121	2.8	771.0	771.0	771.0	0.0
I	3.49	610	2,273	1.4	772.2	772.2	772.2	0.0
J	3.78	520	1,497	2.1	772.7	772.7	772.7	0.0
K	4.17	680	3,819	0.8	780.8	780.8	780.8	0.0
L	4.39	920	3,614	0.9	781.0	781.0	781.0	0.0
M	4.50	1,170	3,752	0.8	781.0	781.0	781.0	0.0
N	4.72	1,593	5,930	0.5	781.1	781.1	781.1	0.0
O	4.99	1,247	5,512	0.6	781.2	781.2	781.2	0.0
P	5.27	381	926	3.4	783.1	783.1	783.1	0.0

[1] MILES ABOVE MOUTH
[2] ELEVATIONS WITHOUT CONSIDERING SNAIL CREEK BACKWATER
[3] FLOODWAY WIDTH MAY DIFFER FROM FIRM. SEE FIRM FOR REGULATORY WIDTH.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[3] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
DRY FORK (continued)								
Q	5.38	420	804	4.0	784.3	784.3	784.3	0.0
R	5.43	349	938	3.4	784.7	784.7	784.7	0.0
S	5.51	261	1,094	2.9	786.6	786.6	786.6	0.0
T	5.76	950	3,908	0.5	790.6	790.6	790.6	0.0
U	6.08	2,200	6,215	0.3	790.7	790.7	790.7	0.0
V	6.41	2,287	4,928	0.4	790.7	790.7	790.7	0.0
HAW CREEK								
A	18.00	137	409	6.8	745.0	745.0	745.1	0.1
B	18.32	155	251	5.5	749.9	749.9	750.0	0.1
C	18.51	190	328	4.5	752.8	752.8	752.9	0.1
D	18.69	119	231	5.5	755.3	755.3	755.4	0.1
E	19.01	142	410	4.0	763.4	763.4	763.5	0.1
F	19.20	39	90	9.2	766.6	766.6	766.6	0.0
G	19.34	100	218	6.6	770.3	770.3	770.4	0.1
H	19.66	99	196	6.8	776.1	776.1	776.2	0.1
I	19.86	143	231	4.3	779.7	779.7	779.8	0.1
J	19.95	119	381	3.0	783.2	783.2	783.3	0.1
K	20.11	187	352	4.1	784.8	784.8	784.9	0.1
L	20.29	170	378	4.0	788.4	788.4	788.5	0.1
M	20.47	148	595	2.2	793.2	793.2	793.3	0.1
N	20.71	189	471	3.4	795.9	795.9	796.0	0.1
O	20.91	116	334	5.8	800.7	800.7	800.8	0.1

[1] Miles Above Mouth

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN
(AND INCORPORATED AREAS)

FLOODWAY DATA

DRY FORK - HAW CREEK

FLOODING SOURCE		FLOODWAY			1- PERCENT ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
LEWIS CREEK								
A	0.07	490	3,217	9.7	681.1	679.5 [2]	679.6	0.1
B	0.21	785	5,247	5.2	682.2	681.7 [2]	681.8	0.1
C	0.54	2,103	8,618	4.2	683.0	682.5 [2]	682.6	0.1
D	0.93	1,311	7,375	4.6	684.2	683.7 [2]	683.8	0.1
E	1.22	1,810	8,923	3.7	685.5	684.9 [2]	685.0	0.1
F	1.62	2,249	8,006	3.7	687.6	686.5 [2]	686.6	0.1
G	2.00	2,720	9,240	3.9	689.5	687.7 [2]	687.8	0.1
H	2.34	2,458	6,374	4.1	691.1	689.2 [2]	689.3	0.1
I	2.78	1,470	5,597	4.1	693.0	693.0	693.1	0.1
J	3.17	905	2,618	7.6	695.6	695.6	695.7	0.1
K	3.47	1,190	5,400	4.0	698.6	698.6	698.7	0.1
L	3.82	1,186	3,736	5.4	700.5	700.5	700.6	0.1
M	4.22	1,010	4,186	5.7	703.0	703.0	703.1	0.1
N	4.61	630	2,703	7.6	706.0	706.0	706.1	0.1
O	4.95	476	2,083	10.0	708.7	708.7	708.8	0.1
P	5.34	1,240	9,347	1.9	714.6	714.6	714.7	0.1
Q	5.78	1,587	5,002	3.9	715.2	715.2	715.3	0.1
R	6.20	1,210	3,788	5.4	717.2	717.2	717.3	0.1
S	6.53	1,280	4,681	3.7	719.7	719.7	719.8	0.1
T	6.91	1,268	3,884	3.6	721.4	721.4	721.5	0.1
U	7.51	622	1,940	5.6	725.5	725.5	725.6	0.1
V	7.79	545	2,081	4.8	728.2	728.2	728.3	0.1
W	8.07	519	1,982	6.5	730.3	730.3	730.4	0.1
X	8.35	575	2,892	3.8	732.9	732.9	733.0	0.1
Y	8.72	545	3,534	2.0	737.2	737.2	737.3	0.1
Z	9.16	344	1,775	6.3	737.9	737.9	738.0	0.1
AA	9.50	1,035	4,632	1.6	739.8	739.8	739.9	0.1
AB	9.92	510	1,995	6.2	742.0	742.0	742.1	0.1
AC	10.21	479	3,663	1.9	746.7	746.7	746.8	0.1

[1] Miles Above Mouth

[2] Elevations Without Considering Overflow Effect From Flatrock River

FLOODING SOURCE		FLOODWAY			1- PERCENT ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
LEWIS CREEK (continued)								
AD	10.54	559	3,146	2.5	748.2	748.2	748.3	0.1
AE	11.04	642	2,898	4.0	750.1	750.1	750.2	0.1
AF	11.40	513	2,244	5.7	753.4	753.4	753.5	0.1
AG	11.81	441	2,021	5.4	757.8	757.8	757.9	0.1
AH	12.18	432	1,848	3.4	759.6	759.6	759.7	0.1
AI	12.59	453	1,601	4.1	761.9	761.9	762.0	0.1
AJ	12.99	633	3,110	2.4	766.3	766.3	766.4	0.1
AK	13.32	520	2,228	4.3	768.4	768.4	768.5	0.1
AL	13.72	408	2,690	2.1	773.9	773.9	774.0	0.1
AM	14.06	450	2,482	2.5	774.4	774.4	774.5	0.1
AN	14.45	168	1,028	5.9	779.2	779.2	779.3	0.1
AO	14.88	479	3,206	1.9	781.4	781.4	781.5	0.1
AP	15.18	484	1,623	4.2	782.0	782.0	782.1	0.1
AQ	15.66	269	1,077	3.5	785.1	785.1	785.2	0.1
AR	15.94	274	1,039	4.0	786.7	786.7	786.8	0.1
AS	16.44	585	1,914	2.8	790.5	790.5	790.6	0.1
AT	16.60	241	1,282	2.8	792.8	792.8	792.9	0.1
AU	16.89	553	2,064	2.9	795.2	795.2	795.3	0.1
AV	17.31	239	878	2.0	800.4	800.4	800.4	0.0
AW	17.61	171	472	4.4	803.4	803.4	803.5	0.1
AX	18.00	229	637	4.9	807.7	807.7	807.8	0.1
AY	18.37	236	752	3.0	811.8	811.8	811.9	0.1
AZ	18.76	192	546	4.0	817.6	817.6	817.7	0.1
BA	19.14	204	482	5.2	825.1	825.1	825.2	0.1
BB	19.63	161	356	5.3	832.6	832.6	832.7	0.1
BC	20.07	145	390	5.21	840.4	840.4	840.5	0.1
BD	20.45	146	458	5.0	849.5	849.5	849.6	0.1

[1] Miles Above Mouth

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[3] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
LITTLE BLUE RIVER								
A	0.38	120	1,248	8.0	760.7	760.7	760.8	0.1
B	0.63	465	2,416	4.1	763.0	763.0	763.1	0.1
C	0.80	294/144[2]	1,746	5.7	764.4	764.4	764.5	0.1
D	1.10	418/378[2]	2,238	4.4	767.5	767.5	767.6	0.1
E	1.50	431	2,139	4.7	770.2	770.2	770.3	0.1
F	1.90	386	2,076	4.8	773.2	773.2	773.3	0.1
G	2.21	400	1,818	5.5	775.0	775.0	775.1	0.1
LITTLE SUGAR CREEK								
A	0.07	425	1,853	4.4	782.6	782.6	782.6	0.0
B	0.26	527	4,520	1.7	788.6	788.6	788.6	0.0
C	0.72	640	1,605	4.7	788.9	788.9	788.9	0.0
D	0.84	730	2,783	2.7	789.9	789.9	789.9	0.0
E	0.95	890	2,850	2.6	790.2	790.2	790.2	0.0
F	1.12	995	1,117	6.8	790.3	790.3	790.3	0.0
G	1.31	910	3,919	1.9	792.6	792.6	792.6	0.0
H	1.59	934	4,240	1.8	795.5	795.5	795.5	0.0

[1] MILES ABOVE MOUTH
[2] TOTAL WIDTH / WIDTH WITHING UNINCORPORATED AREAS
[3] FLOODWAY WIDTH MAY DIFFER FROM FIRM. SEE FIRM FOR REGULATORY WIDTH.

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN
(AND INCORPORATED AREAS)

FLOODWAY DATA

LITTLE BLUE RIVER - LITTLE SUGAR CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[3] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
LITTLE SUGAR CREEK(continued)								
I	1.77	575	2,867	2.6	796.1	796.1	796.1	0.0
J	1.99	710	3,749	2.0	798.3	798.3	798.3	0.0
K	2.18	519	1,977	3.8	798.7	798.7	798.7	0.0
L	2.41	590	2,426	3.1	800.4	800.4	800.4	0.0
M	2.60	477	1,553	4.9	802.1	802.1	802.1	0.0
N	2.70	630	829	9.1	804.6	804.6	804.6	0.0
SNAIL CREEK								
A	0.19	729	2,506	3.7	737.4	736.1[2]	736.1	0.0
B	0.50	669	3,672	2.5	739.2	739.2	739.2	0.0
C	0.69	665	2,955	3.1	739.7	739.7	739.7	0.0
D	1.03	820	3,401	2.7	742.7	742.7	742.7	0.0
E	1.18	704	2,887	3.2	743.6	743.6	743.6	0.0
F	1.45	1,182	3,795	2.0	745.6	745.6	745.6	0.0
G	2.24	1,449	2,792	2.7	750.0	750.0	750.0	0.0
H	2.84	1,469	3,193	2.3	754.9	754.9	754.9	0.0
I	3.16	550	2,066	3.6	758.2	758.2	758.2	0.0
J	3.78	644	3,343	2.2	763.6	763.6	763.6	0.0
K	4.30	581	3,070	2.4	766.4	766.4	766.4	0.0
L	4.59	450	2,423	2.7	771.1	771.1	771.1	0.0
M	5.16	584	3,088	2.2	772.1	772.1	772.1	0.0
N	5.48	750	2,758	2.4	773.2	773.2	773.2	0.0
O	5.78	464	1,658	4.0	774.8	774.8	774.8	0.0
P	6.06	458	2,288	2.9	776.6	776.6	776.6	0.0
Q	6.99	920	5,494	1.1	783.9	783.9	783.9	0.0
R	7.33	575	2,872	2.1	784.3	784.3	784.3	0.0
S	7.87	1,011	3,986	1.5	787.1	787.1	787.1	0.0

[1] MILES ABOVE MOUTH

[2] ELEVATIONS WITHOUT CONSIDERING SUGAR CREEK BACKWATER

[3] FLOODWAY WIDTH MAY DIFFER FROM FIRM. SEE FIRM FOR REGULATORY WIDTH.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
SNAIL CREEK (continued)								
T	8.01	570	3,139	1.9	787.3	787.3	787.3	0.0
U	8.17	870	3,117	1.5	787.6	787.6	787.6	0.0
V	8.31	623	2,661	1.7	787.8	787.8	787.8	0.0
W	8.69	444	1,751	2.6	789.2	789.2	789.2	0.0
SNODGRASS DITCH								
A	0.19	793	959	2.5	789.5	789.5	789.5	0.0
B	0.32	800	1,175	2.0	790.8	790.8	790.8	0.0
C	0.41	458	941	2.6	791.8	791.8	791.8	0.0
D	0.57	178	585	4.1	794.0	794.0	794.0	0.0
E	0.67	238	684	3.5	795.4	795.4	795.4	0.0
F	0.84	255	661	3.6	797.3	797.3	797.3	0.0
G	0.97	553	1,138	2.1	798.4	798.4	798.4	0.0
SUGAR CREEK								
A	23.65	2,580	10,272	2.3	735.4	735.4	735.4	0.0
B	24.15	1,416	9,261	2.5	737.1	737.1	737.1	0.0
C	24.40	2,354	11,506	1.9	738.2	738.2	738.2	0.0
D	24.73	2,679	15,618	1.4	739.3	739.3	739.3	0.0
E	24.91	2,780	14,840	1.5	740.4	740.4	740.4	0.0
F	25.30	2,063	11,213	1.9	743.7	743.7	743.7	0.0
G	25.51	1,813	9,586	2.3	744.3	744.3	744.3	0.0
H	25.91	1,796	7,407	2.9	746.1	746.1	746.1	0.0
I	26.15	1,356	9,510	2.3	748.1	748.1	748.1	0.0
J	26.46	1,346	8,834	2.5	749.3	749.3	749.3	0.0

[1] MILES ABOVE MOUTH

[2] FLOODWAY WIDTH MAY DIFFER FROM FIRM. SEE FIRM FOR REGULATORY WIDTH.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
SUGAR CREEK (continued)								
K	27.11	2,186	10,520	2.1	750.8	750.8	750.8	0.0
L	27.43	2,839	16,640	1.3	751.4	751.4	751.4	0.0
M	28.05	2,665	16,289	1.3	752.4	752.4	752.4	0.0
N	28.25	2,605	14,162	1.5	752.6	752.6	752.6	0.0
O	28.62	2,697	8,294	1.9	752.9	752.9	752.9	0.0
P	28.84	1,814	5,908	2.6	753.8	753.8	753.8	0.0
Q	29.03	1,330	4,232	3.6	754.7	754.7	754.7	0.0
R	29.62	1,715	8,538	1.8	761.2	761.2	761.2	0.0
S	29.87	1,569	6,993	2.2	761.4	761.4	761.4	0.0
T	30.21	1,723	5,215	3.0	762.6	762.6	762.6	0.0
U	30.51	1,084	3,926	3.9	765.4	765.4	765.4	0.0
V	30.86	1,569	6,718	2.3	767.4	767.4	767.4	0.0
W	31.24	990	5,812	2.6	768.6	768.6	768.6	0.0
X	31.74	706	3,933	3.9	771.3	771.3	771.3	0.0
Y	32.14	1,192	7,556	2.0	772.7	772.7	772.7	0.0
Z	32.57	1,466	6,503	2.4	773.4	773.4	773.4	0.0
AA	32.84	1,236	4,892	3.1	774.4	774.4	774.4	0.0
AB	33.00	831	3,722	4.1	776.0	776.0	776.0	0.0
AC	33.37	929	5,119	3.0	780.4	780.4	780.4	0.0
AD	33.95	1,097	5,250	2.9	781.9	781.9	781.9	0.0
AE	34.20	1,671	8,734	1.8	782.4	782.4	782.4	0.0
AF	34.53	986	4,343	2.9	783.1	783.1	783.1	0.0
AG	35.01	1,230	5,455	2.3	786.5	786.5	786.5	0.0
AH	35.58	800	2,395	5.3	789.7	789.7	789.7	0.0
AI	35.84	970	6,416	2.0	792.6	792.6	792.6	0.0

[1] MILES ABOVE MOUTH

[2] FLOODWAY WIDTH MAY DIFFER FROM FIRM. SEE FIRM FOR REGULATORY WIDTH.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[3] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
SWEET CREEK								
A	0.13	660	1,488	1.2	789.0	789.0	789.1	0.1
B	0.18	680	1,762	1.0	789.3	789.3	789.4	0.1
C	0.27	500	845	2.1	789.5	789.5	789.6	0.1
D	0.36	286	550	3.2	790.6	790.6	790.7	0.1
E	0.43	610	1,436	1.2	791.3	791.3	791.4	0.1
F	0.60	740	1,566	1.1	791.9	791.9	792.0	0.1
G	0.70	600	1,237	1.4	792.2	792.2	792.3	0.1
H	0.74	465	935	1.9	792.5	792.5	792.6	0.1
WEST LITTLE SUGAR CREEK								
A	0.15[2]	330	1,066	2.3	789.0	789.0	789.1	0.1
B	0.21[2]	526	1,278	1.9	789.4	789.4	789.5	0.1
C	0.23[2]	670	1,621	1.5	789.7	789.7	789.8	0.1
D	0.39[2]	510	1,374	1.7	790.2	790.2	790.3	0.1
E	0.51[2]	320	958	2.5	790.6	790.6	790.7	0.1
F	0.56[2]	360	869	2.8	790.8	790.8	790.9	0.1
G	0.72[2]	520	1,231	1.9	791.9	791.9	792.0	0.1

[1] MILES ABOVE MOUTH
[2] MILES ABOVE CONFLUENCE WITH SWEET CREEK
[3] FLOODWAY WIDTH MAY DIFFER FROM FIRM. SEE FIRM FOR REGULATORY WIDTH.

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN
(AND INCORPORATED AREAS)

FLOODWAY DATA

SWEET CREEK - WEST LITTLE SUGAR CREEK

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no BFEs or base flood depths are shown within this zone.

Zone AE

Zone AE is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance risk zone that corresponds to areas outside the 0.2-percent-annual-chance floodplain, areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by levees. No BFEs or base flood depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance risk zones as described in Section 5.0 and, in the 1-percent-annual-chance floodplains that were studied by detailed methods, shows selected whole-foot BFEs or average depths. Insurance agents use the zones and BFEs in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 1- and 0.2-percent-annual-chance floodplains, floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

The current FIRM presents flooding information for the entire geographic area of Shelby County. Previously, separate FIRMs were prepared for each identified flood prone incorporated community and for the unincorporated areas of the county. Historical data relating to the maps prepared for each community are presented in Table 9.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Edinburgh, Town of [1,2]	N/A	N/A	N/A	
Fairland, Town of [1,2]	N/A	N/A	N/A	
Morristown, Town of [1]	N/A	N/A	N/A	
Shelby County (Unincorporated Areas)	September 20, 1974	April 15, 1977	October 15, 1982	
Shelbyville, City of	December 17, 1973	June 18, 1976	April 1, 1982	

[1] This community did not have a FIRM prior to the first countywide FIRM for Shelby County

[2] No Special Flood Hazard Areas Identified

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

SHELBY COUNTY, IN (AND INCORPORATED AREAS)

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

This FIS report either supersedes or is compatible with all previous studies on streams studied in this report and should be considered authoritative for purposes of the NFIP.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Flood Insurance and Mitigation Division, Federal Emergency Management Agency, Region V, 536 S. Clark Street, 6th Floor, Chicago, IL 60605

9.0 BIBLIORAPHY AND REFERENCES

1. Federal Emergency Management Agency, Flood Insurance Study, Shelby County, IN, Unincorporated Areas, Washington D.C., April 15, 1982.

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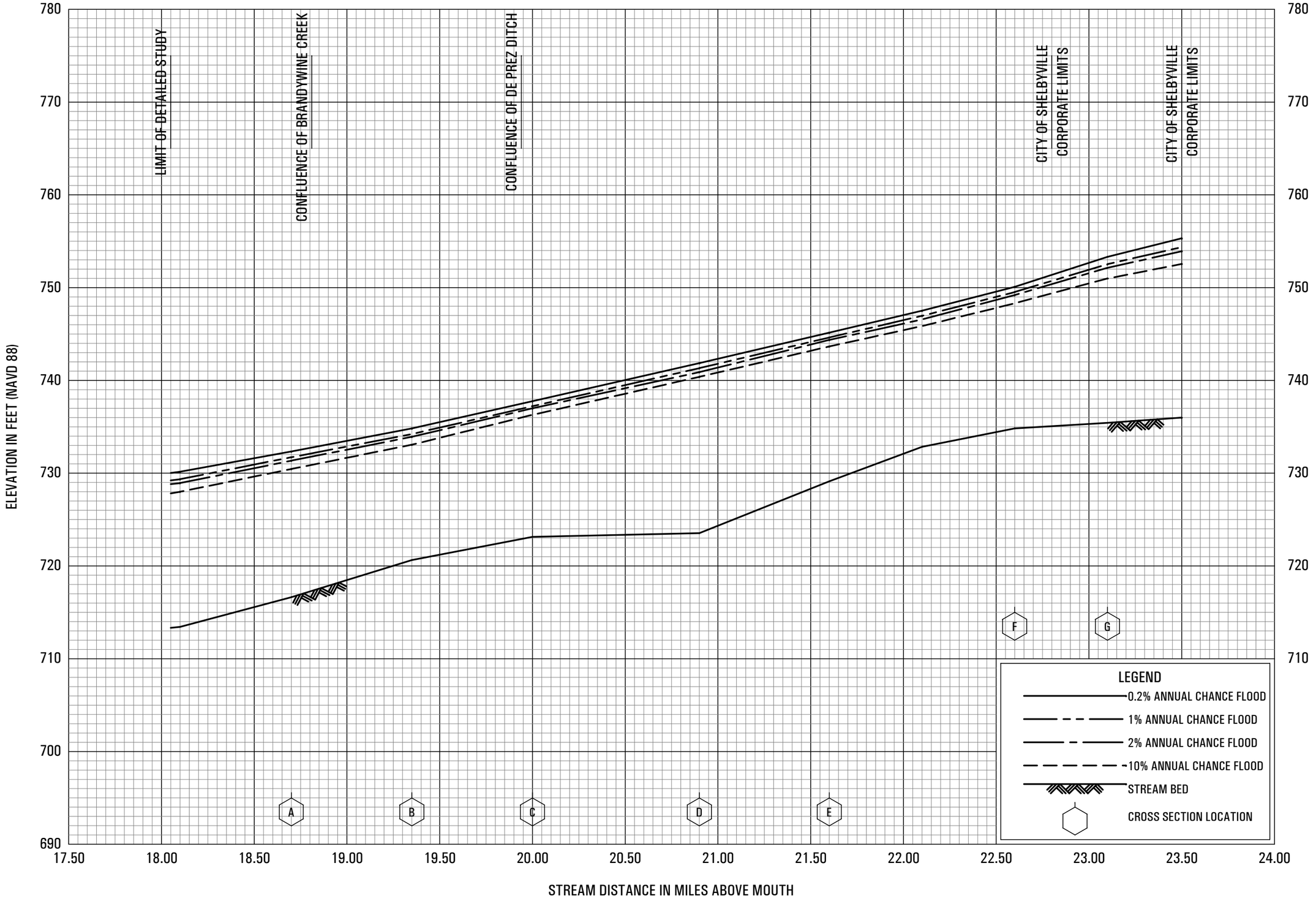
4. "Population Counts, Estimates and Projections", STATS Indiana, Indiana Business Research Center, Indiana University Kelley School of Business, accessed at www.stats.indiana.edu/pop_totals_topic_page.html.

5. National Oceanic and Atmospheric Administration, National Climatic Data Center, *Monthly Station Normals of Temperature, Precipitation, and Heating and Cooling Days, 1971-2000*, Climatography of the United States No. 81, 2002

6. "Peak Streamflow for Indiana", United States Geological Survey, National Water Information System, accessed at http://nwis.waterdata.usgs.gov/in.



FLOOD PROFILES

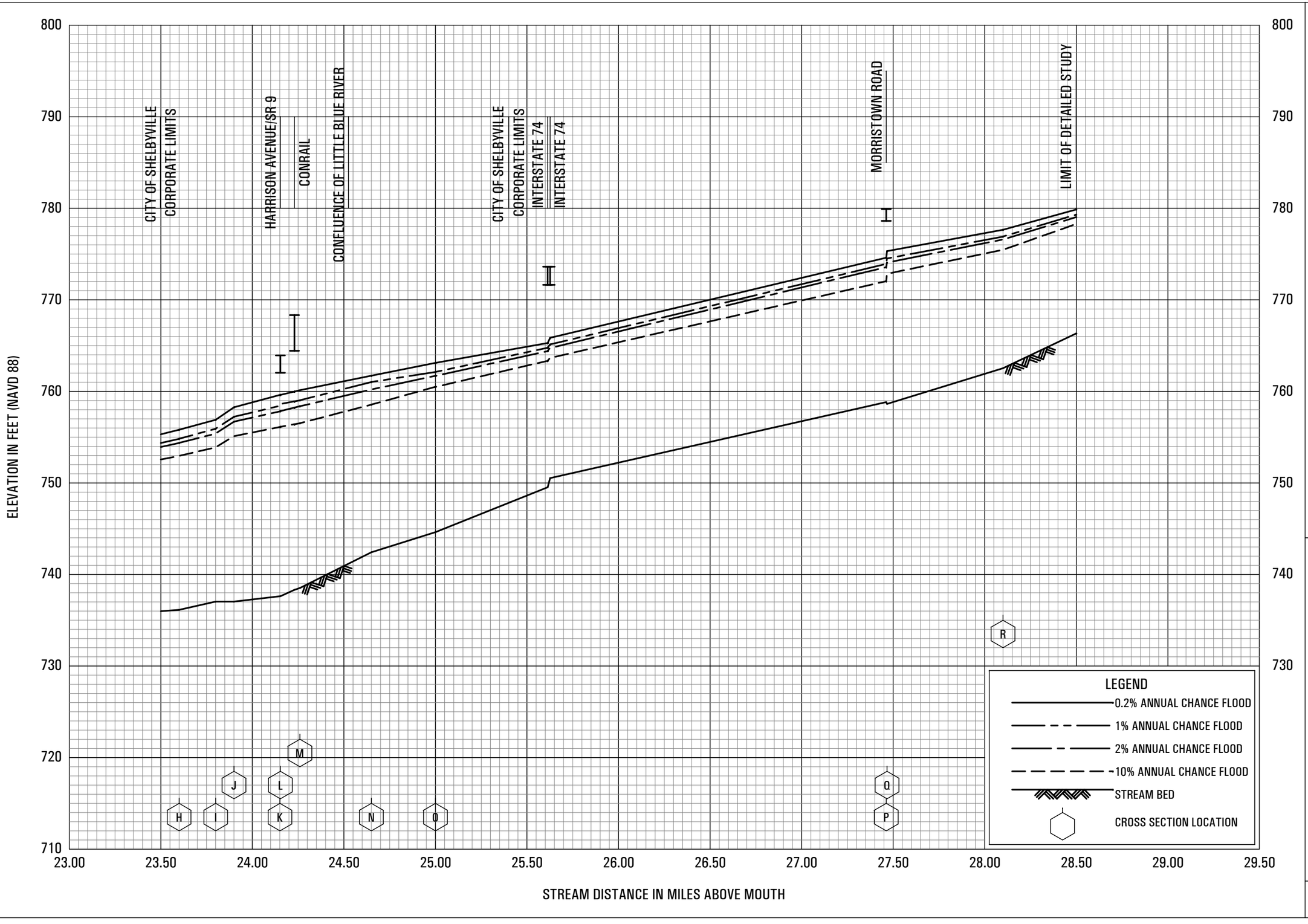
BIG BLUE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

01P



FLOOD PROFILES

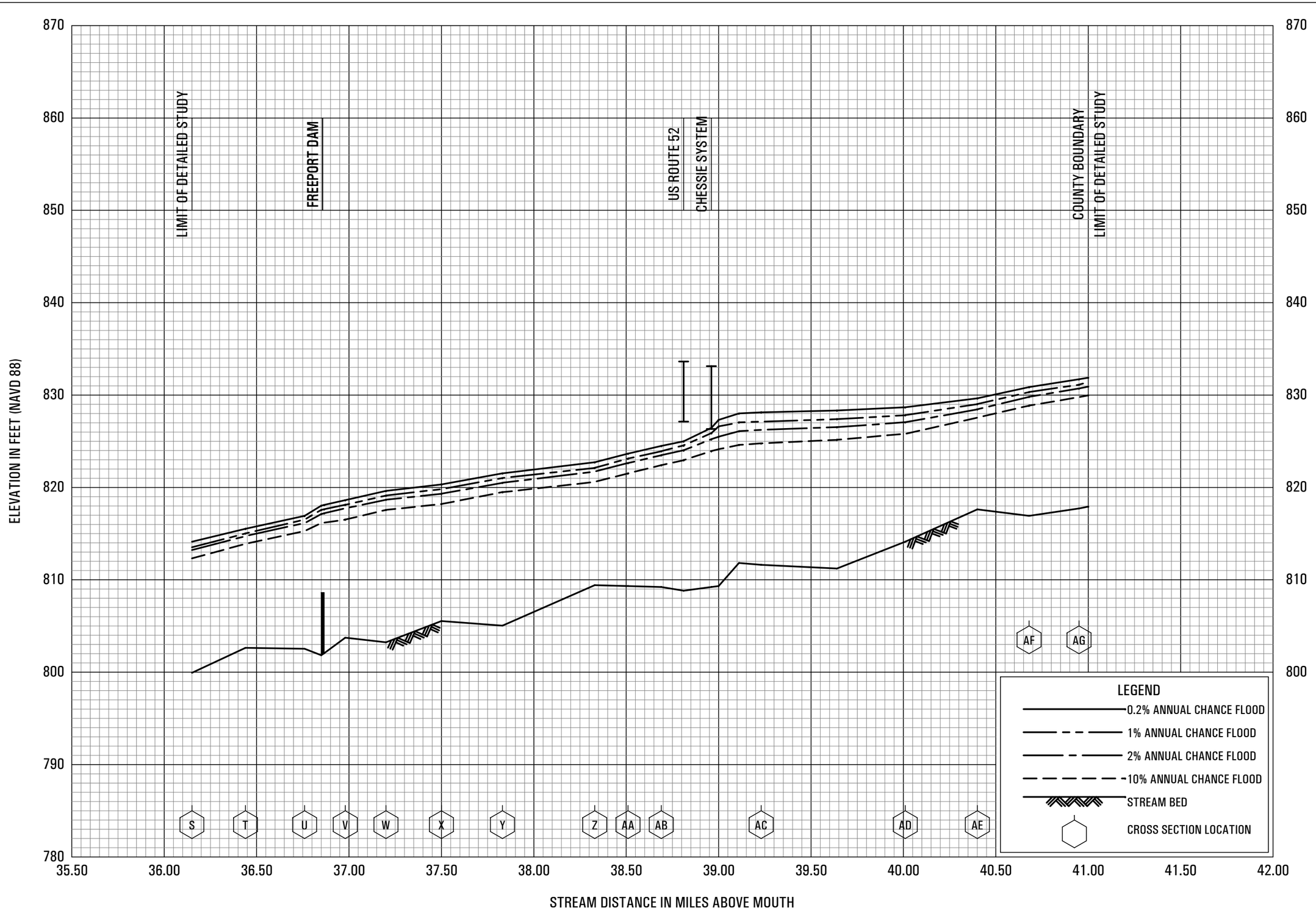
BIG BLUE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

02P



FLOOD PROFILES

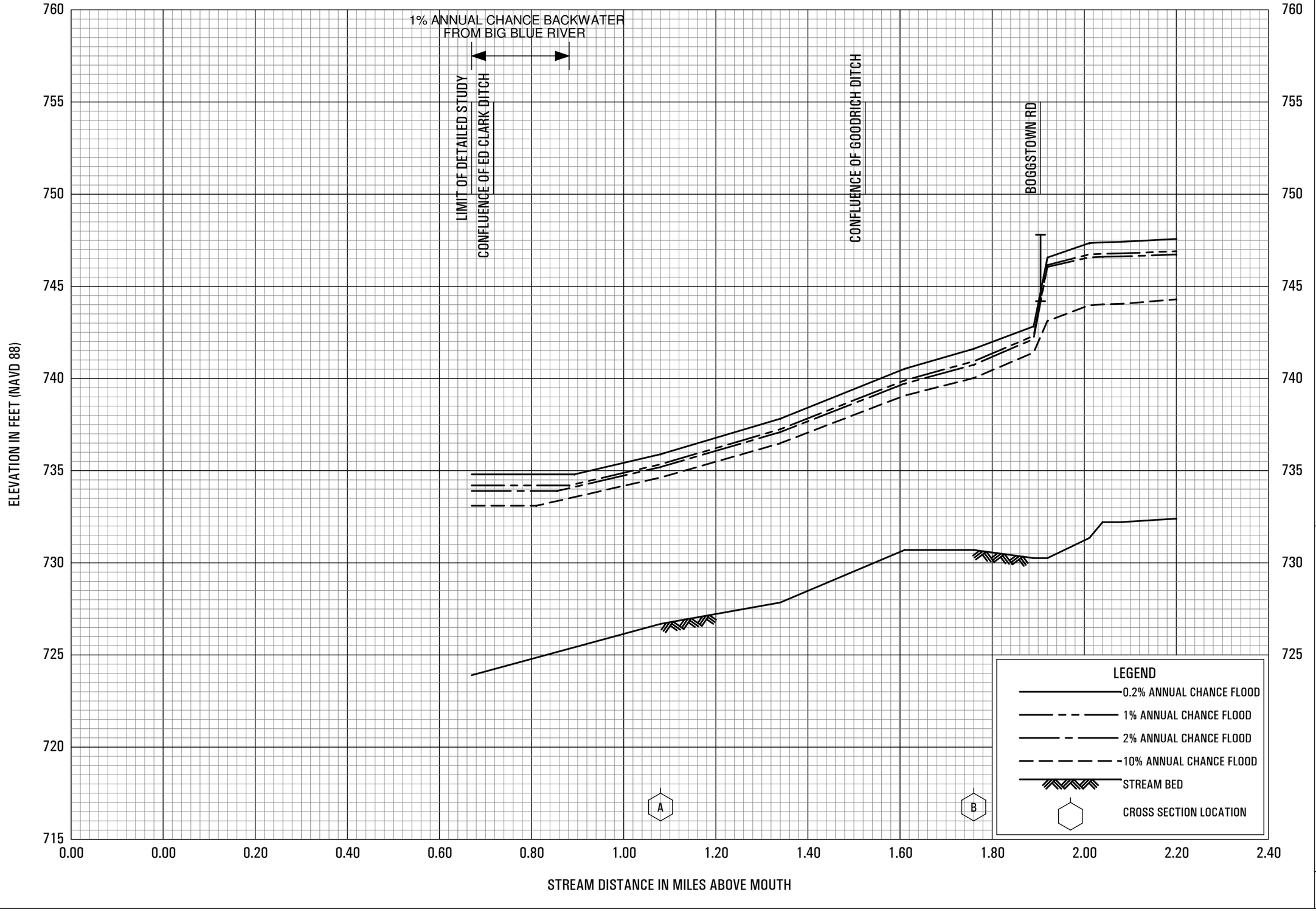
BIG BLUE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

03P



FLOOD PROFILES

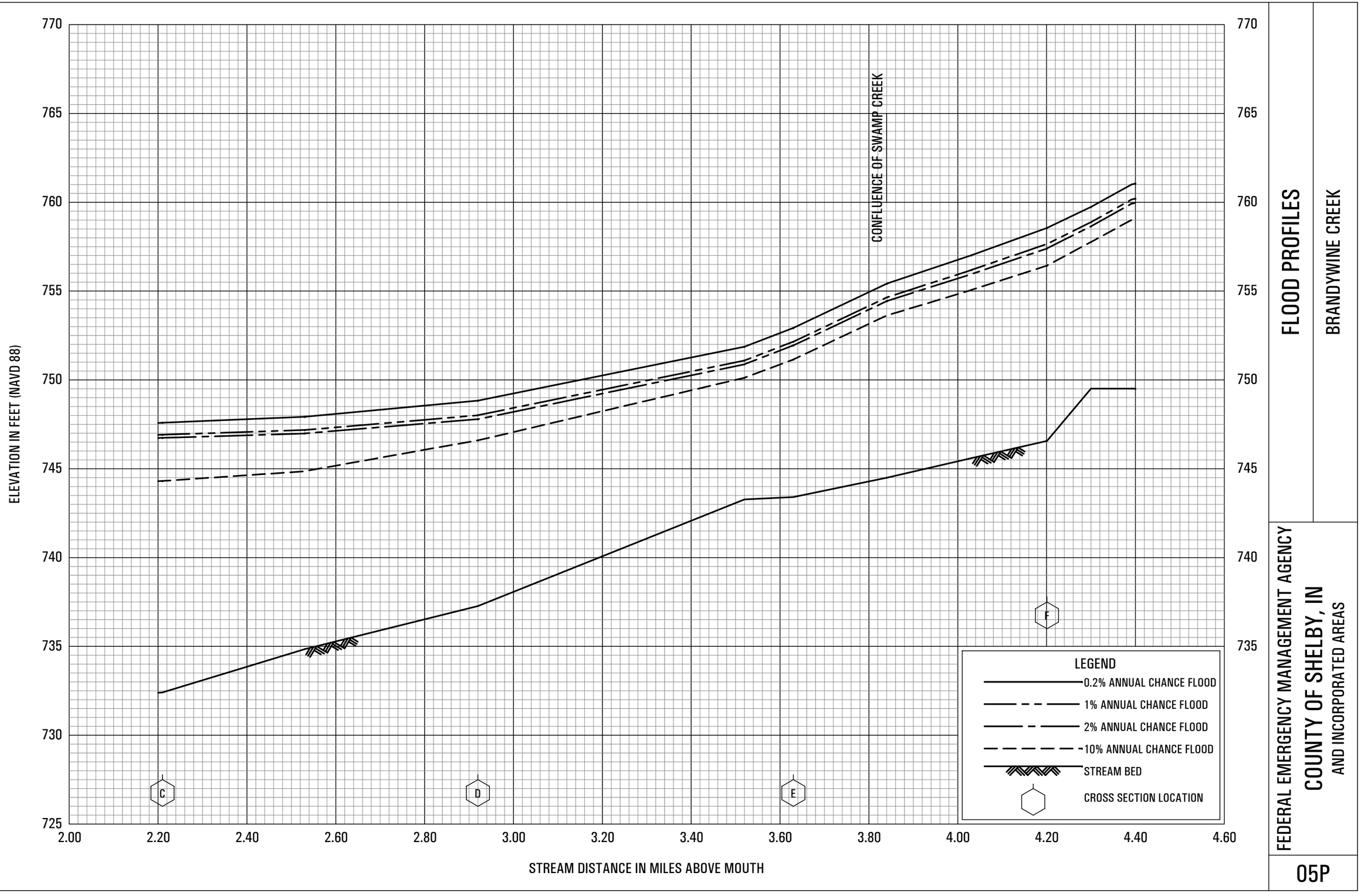
BRANDYWINE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

04P



FLOOD PROFILES

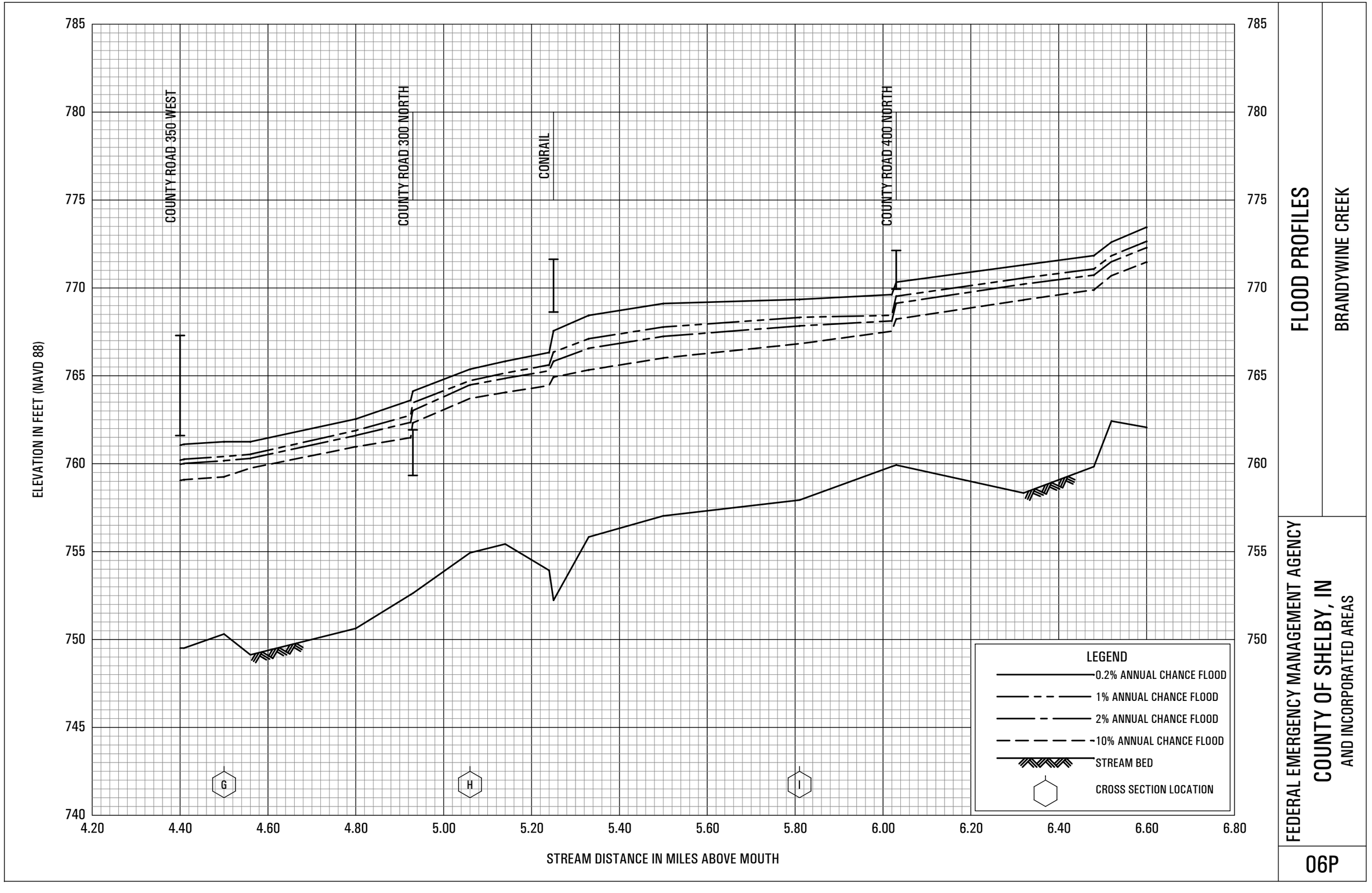
BRANDYWINE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

05P



FLOOD PROFILES

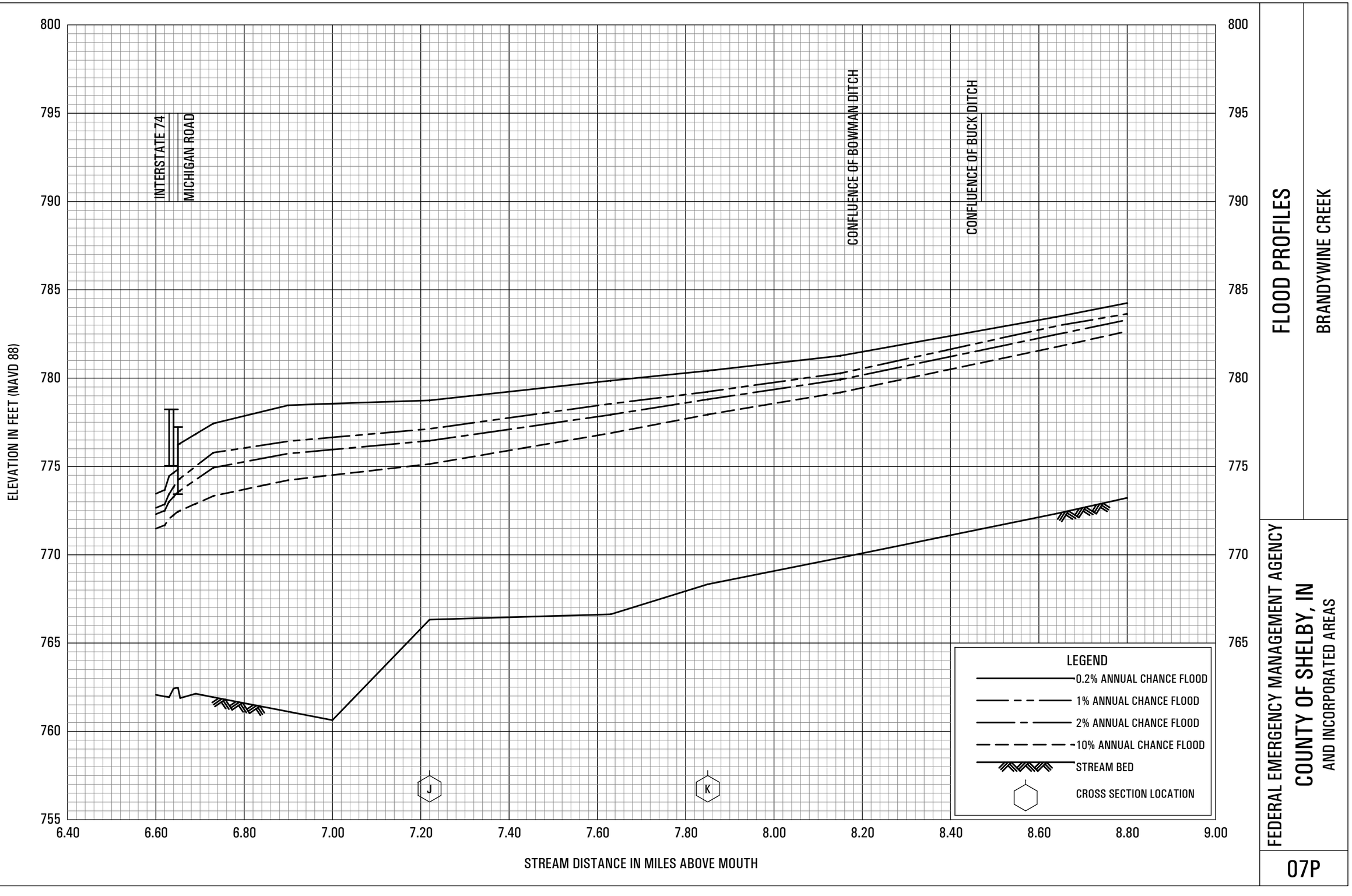
BRANDYWINE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

06P



FLOOD PROFILES

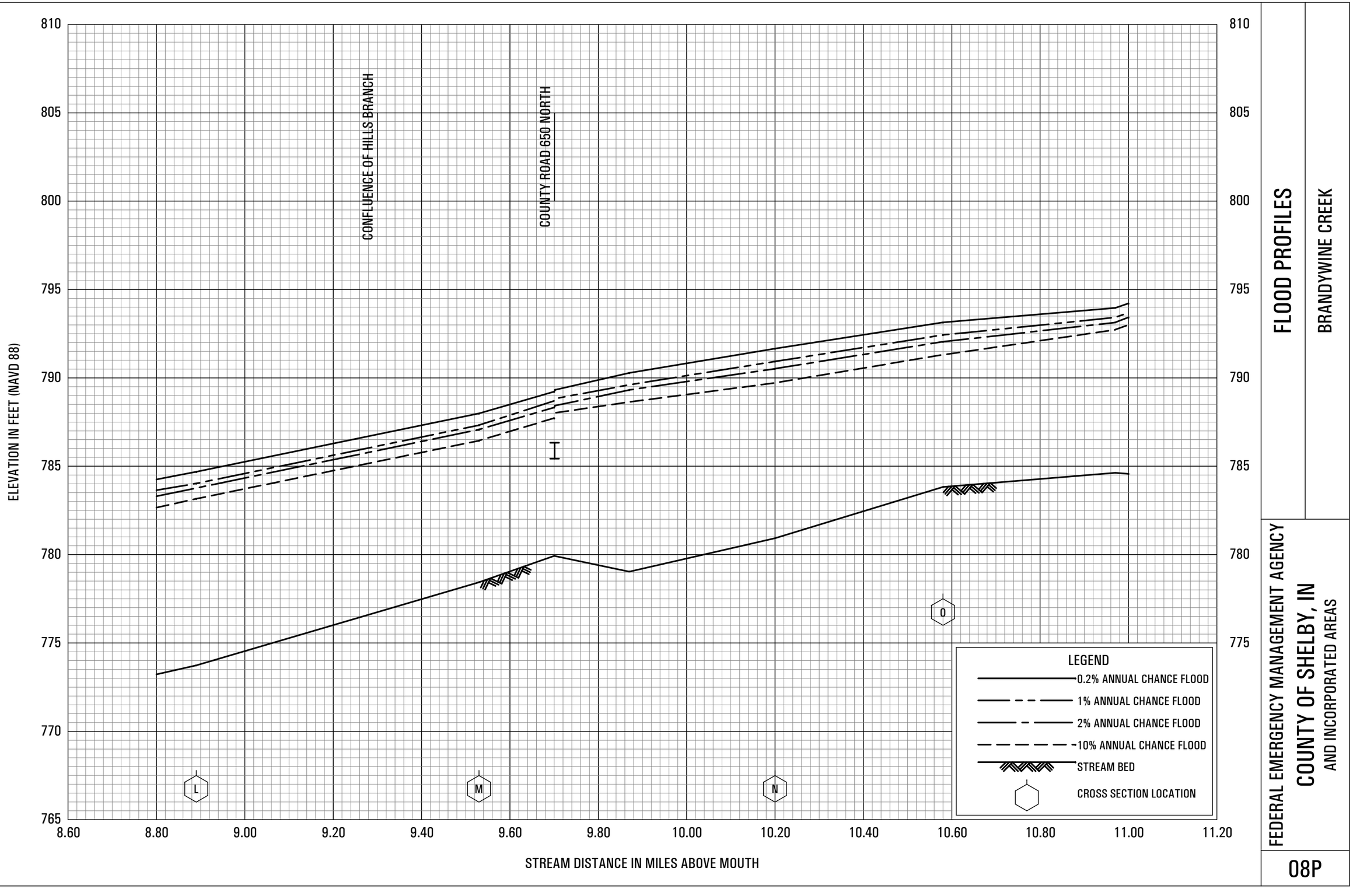
BRANDYWINE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

07P



FLOOD PROFILES

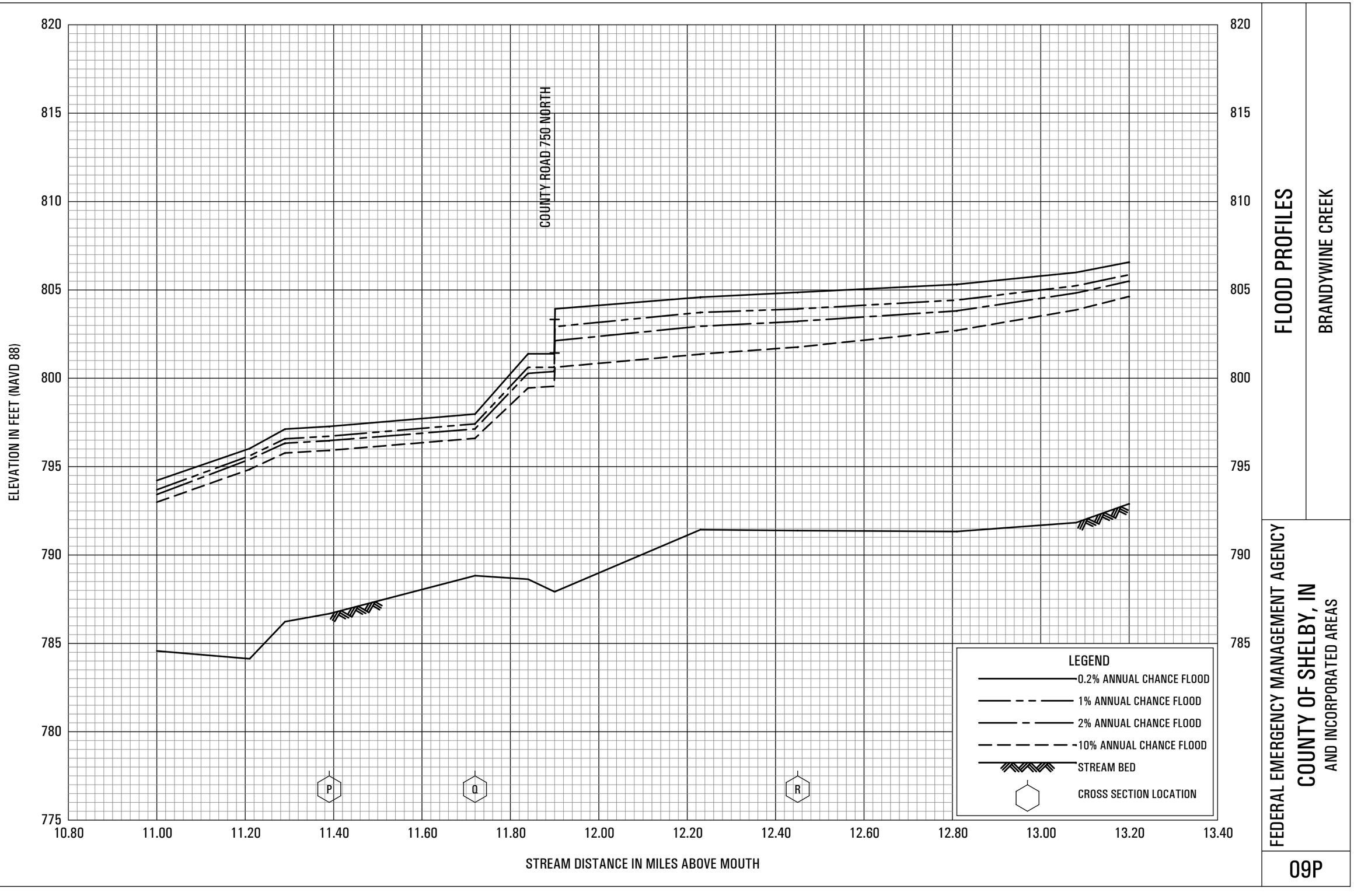
BRANDYWINE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

08P



FLOOD PROFILES

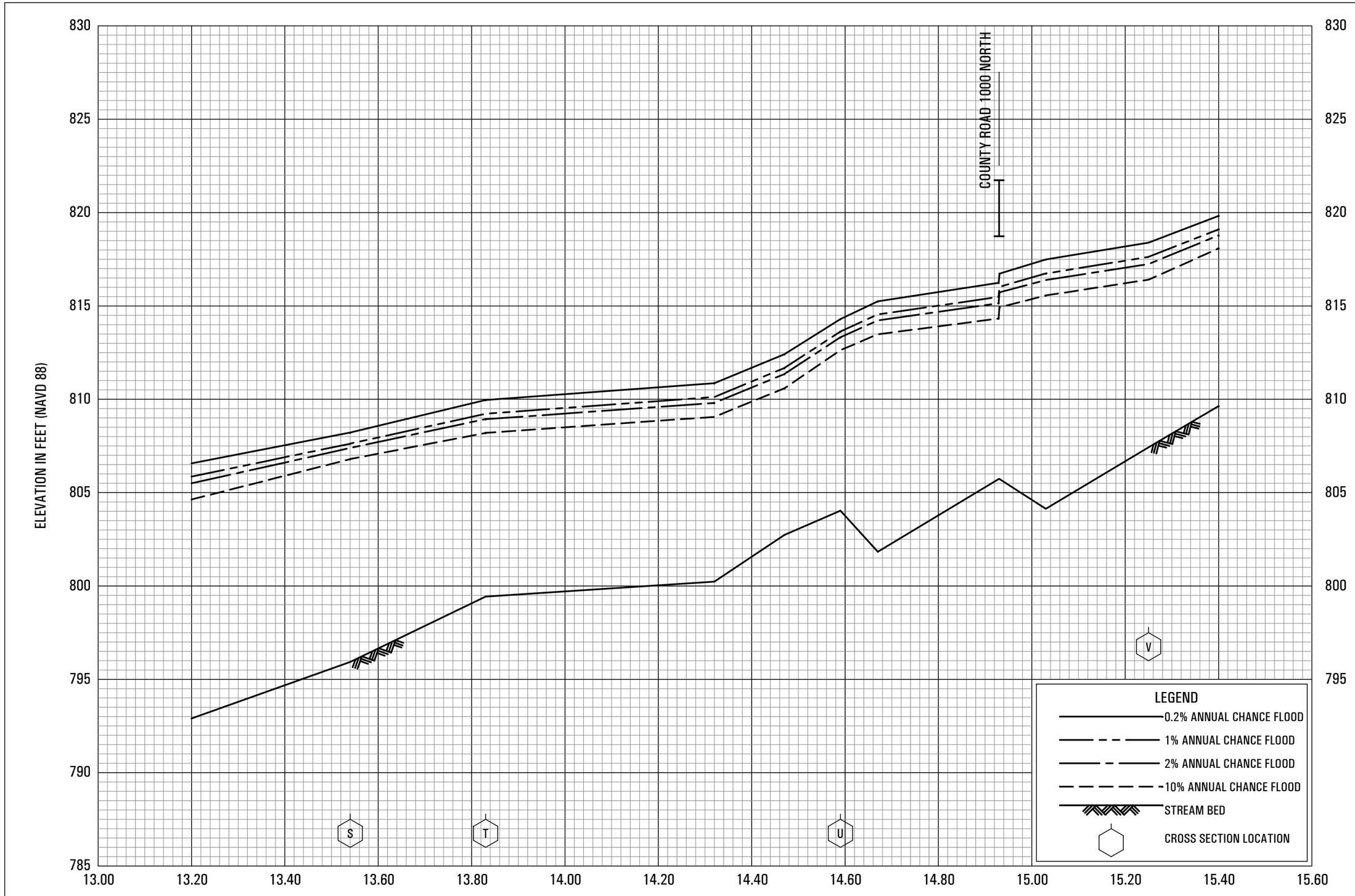
BRANDYWINE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

09P



FLOOD PROFILES

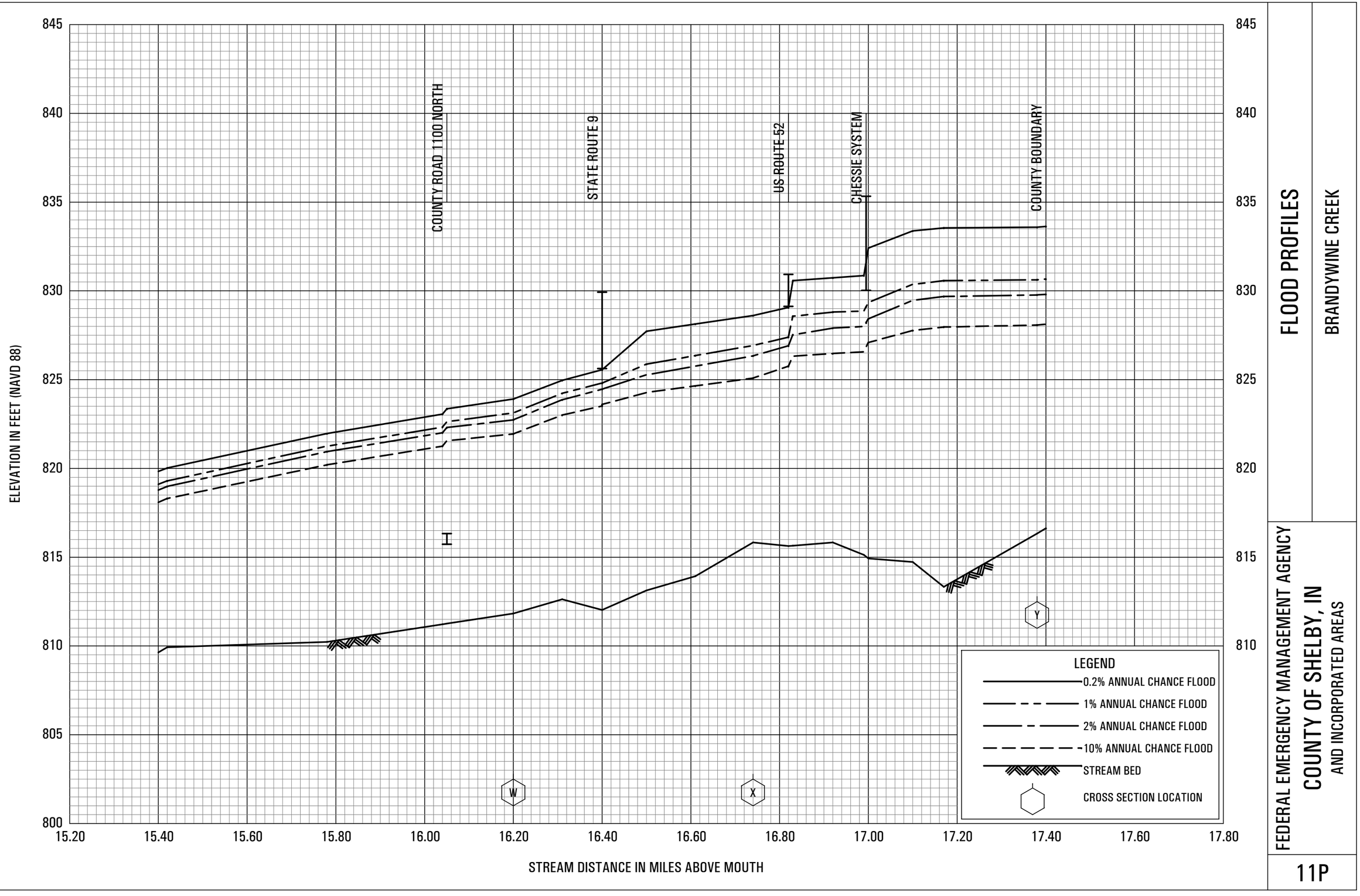
BRANDYWINE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

10P



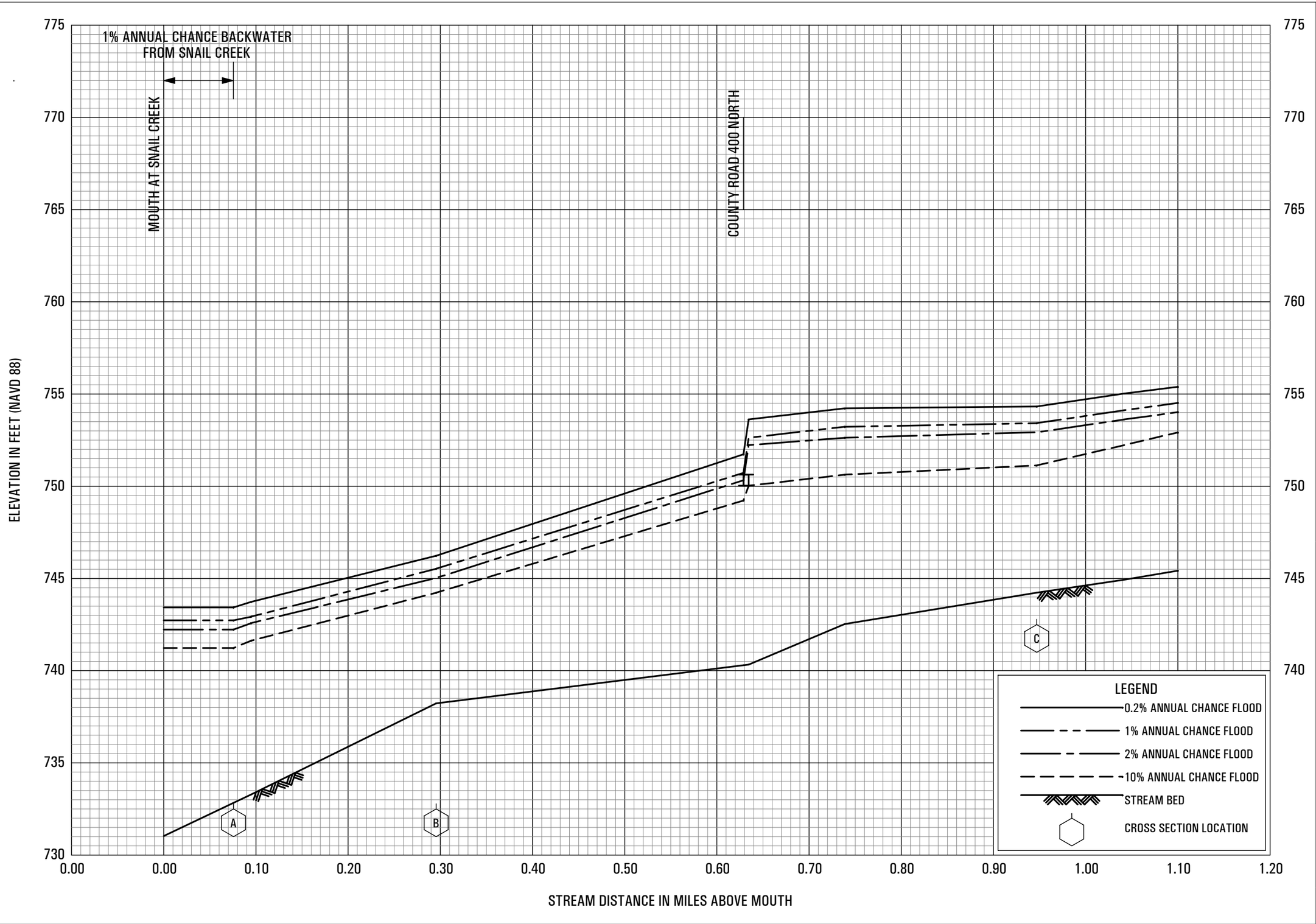
FLOOD PROFILES

BRANDYWINE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS



FLOOD PROFILES

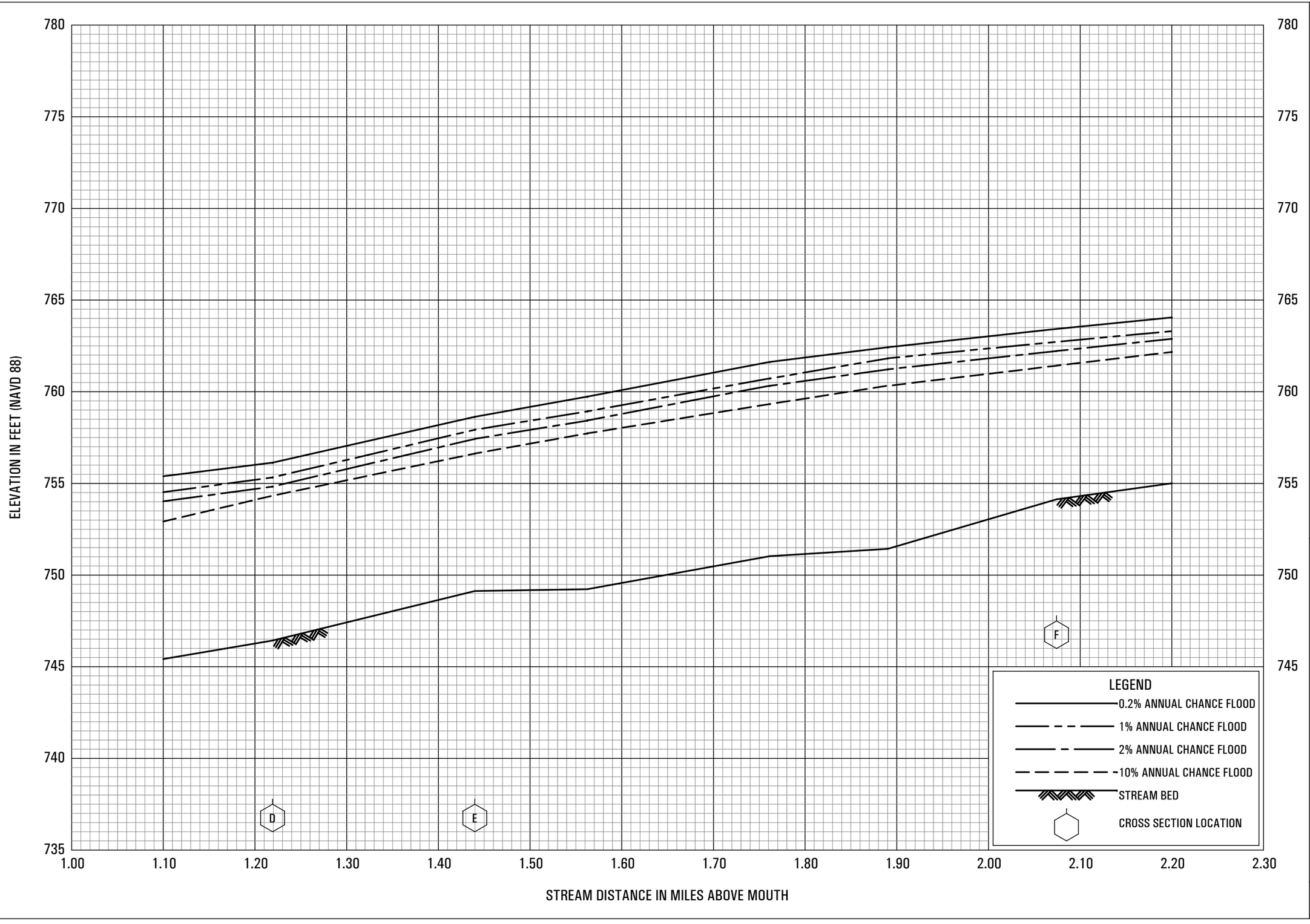
DRY FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

12P



FLOOD PROFILES

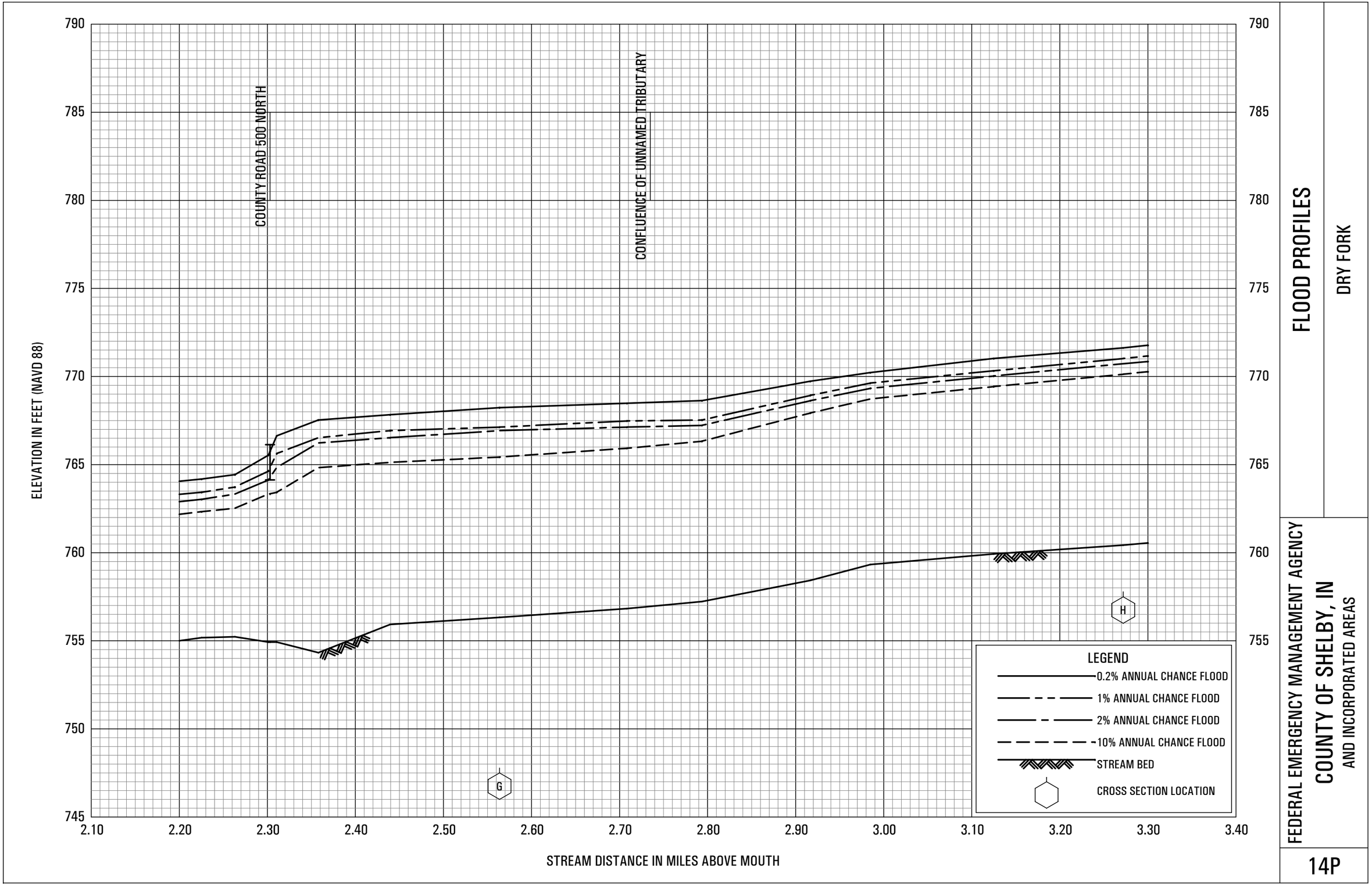
DRY FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

13P



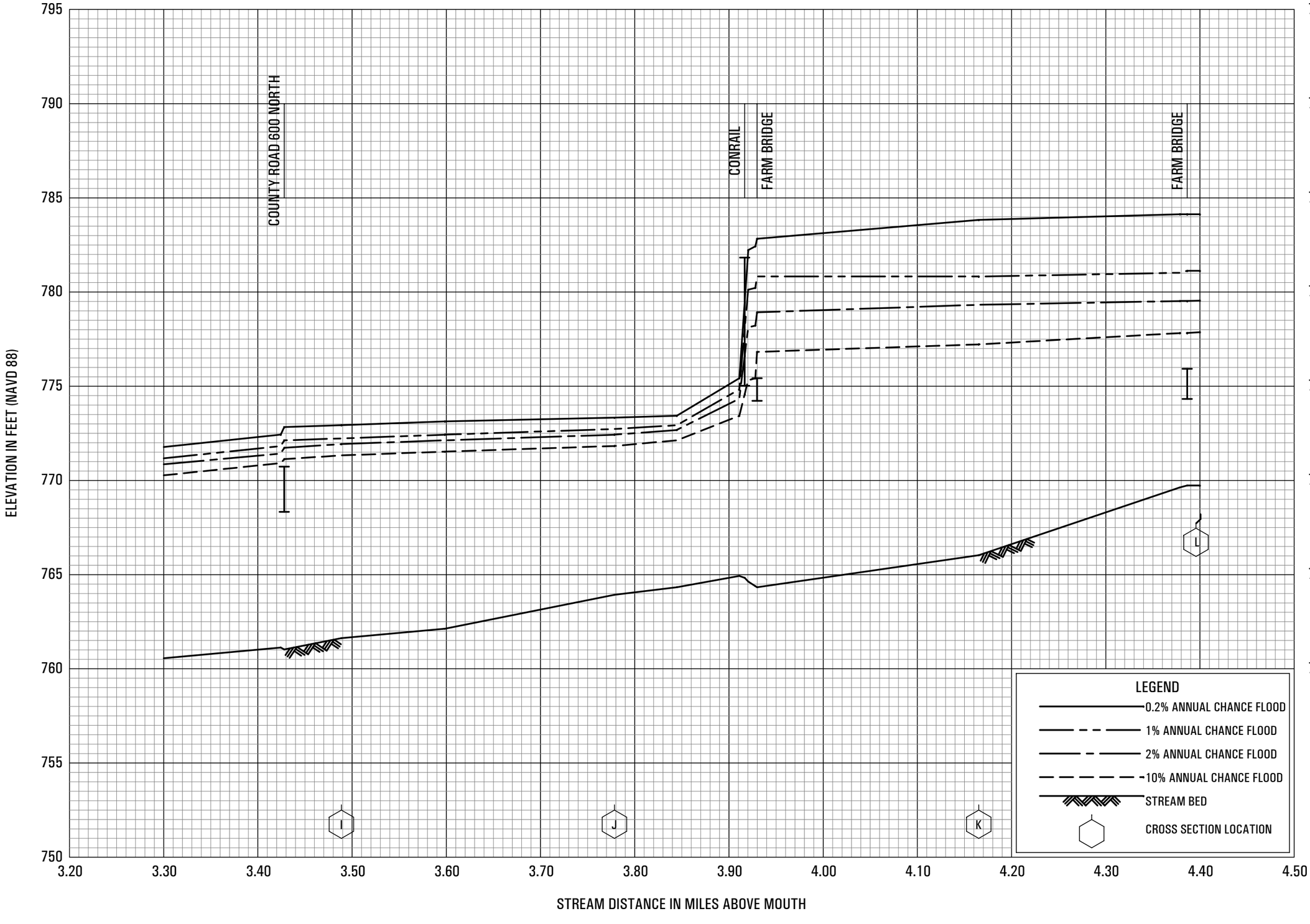
FLOOD PROFILES

DRY FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS



FLOOD PROFILES

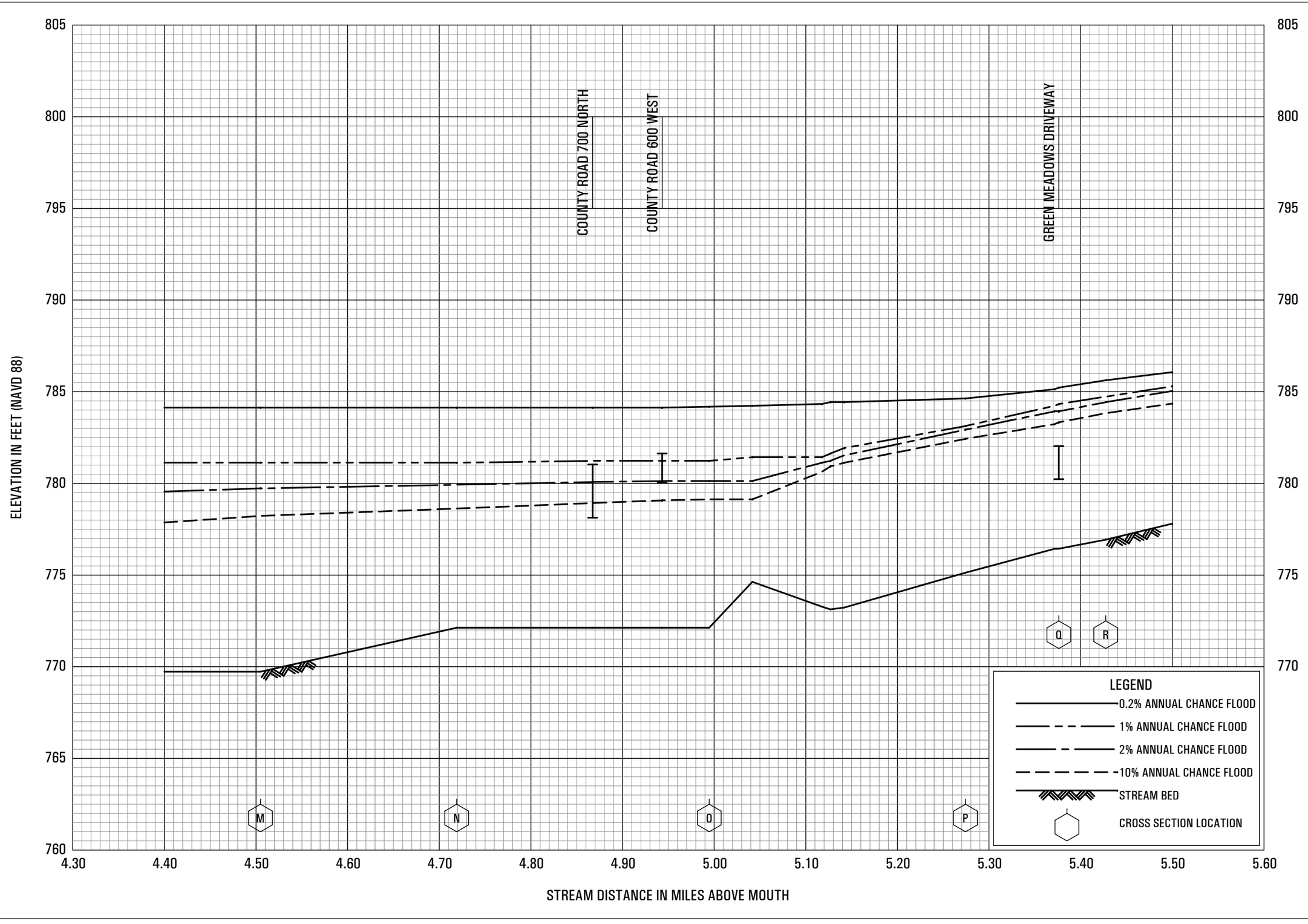
DRY FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

15P



FLOOD PROFILES

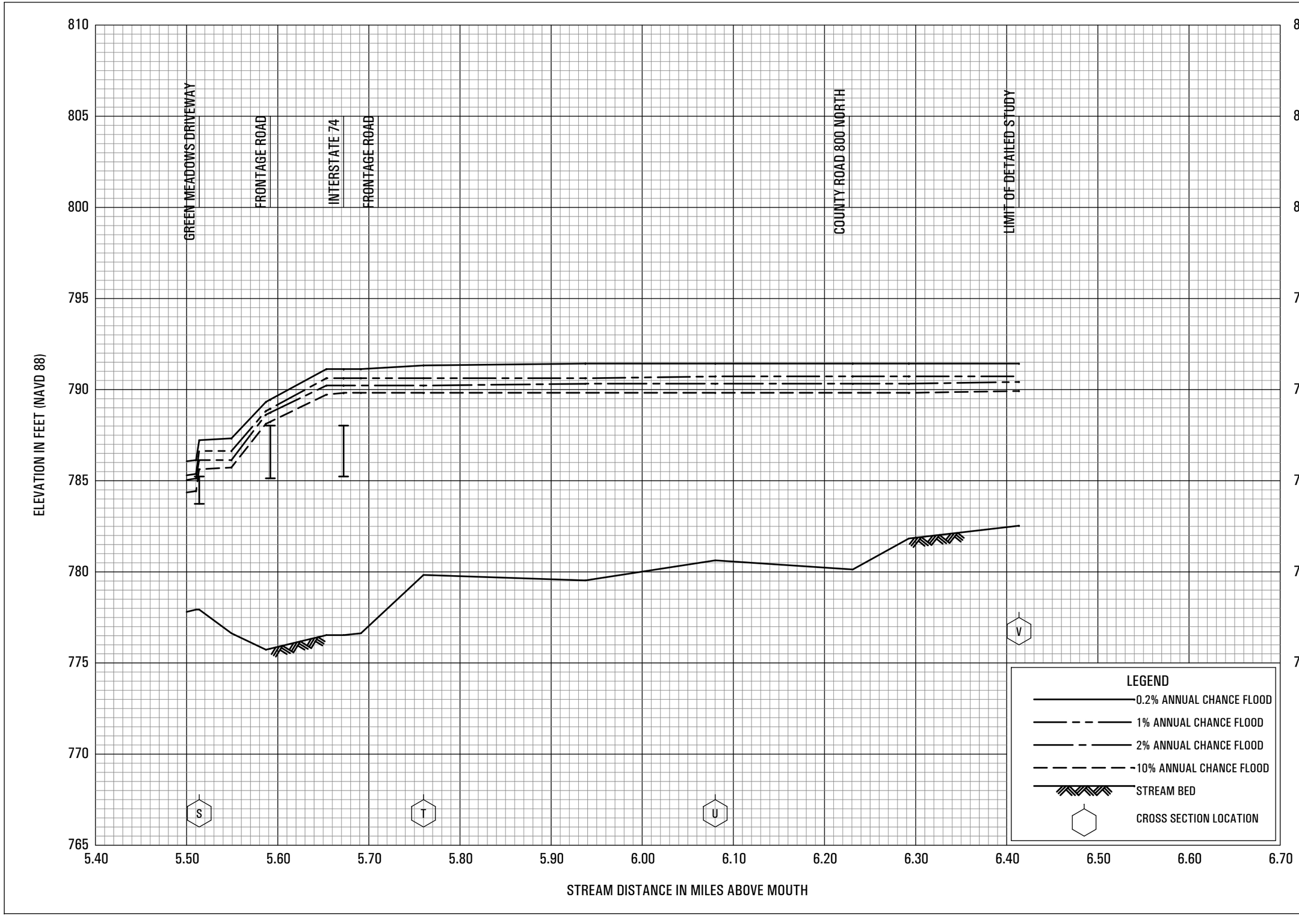
DRY FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

16P



FLOOD PROFILES

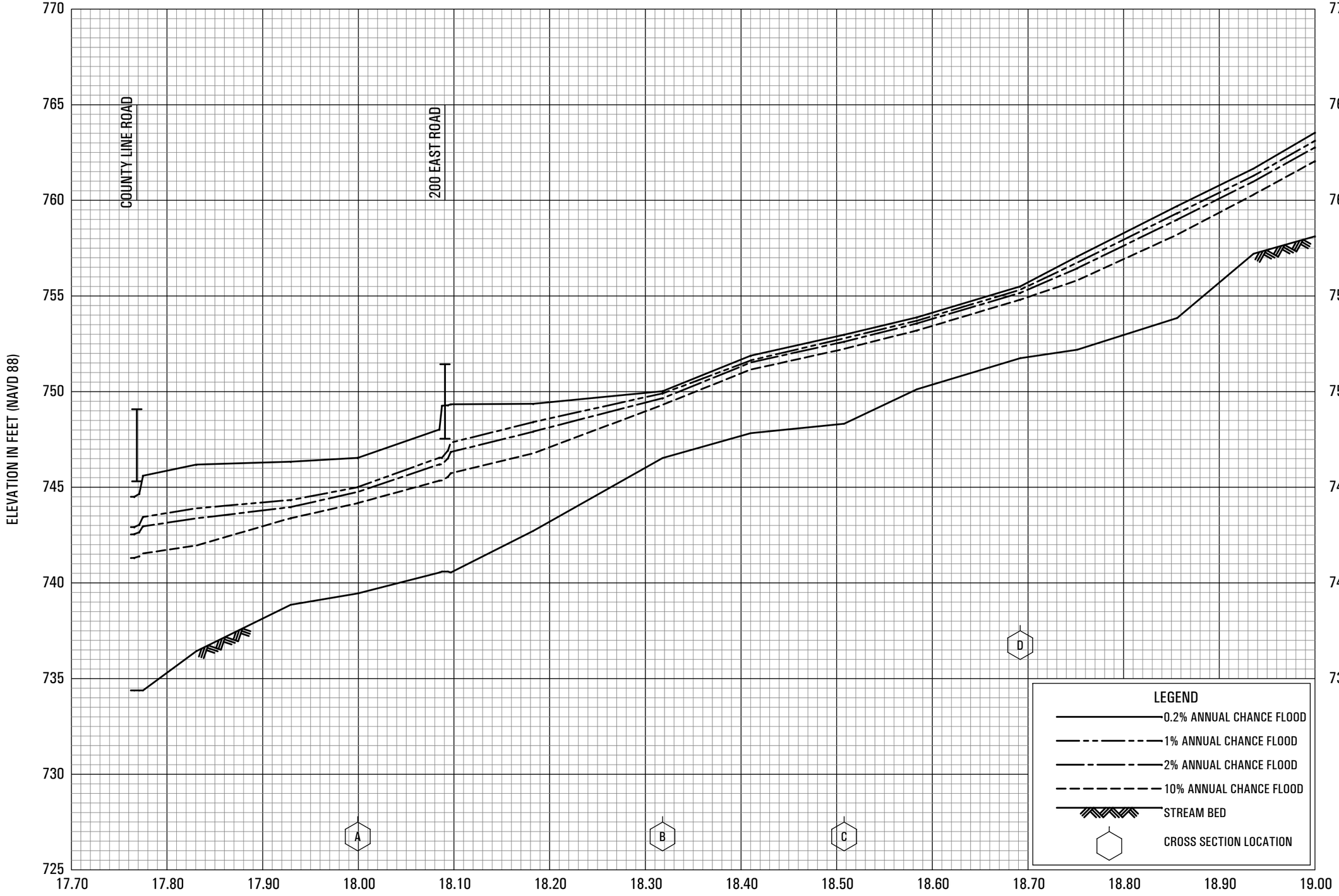
DRY FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

17P



FLOOD PROFILES

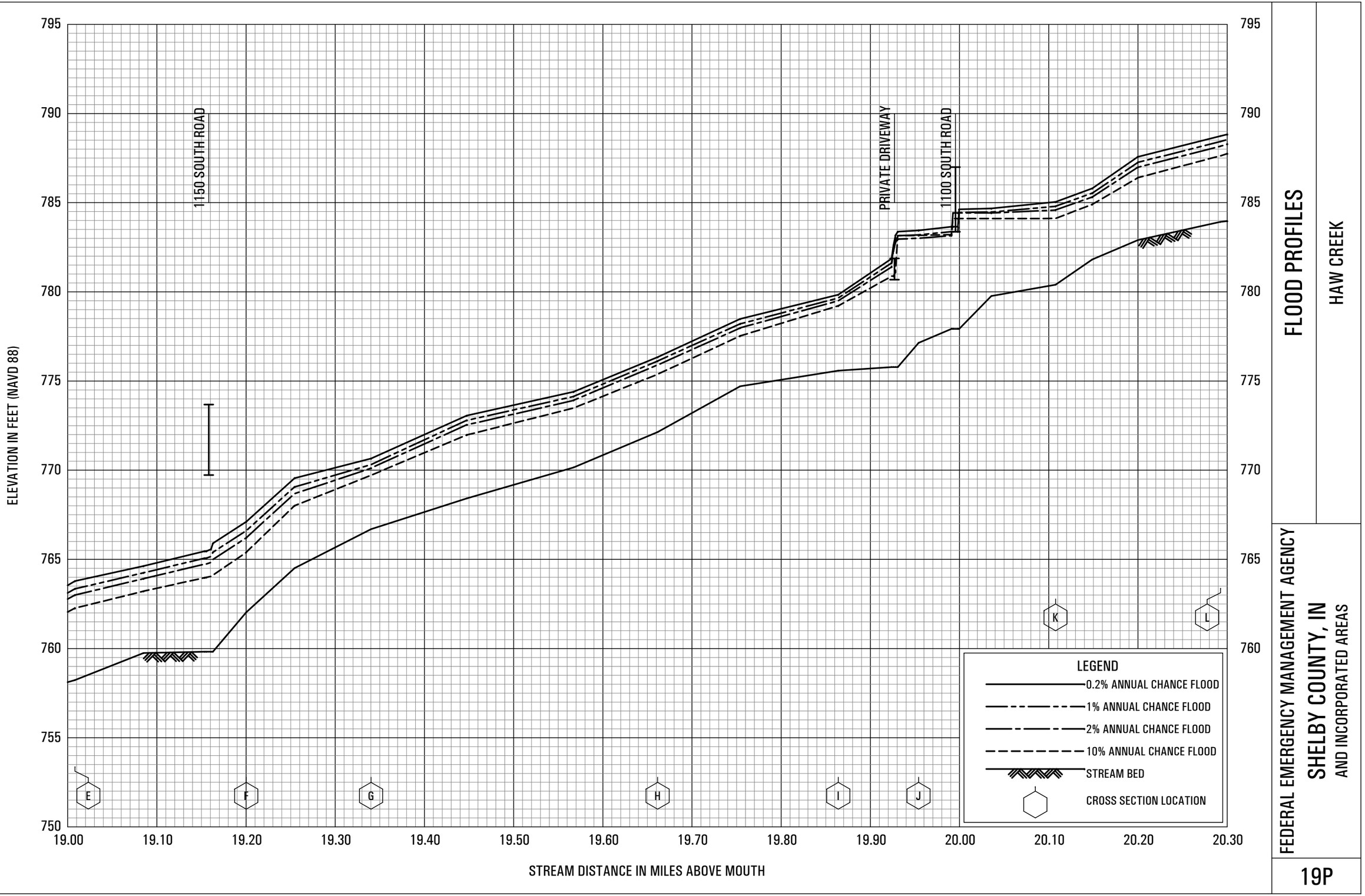
HAW CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SHELBY COUNTY, IN

AND INCORPORATED AREAS

18P



FLOOD PROFILES

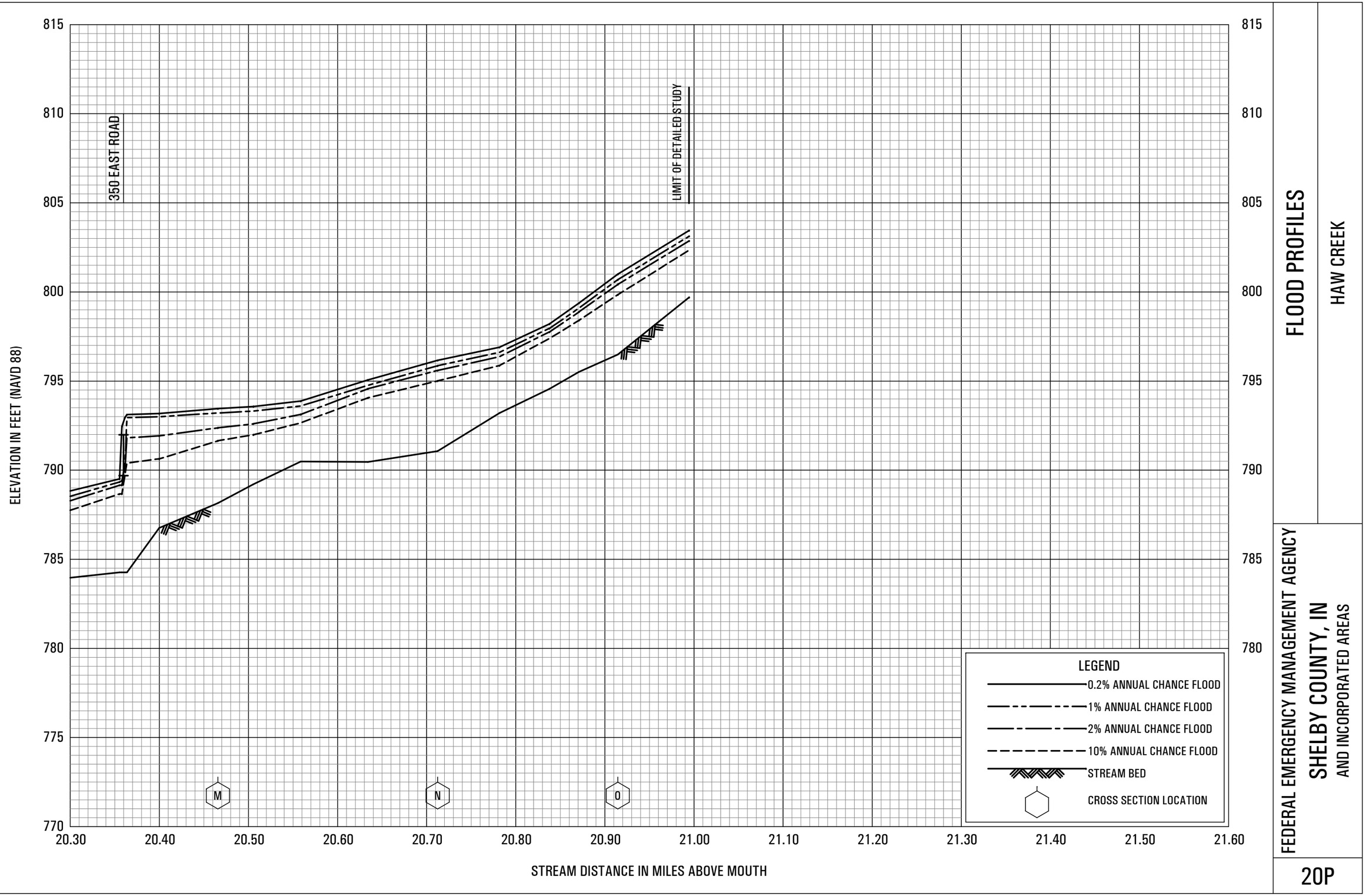
HAW CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SHELBY COUNTY, IN

AND INCORPORATED AREAS

19P



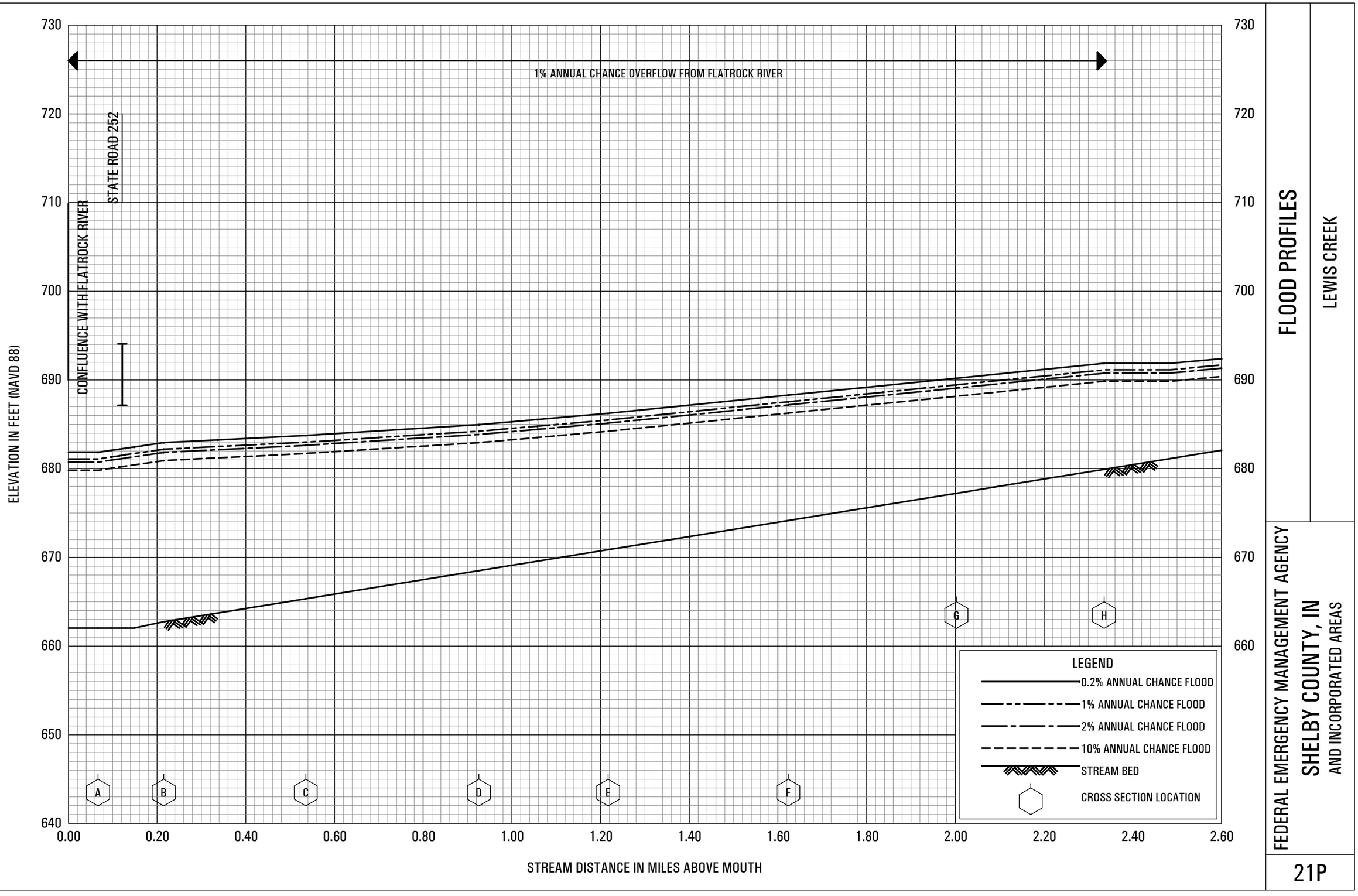
FLOOD PROFILES

HAW CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SHELBY COUNTY, IN

AND INCORPORATED AREAS



FLOOD PROFILES

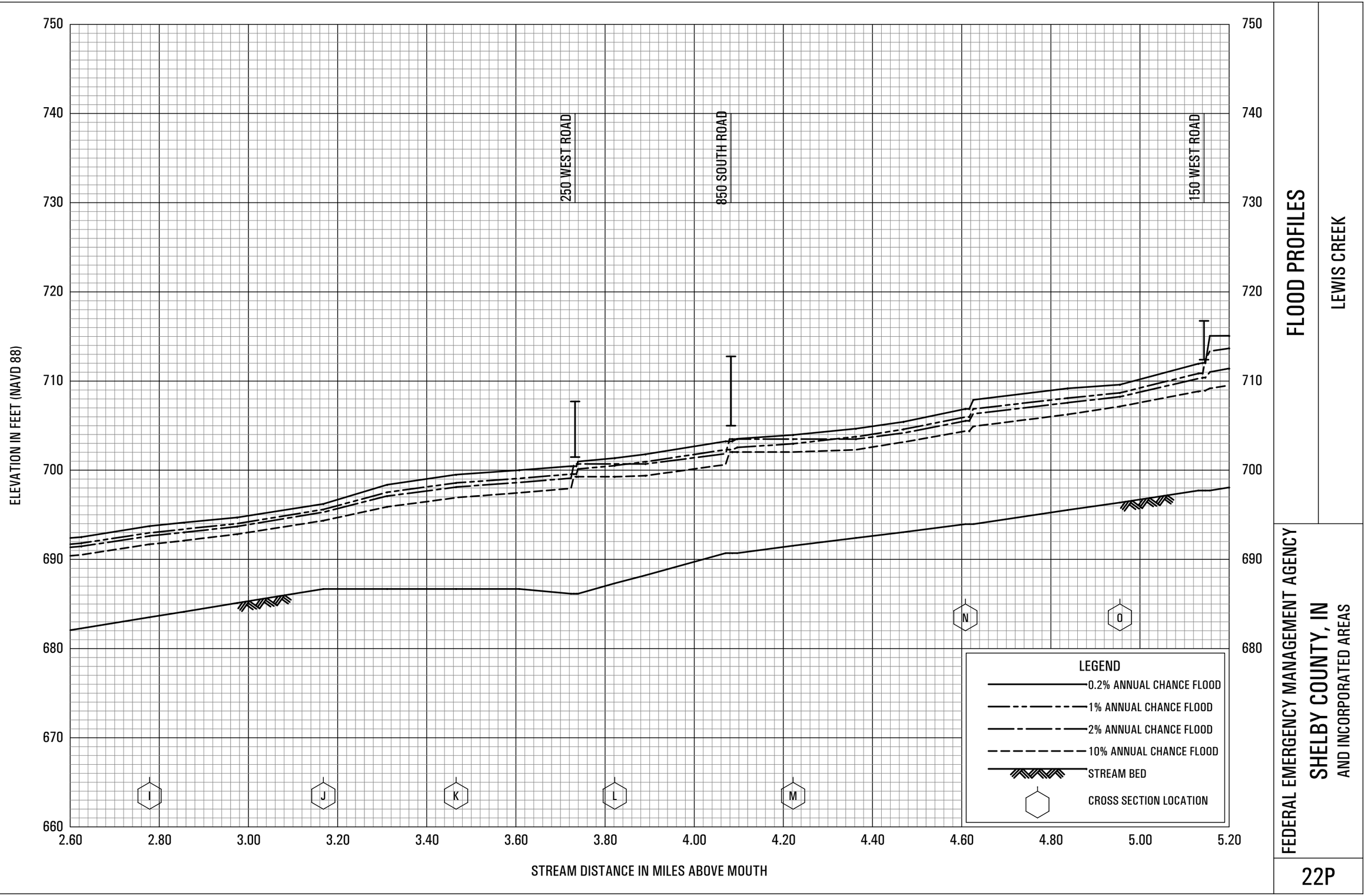
LEWIS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SHELBY COUNTY, IN

AND INCORPORATED AREAS

21P



FLOOD PROFILES

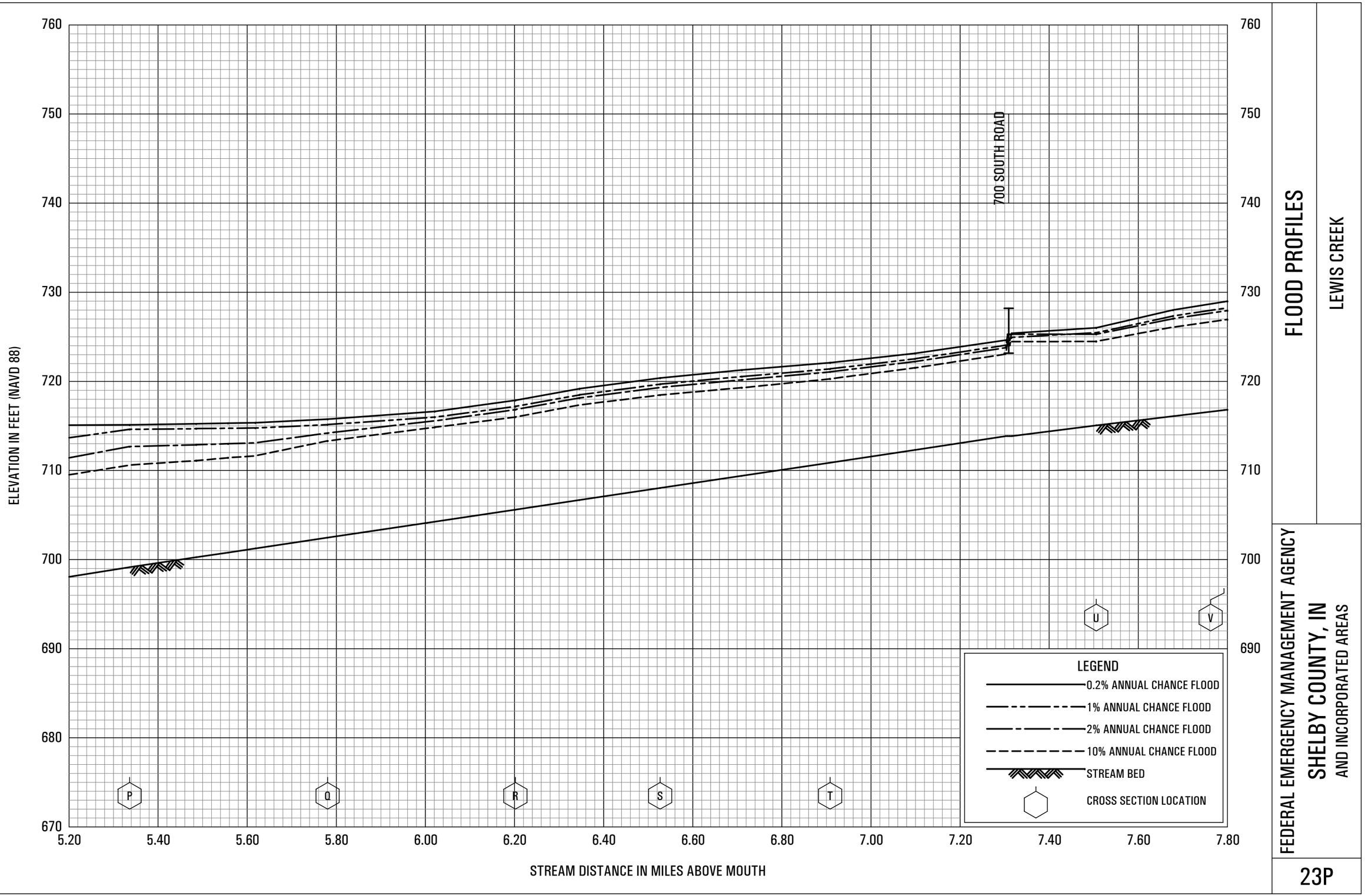
LEWIS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SHELBY COUNTY, IN

AND INCORPORATED AREAS

22P



FLOOD PROFILES

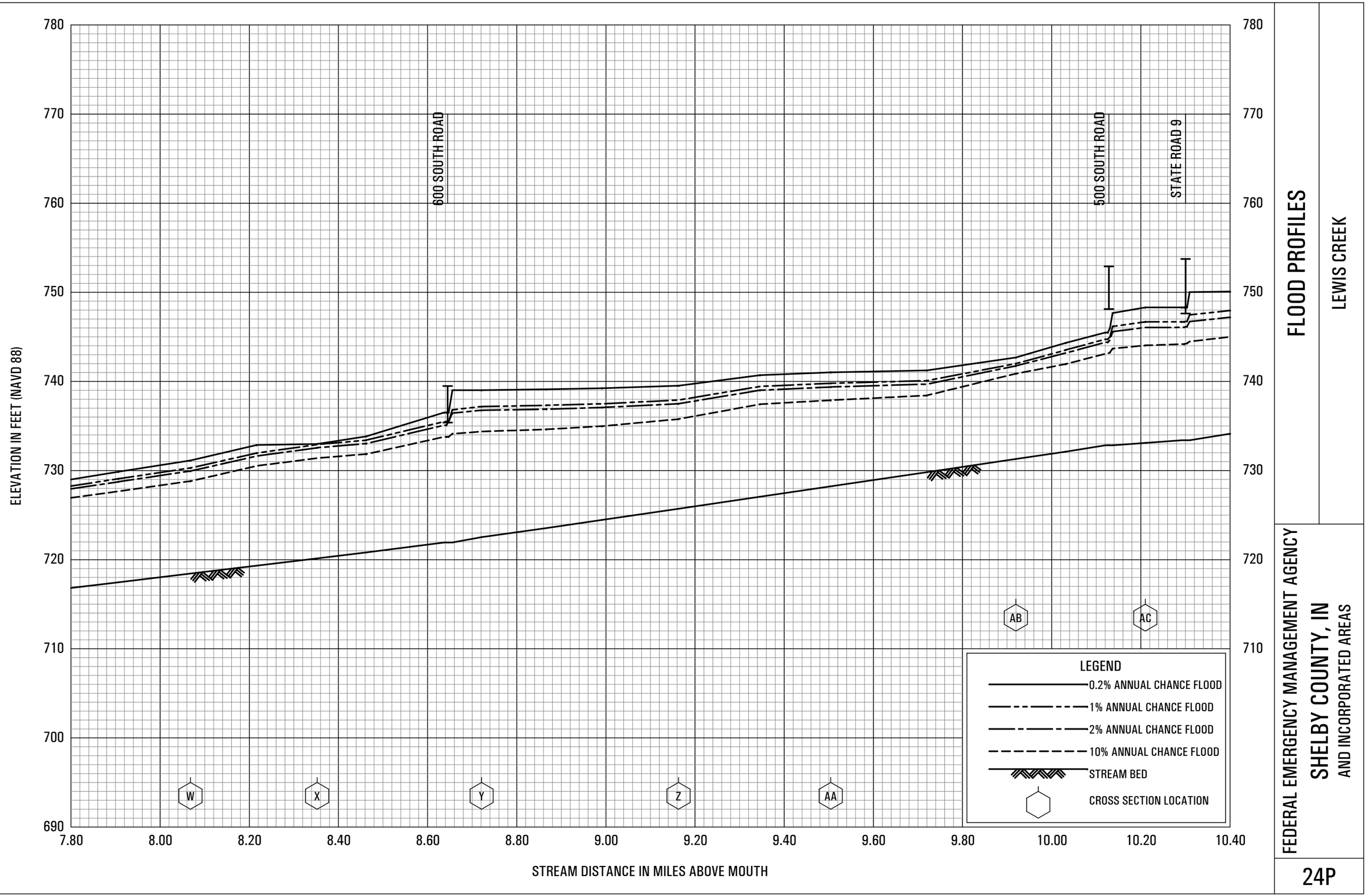
LEWIS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SHELBY COUNTY, IN

AND INCORPORATED AREAS

23P



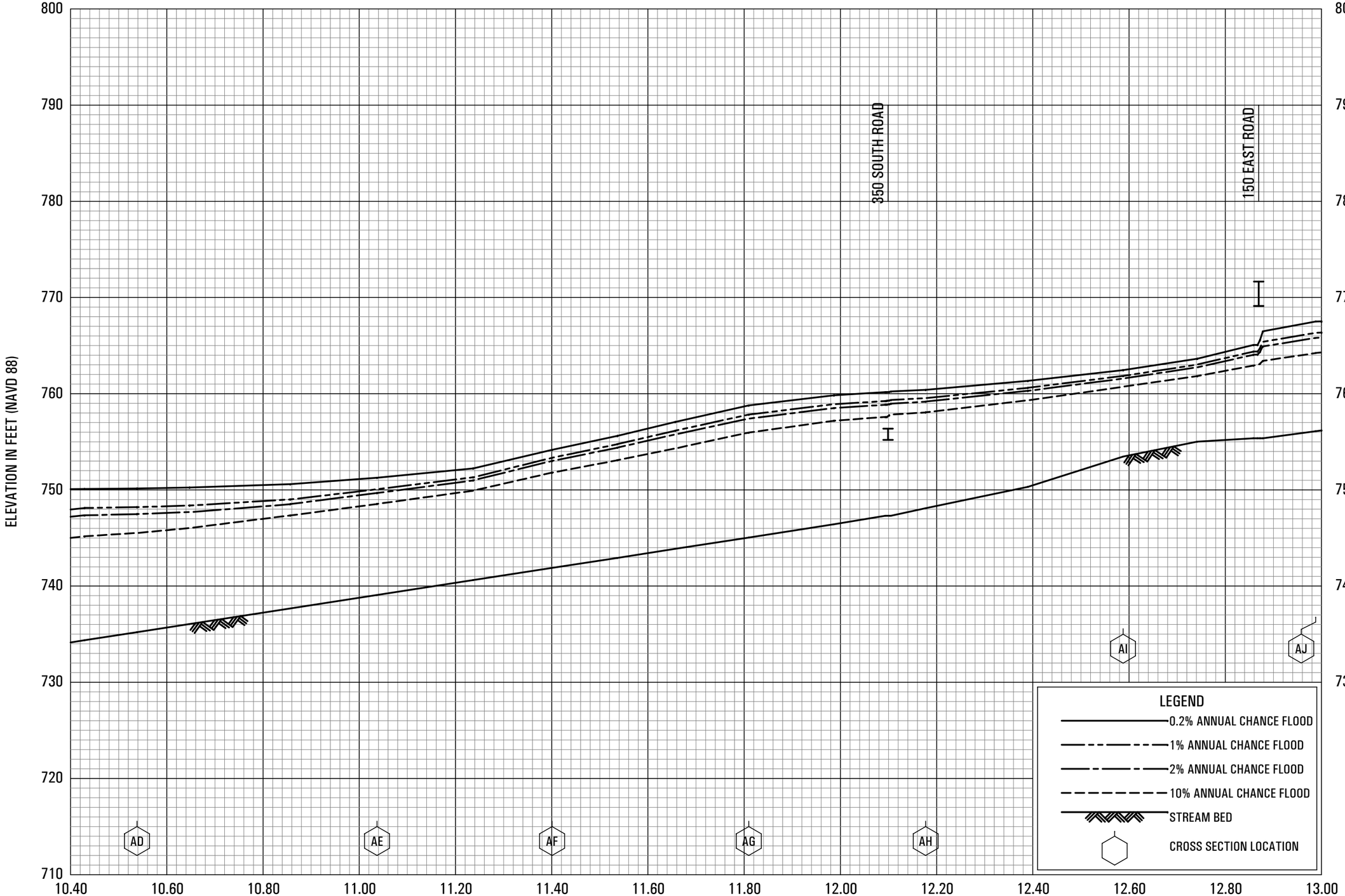
FLOOD PROFILES

LEWIS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SHELBY COUNTY, IN

AND INCORPORATED AREAS



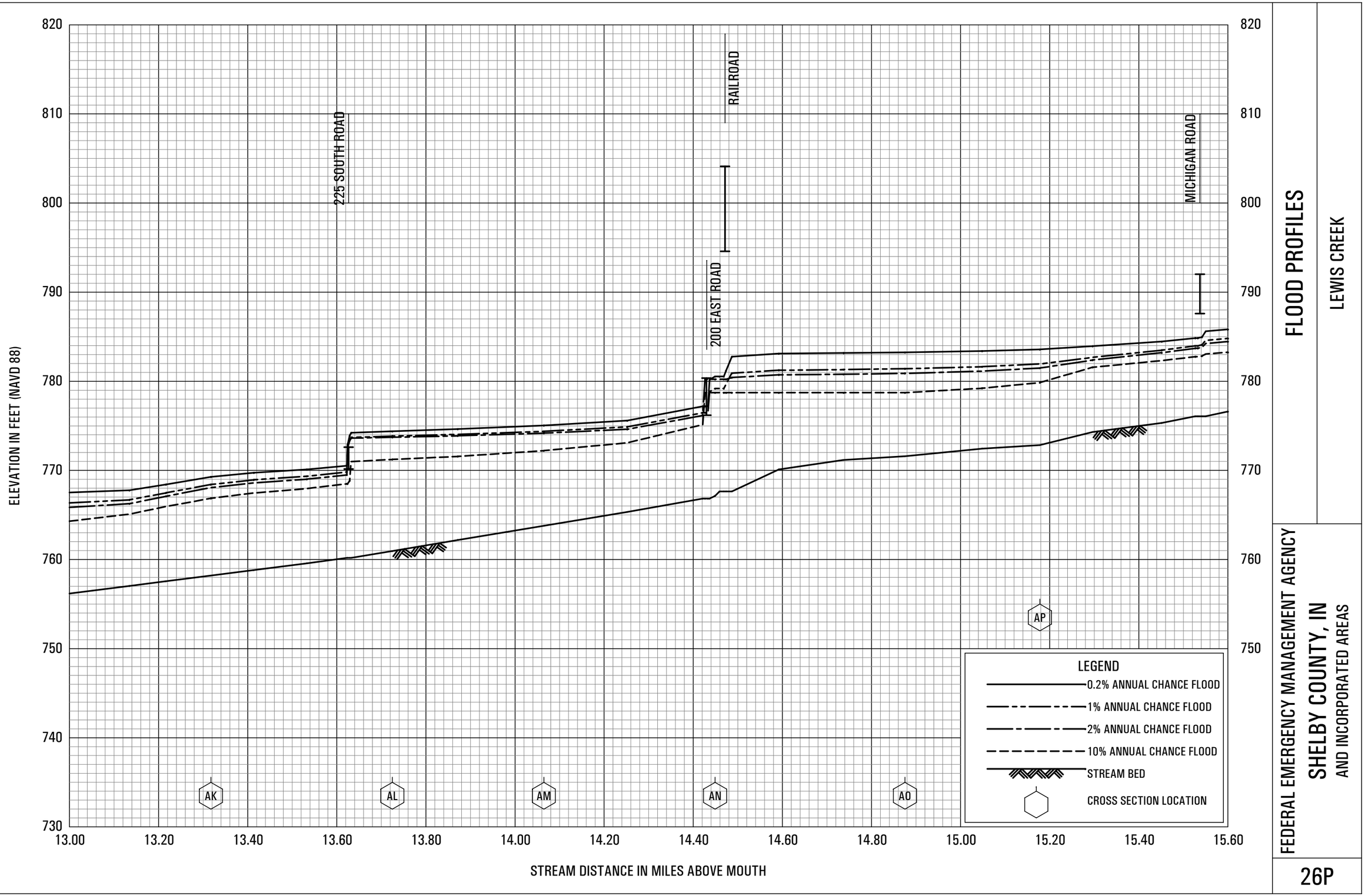
FLOOD PROFILES

LEWIS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SHELBY COUNTY, IN

AND INCORPORATED AREAS



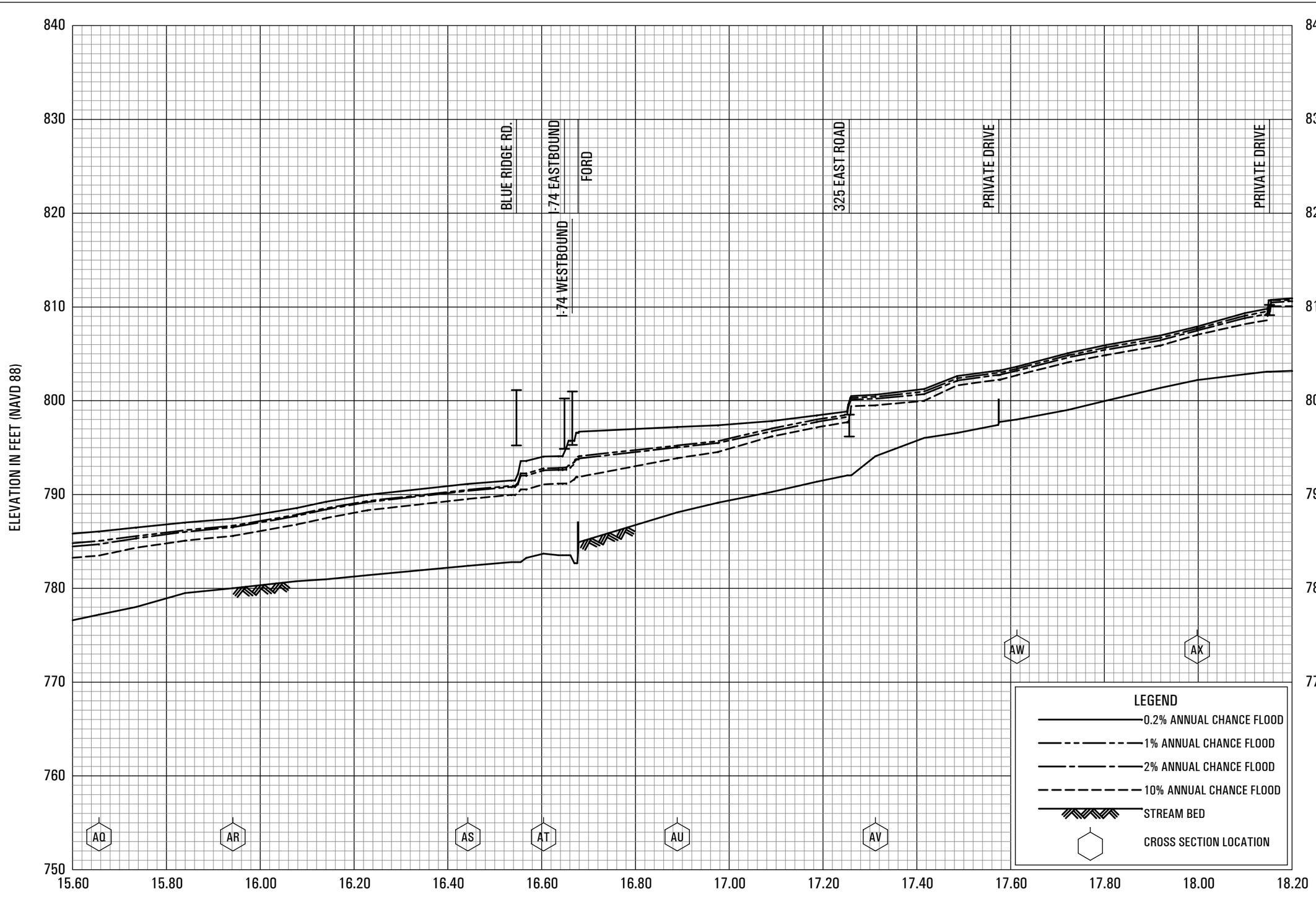
FLOOD PROFILES

LEWIS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SHELBY COUNTY, IN

AND INCORPORATED AREAS



FLOOD PROFILES

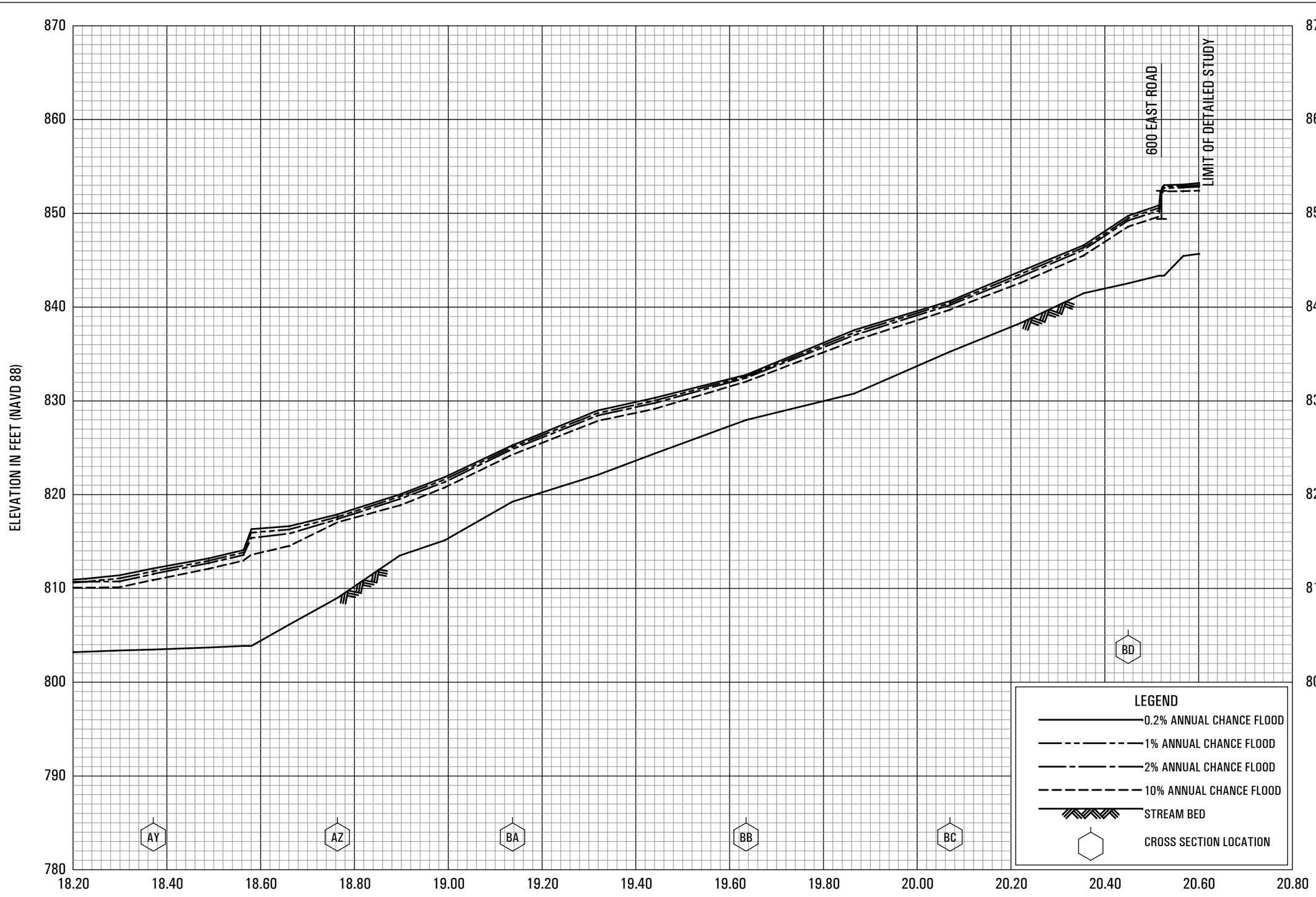
LEWIS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SHELBY COUNTY, IN

AND INCORPORATED AREAS

27P



FLOOD PROFILES

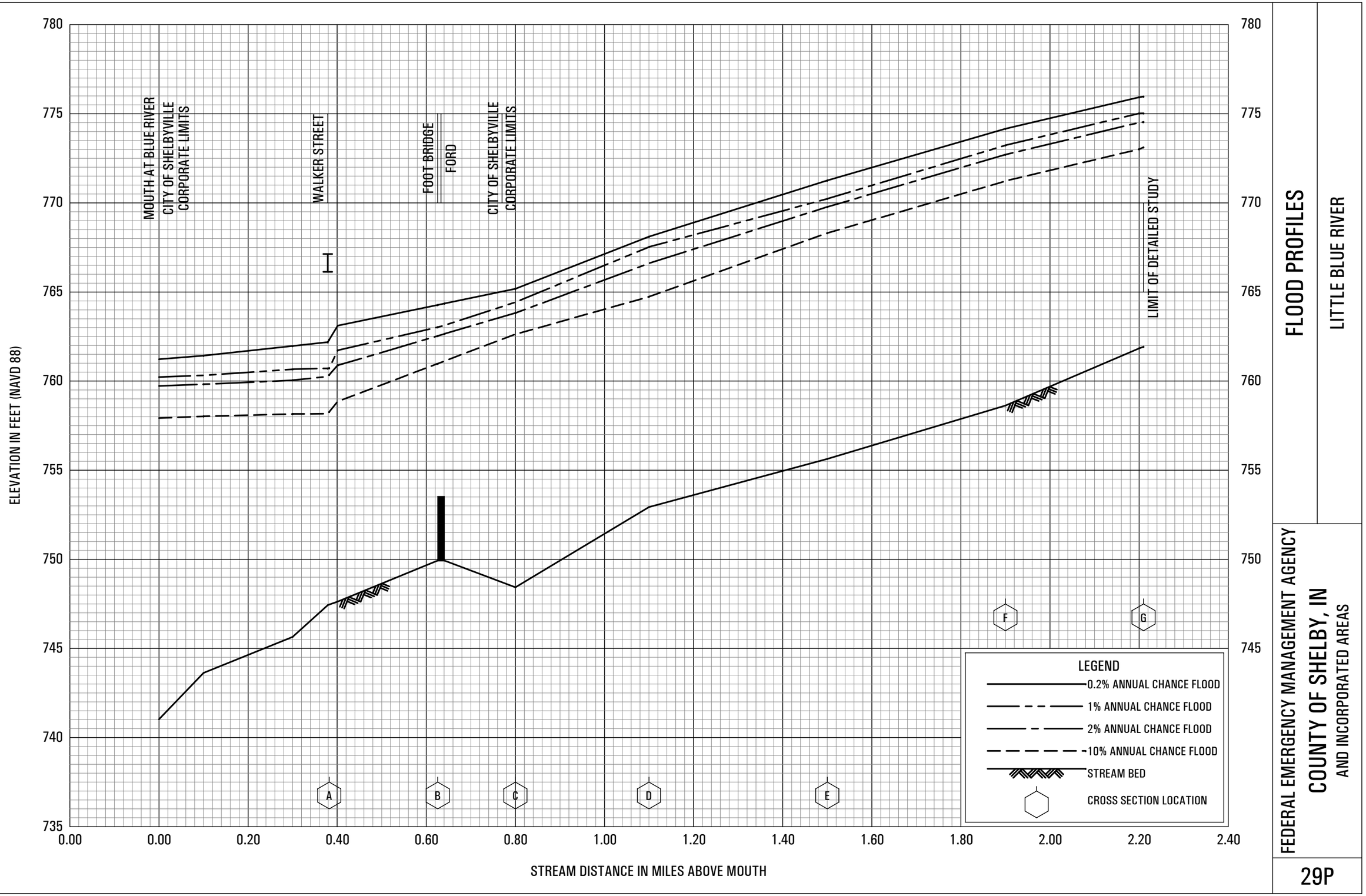
LEWIS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SHELBY COUNTY, IN

AND INCORPORATED AREAS

28P



FLOOD PROFILES

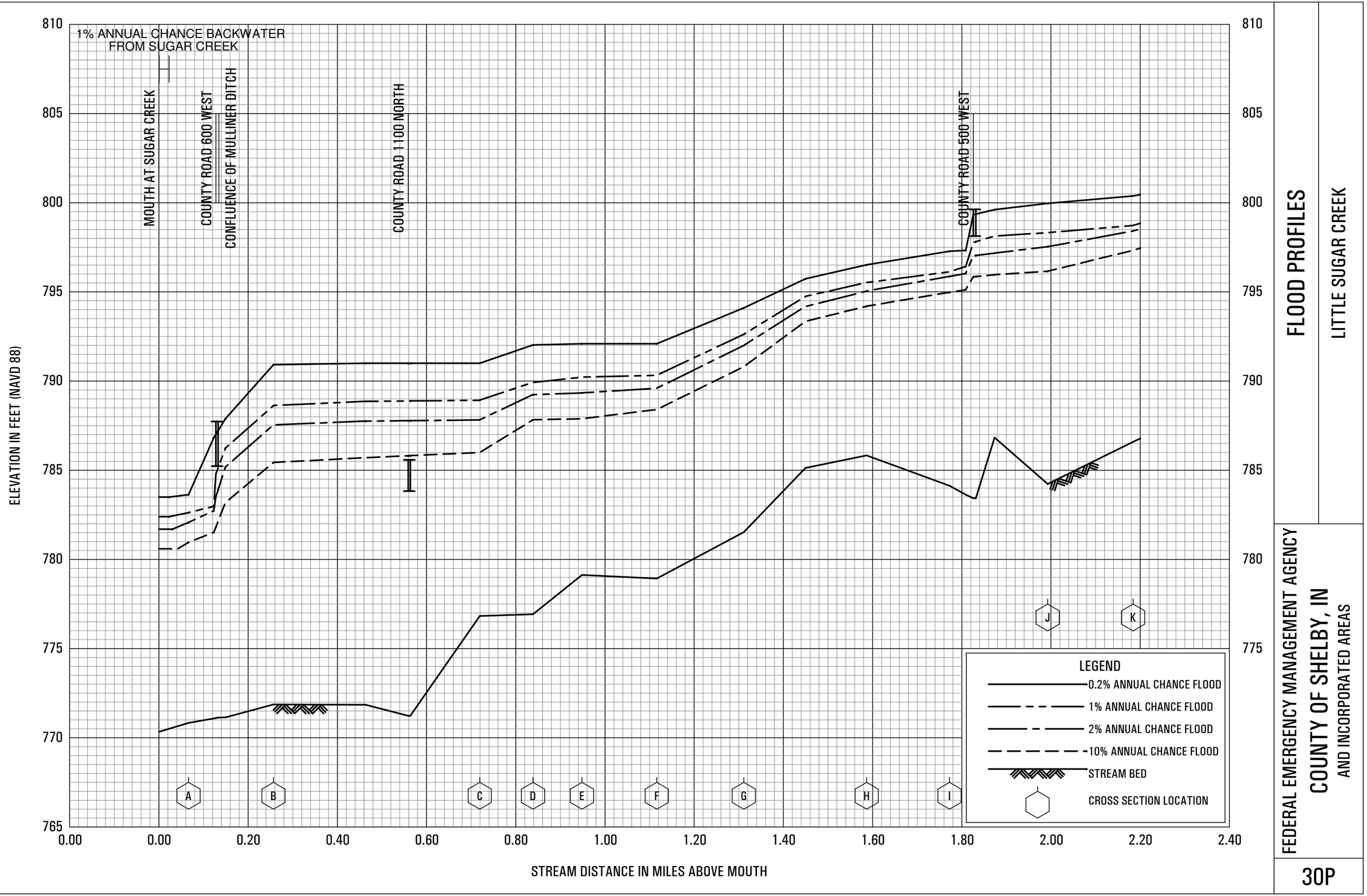
LITTLE BLUE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

29P



FLOOD PROFILES

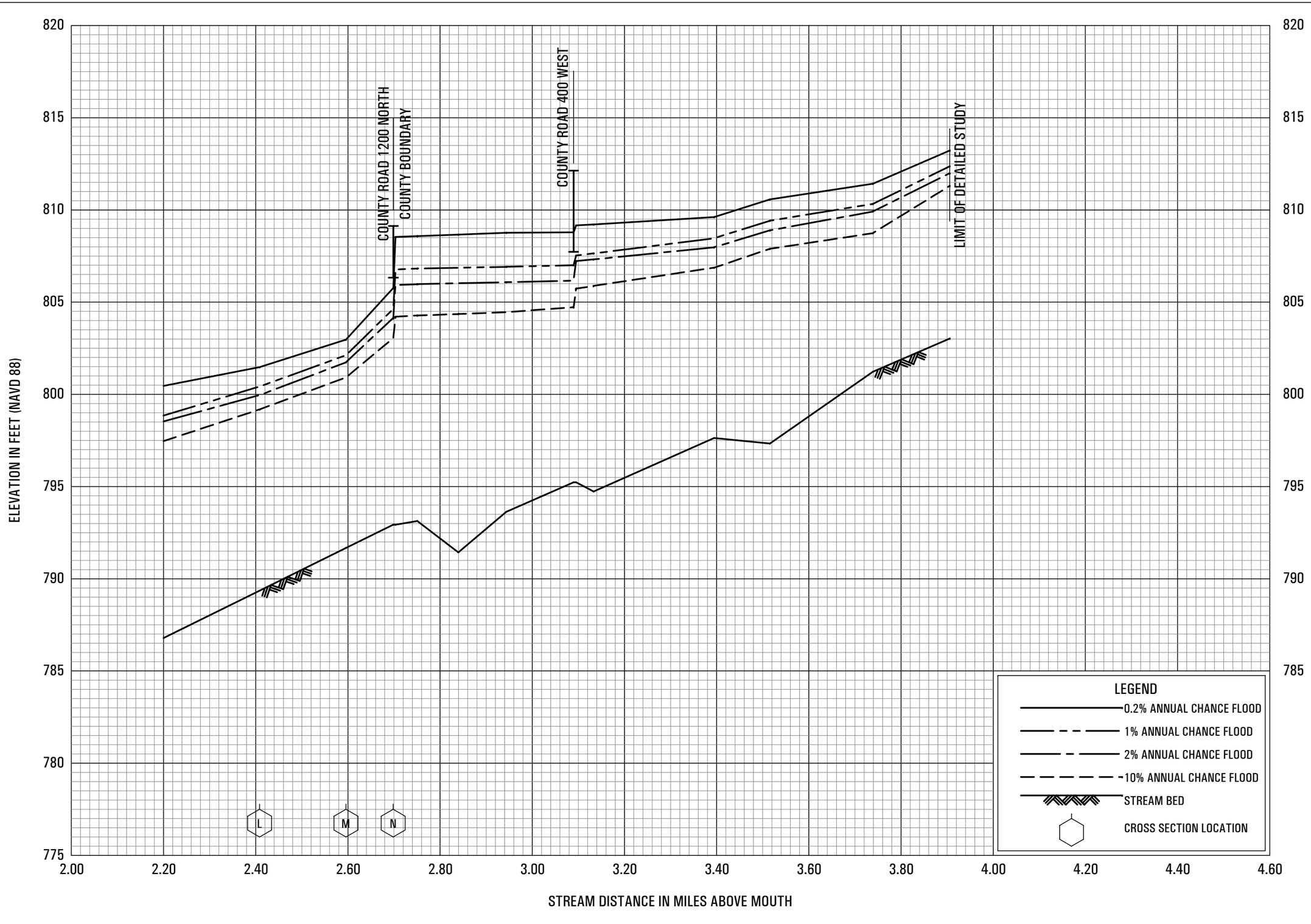
LITTLE SUGAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

30P



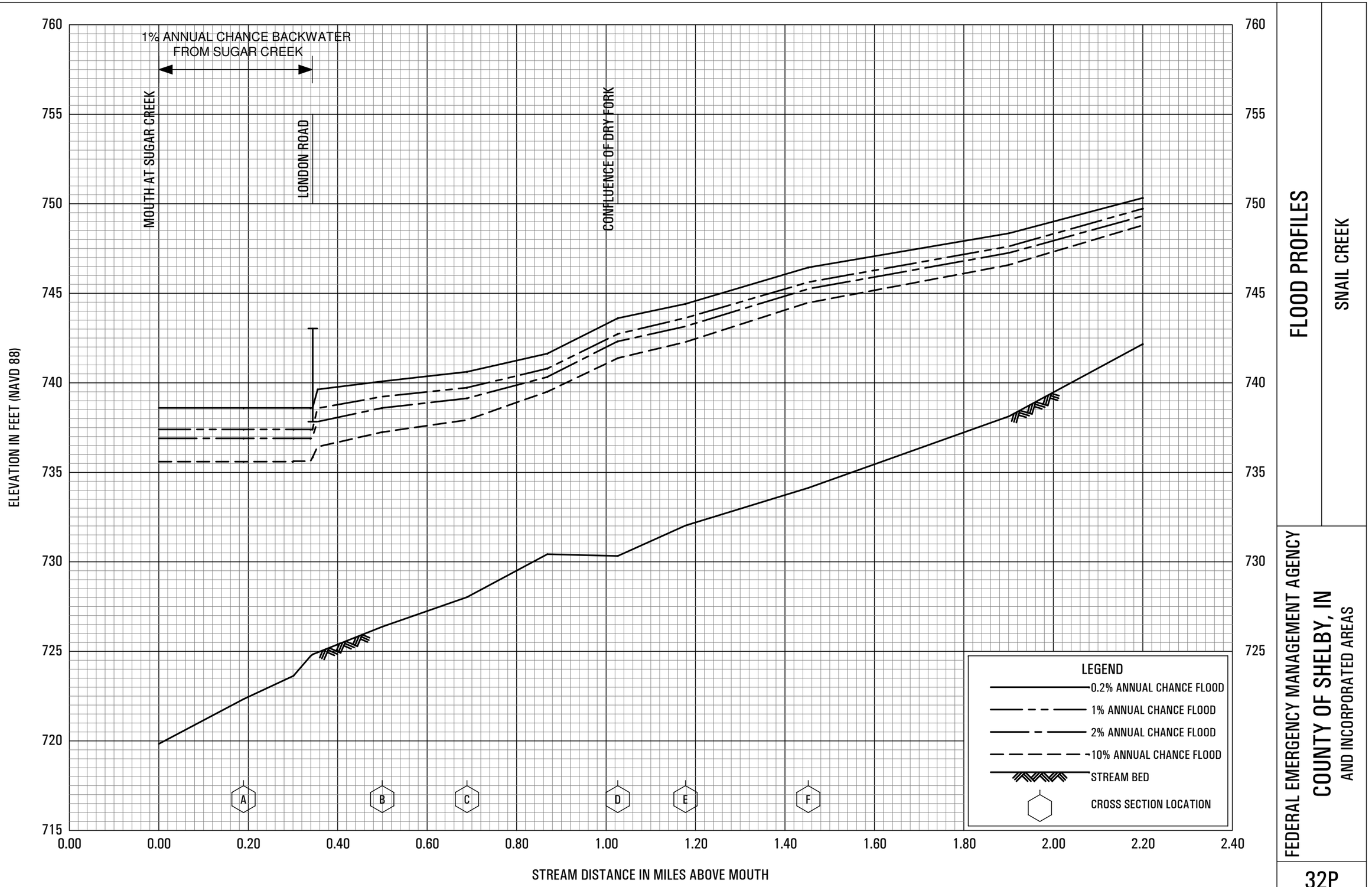
FLOOD PROFILES

LITTLE SUGAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS



FLOOD PROFILES

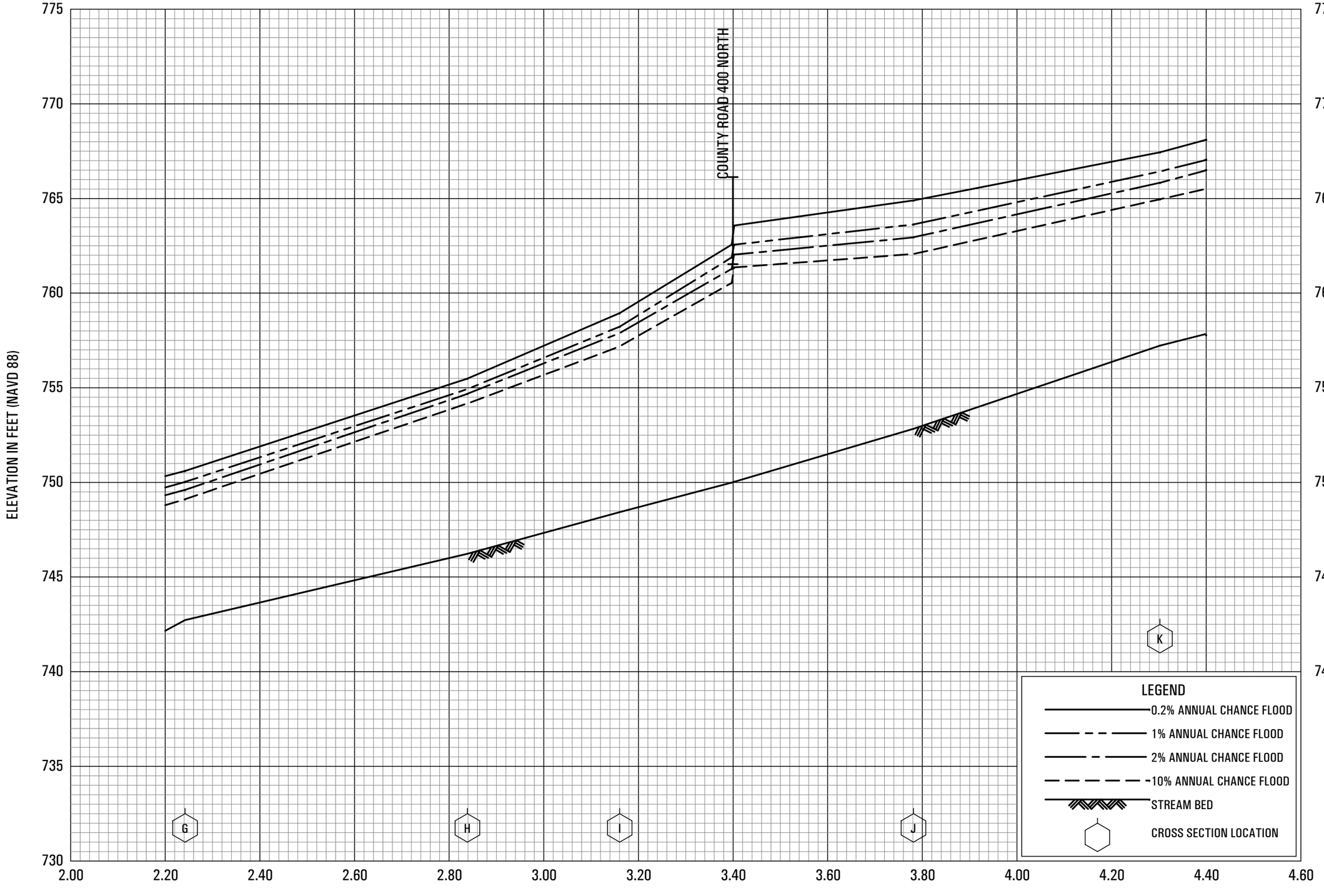
SNAIL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

32P



FLOOD PROFILES

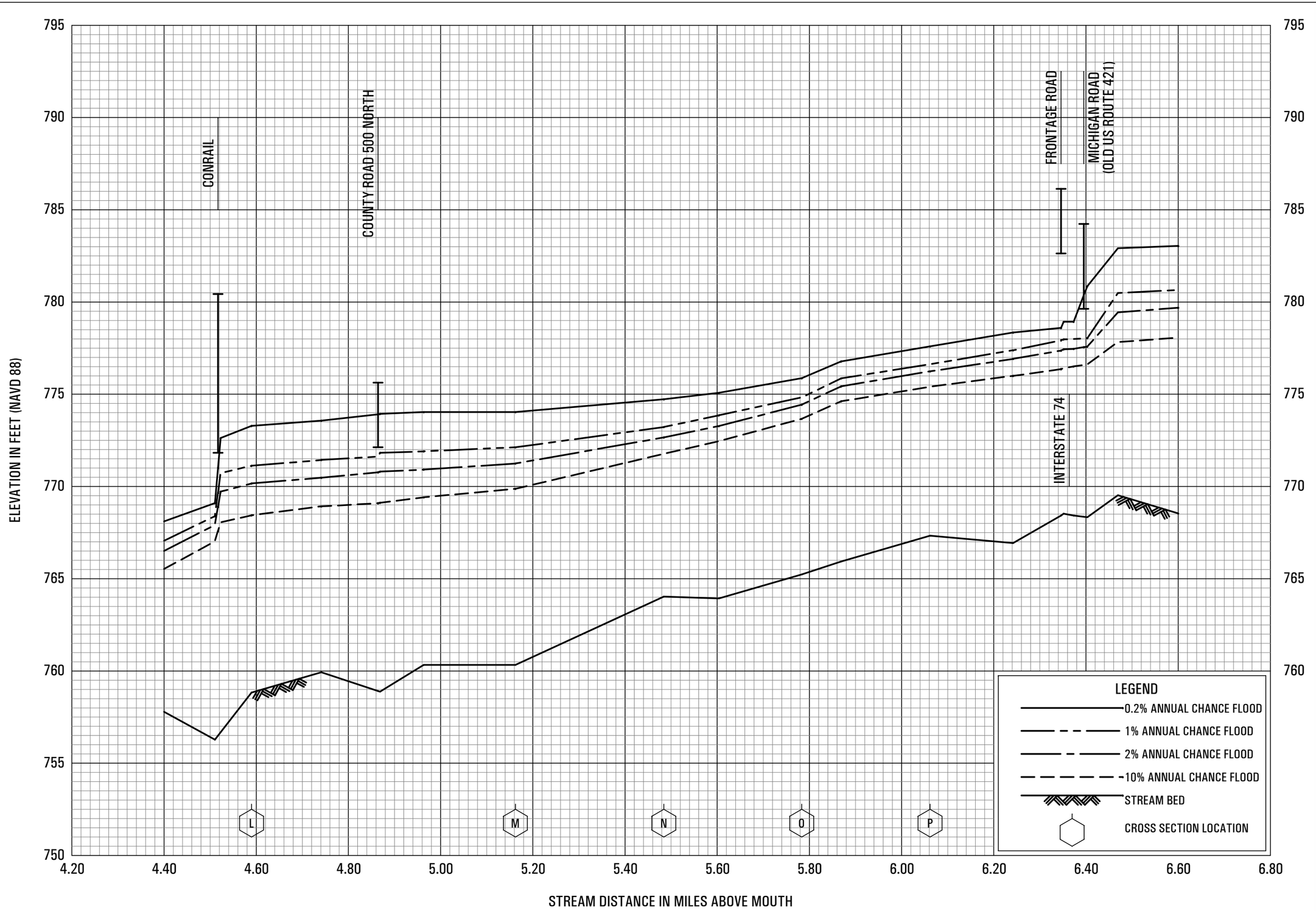
SNAIL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

33P



FLOOD PROFILES

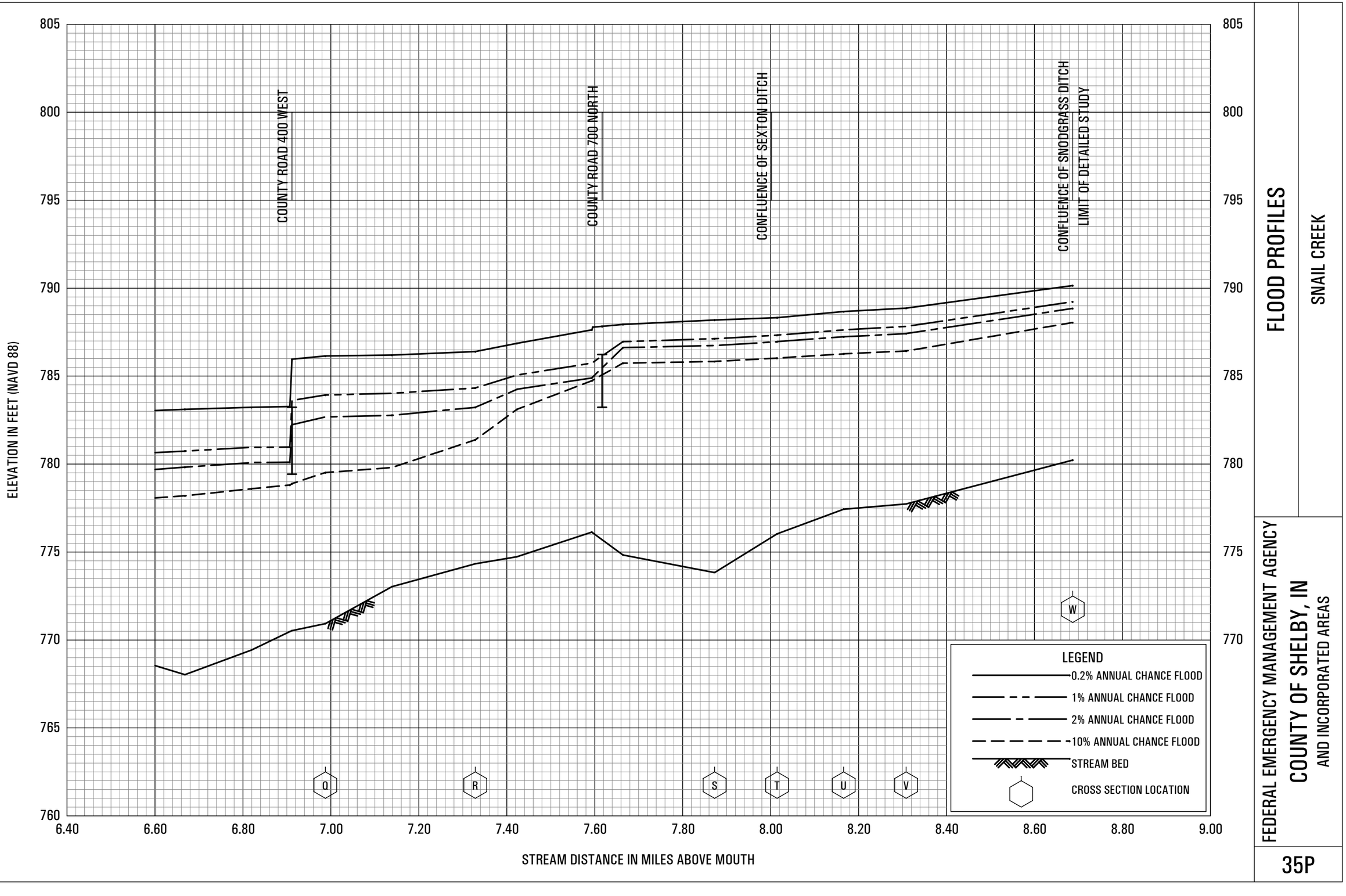
SNAIL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

34P



FLOOD PROFILES

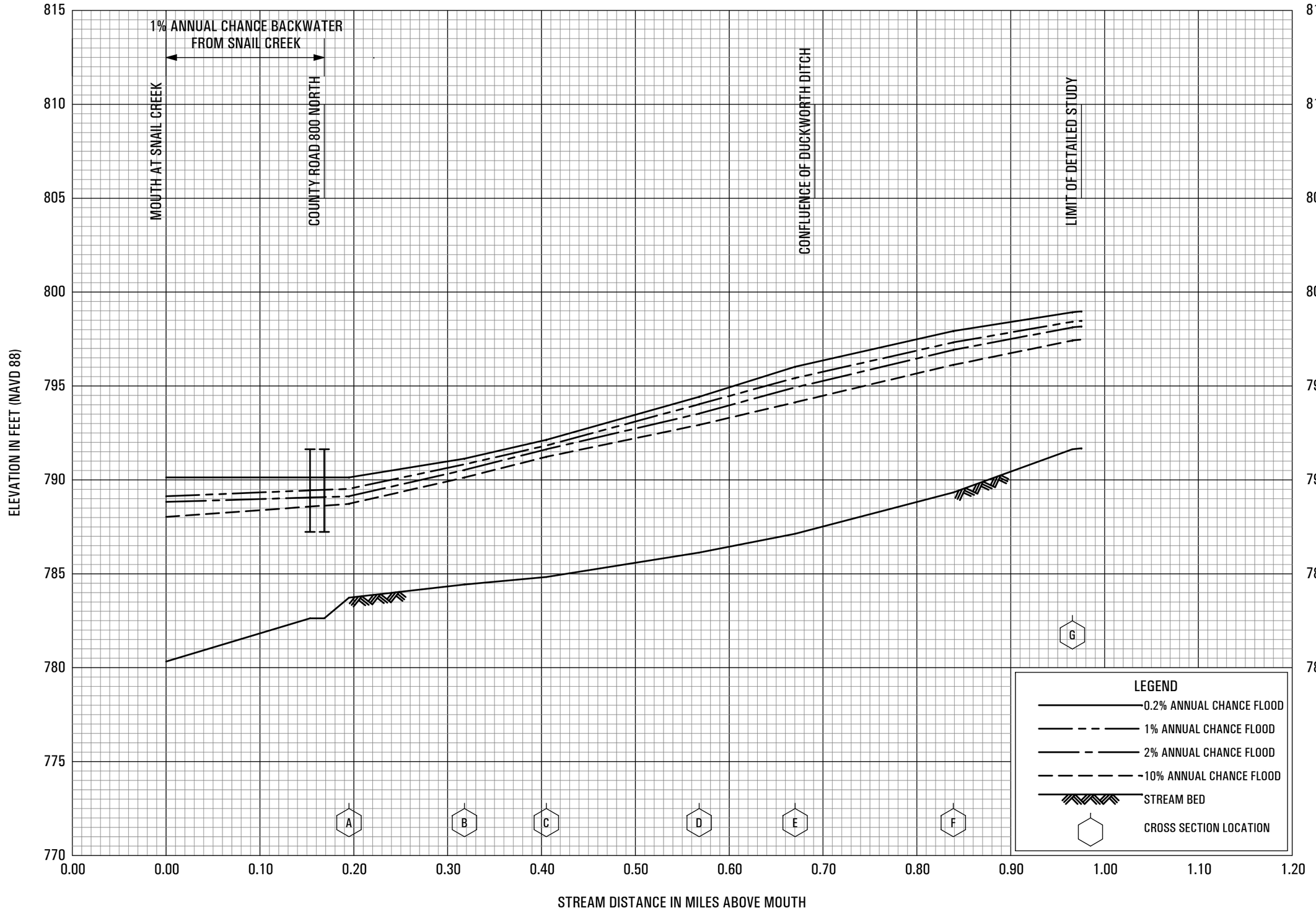
SNAIL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

35P



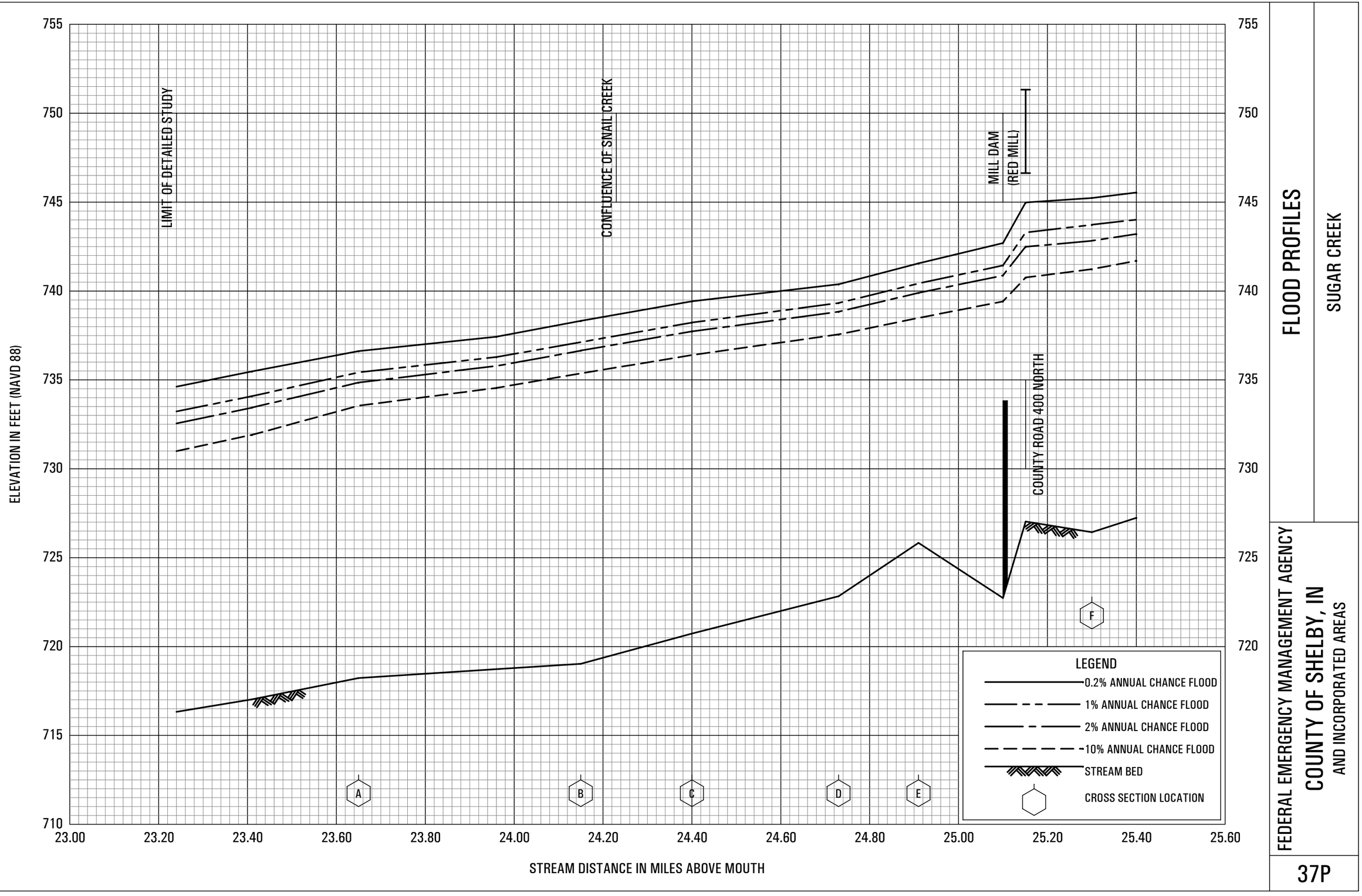
FLOOD PROFILES

SNODGRASS DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS



FLOOD PROFILES

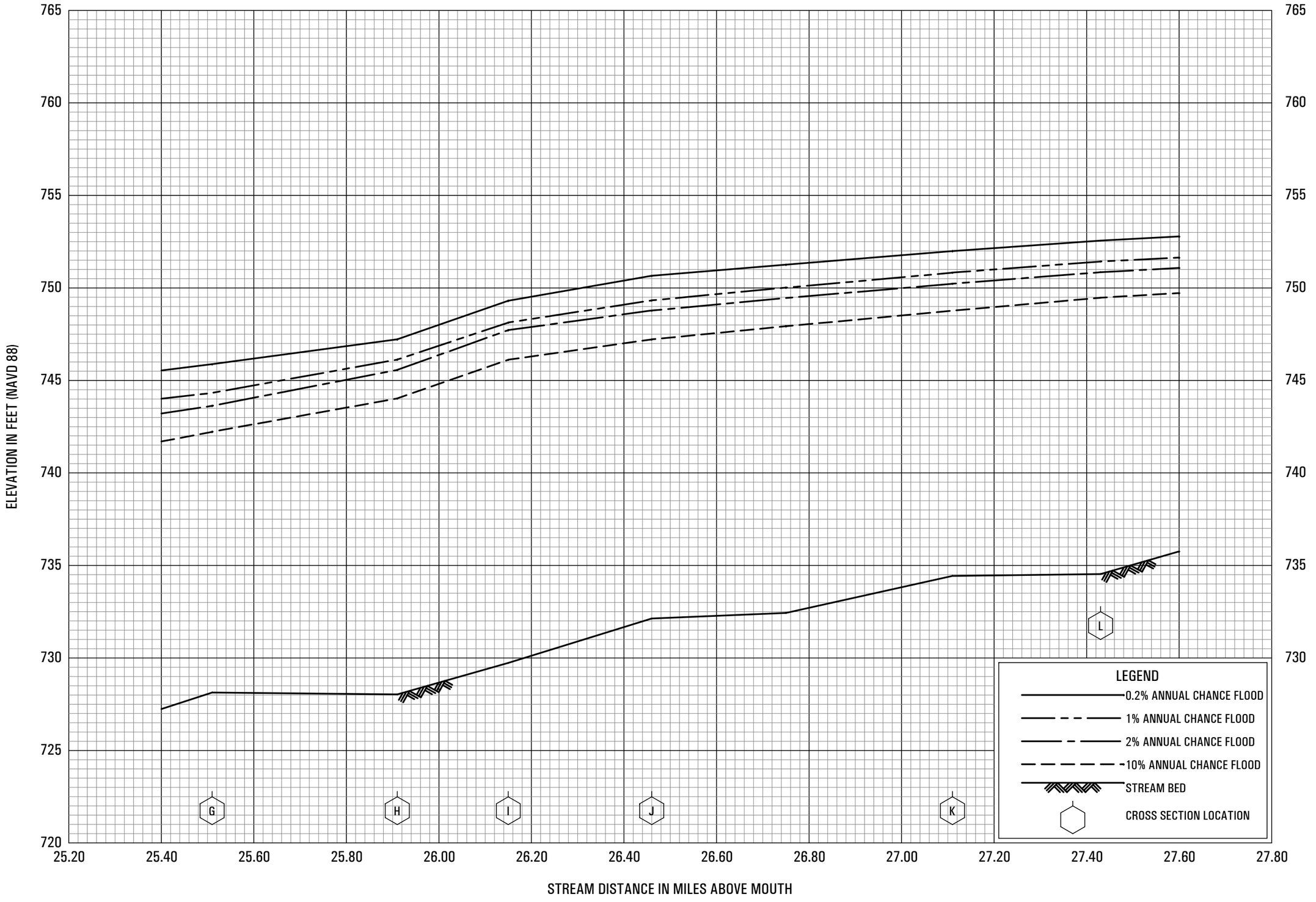
SUGAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

37P



FLOOD PROFILES

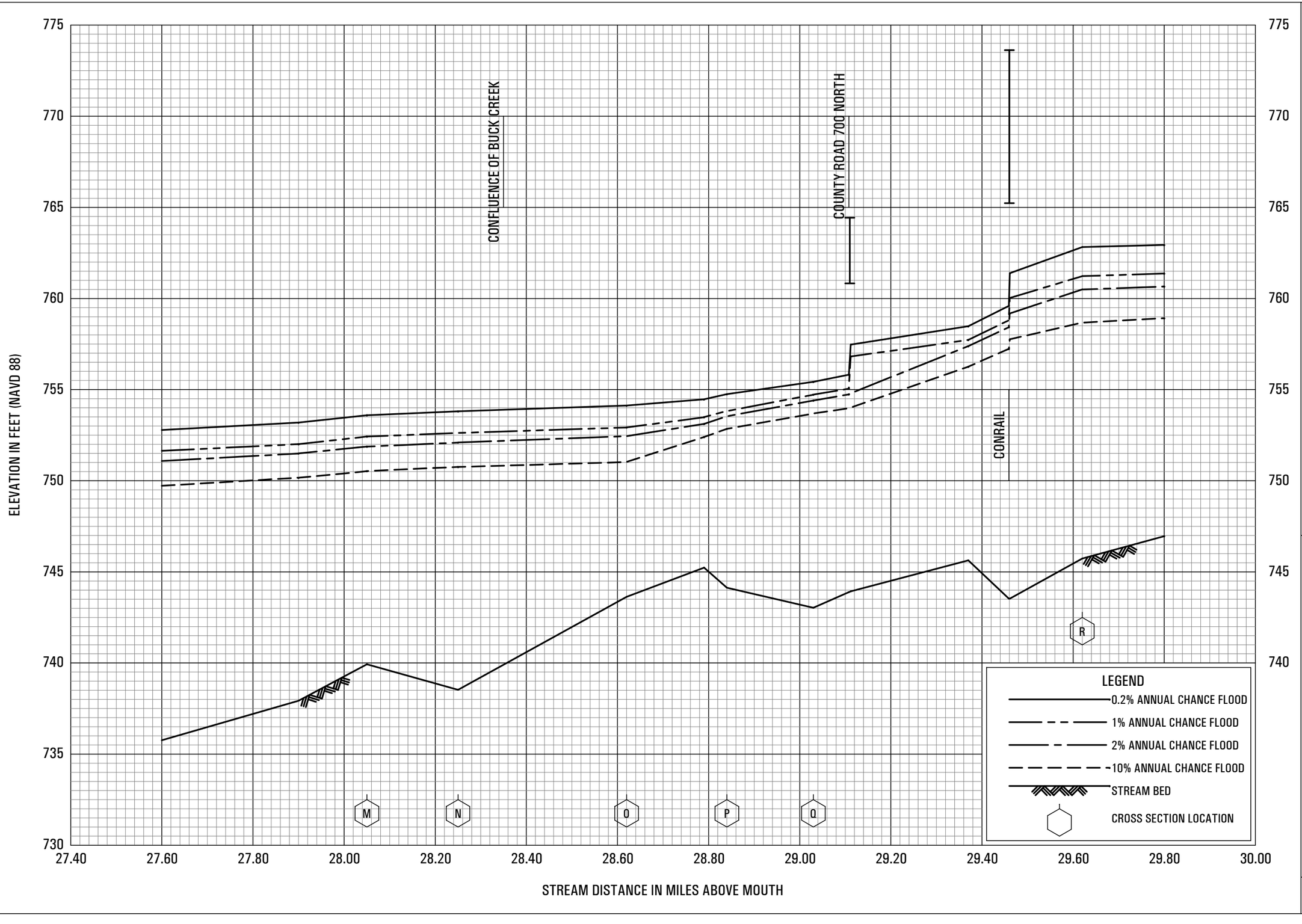
SUGAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

38P



FLOOD PROFILES

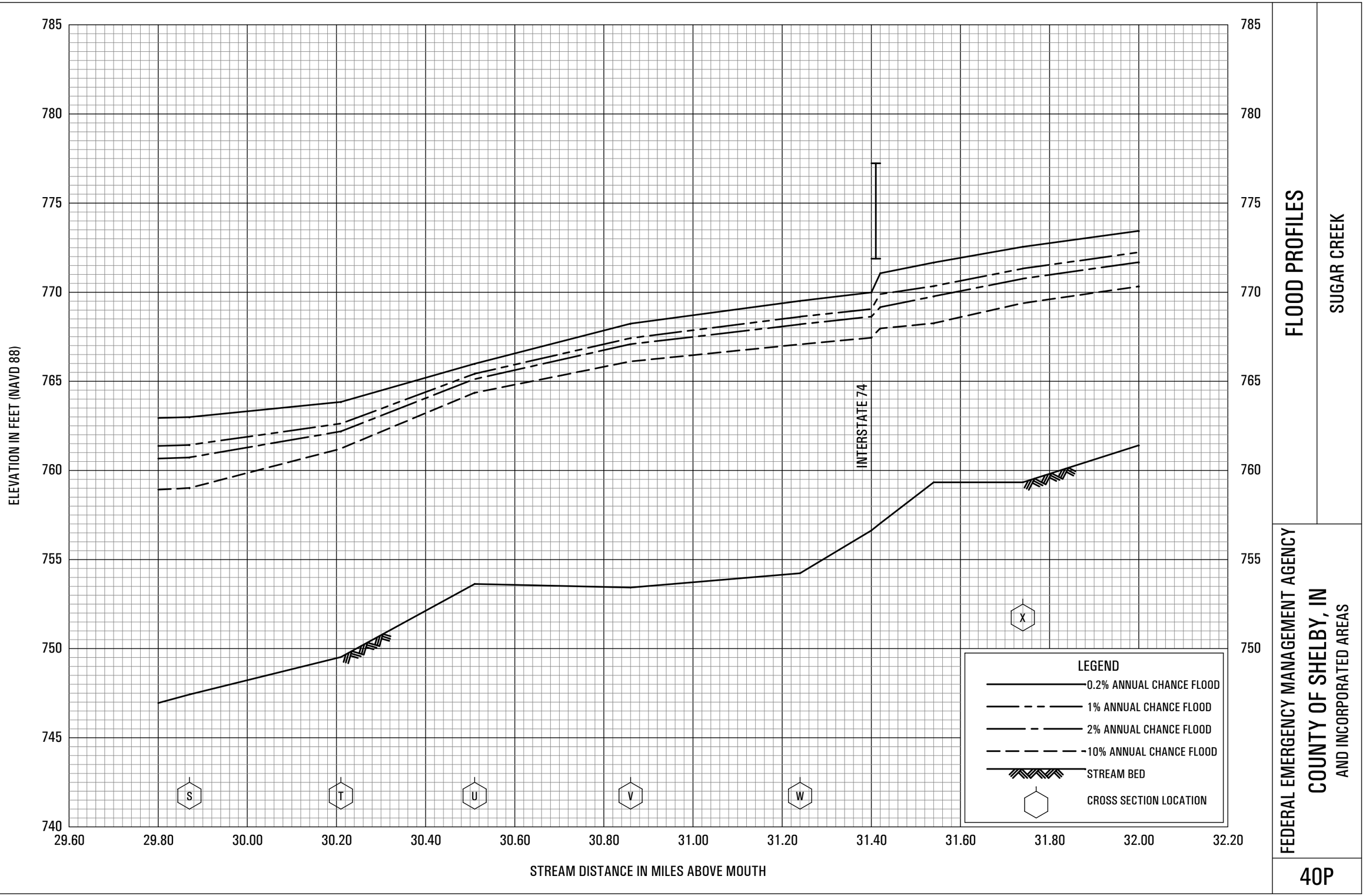
SUGAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

39P



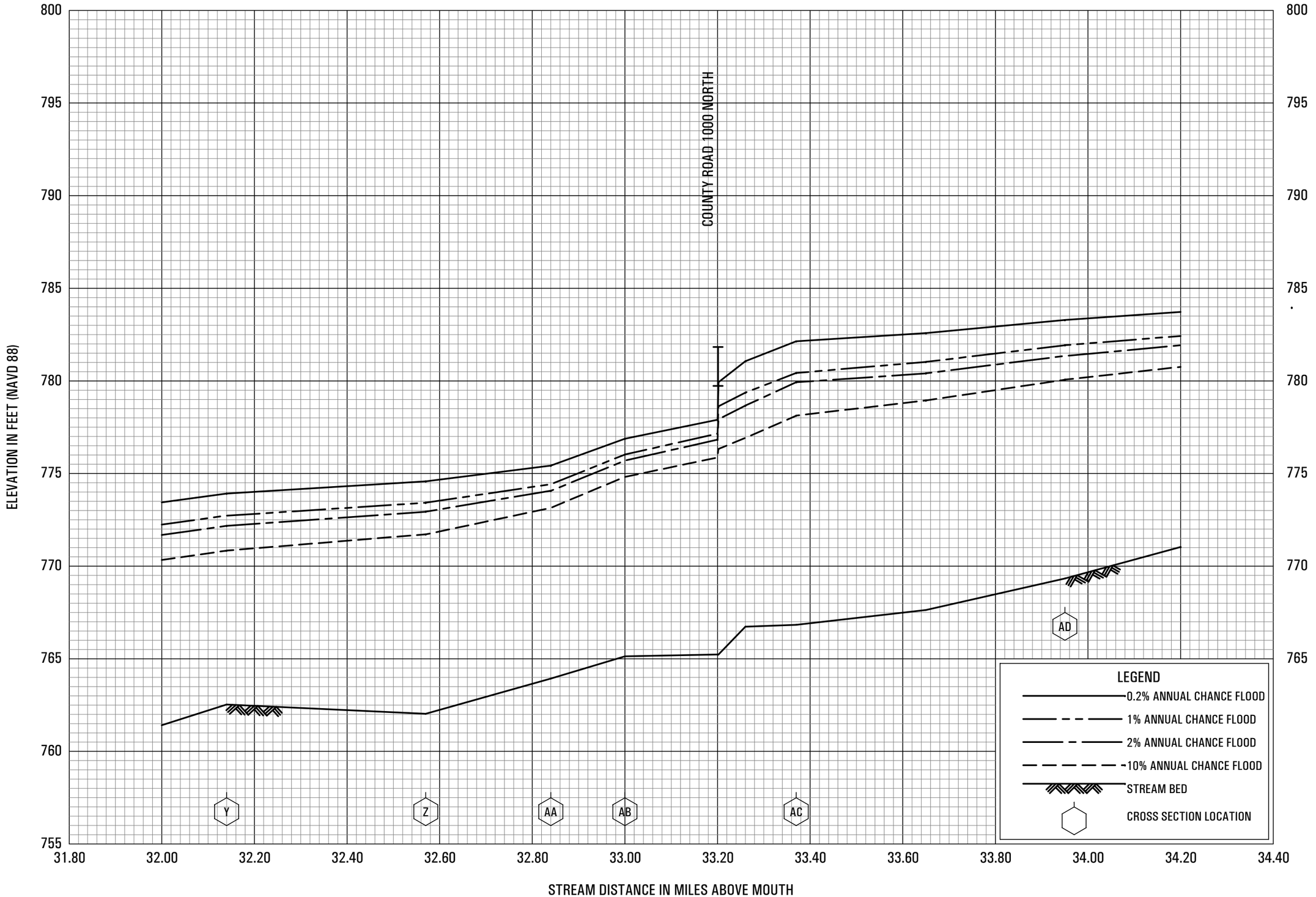
FLOOD PROFILES

SUGAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS



FLOOD PROFILES

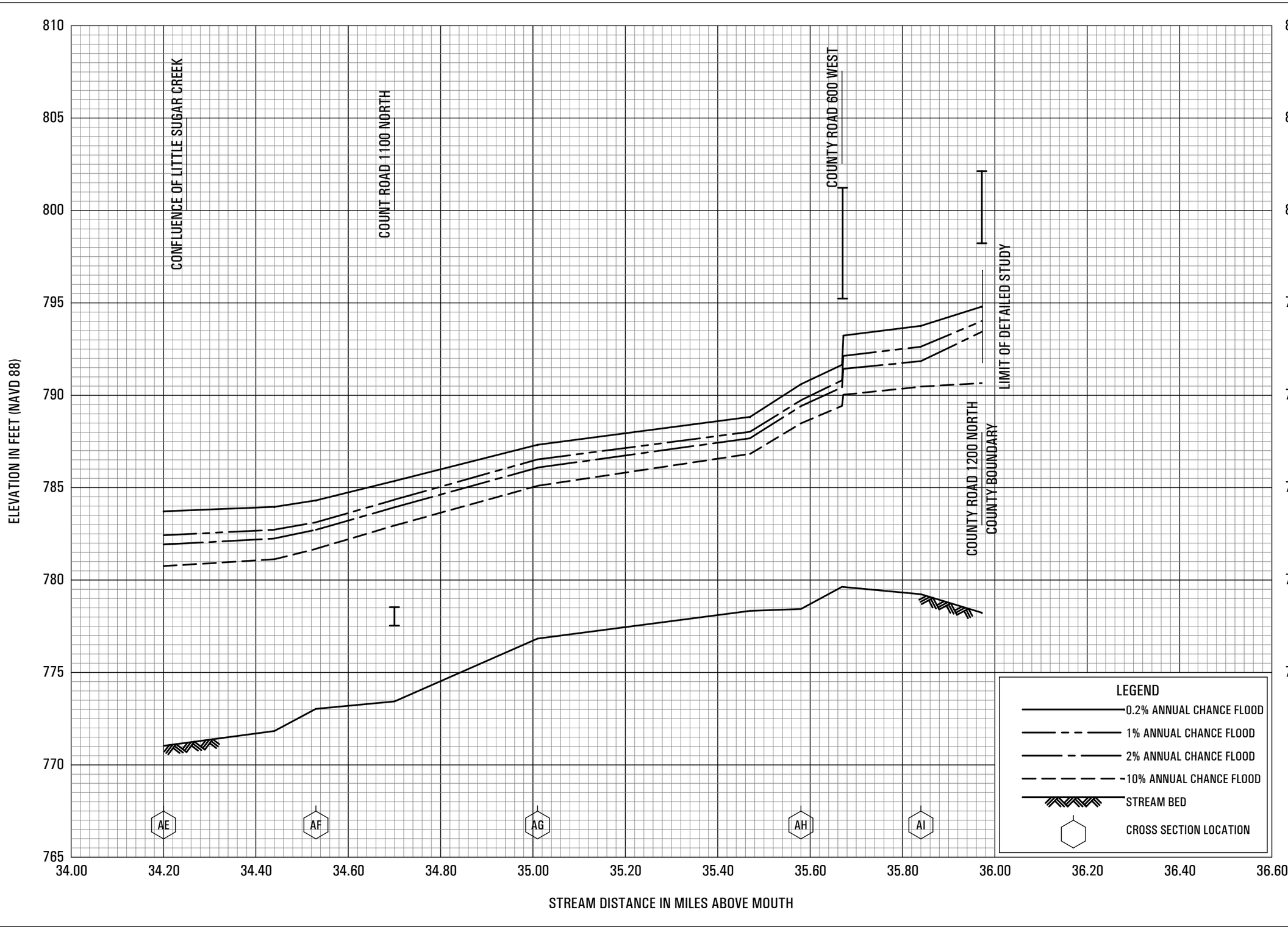
SUGAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS

41P



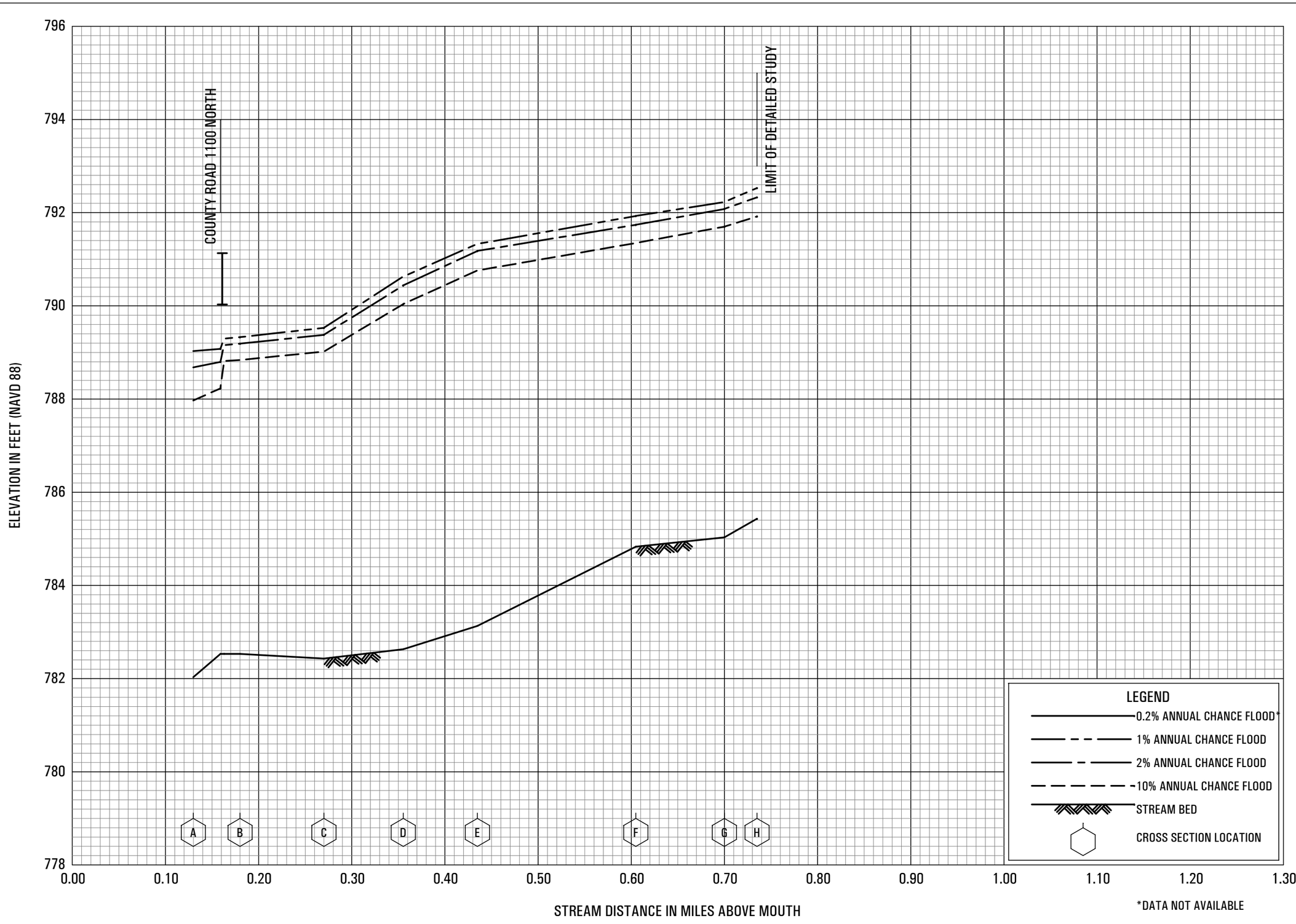
FLOOD PROFILES

SUGAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS



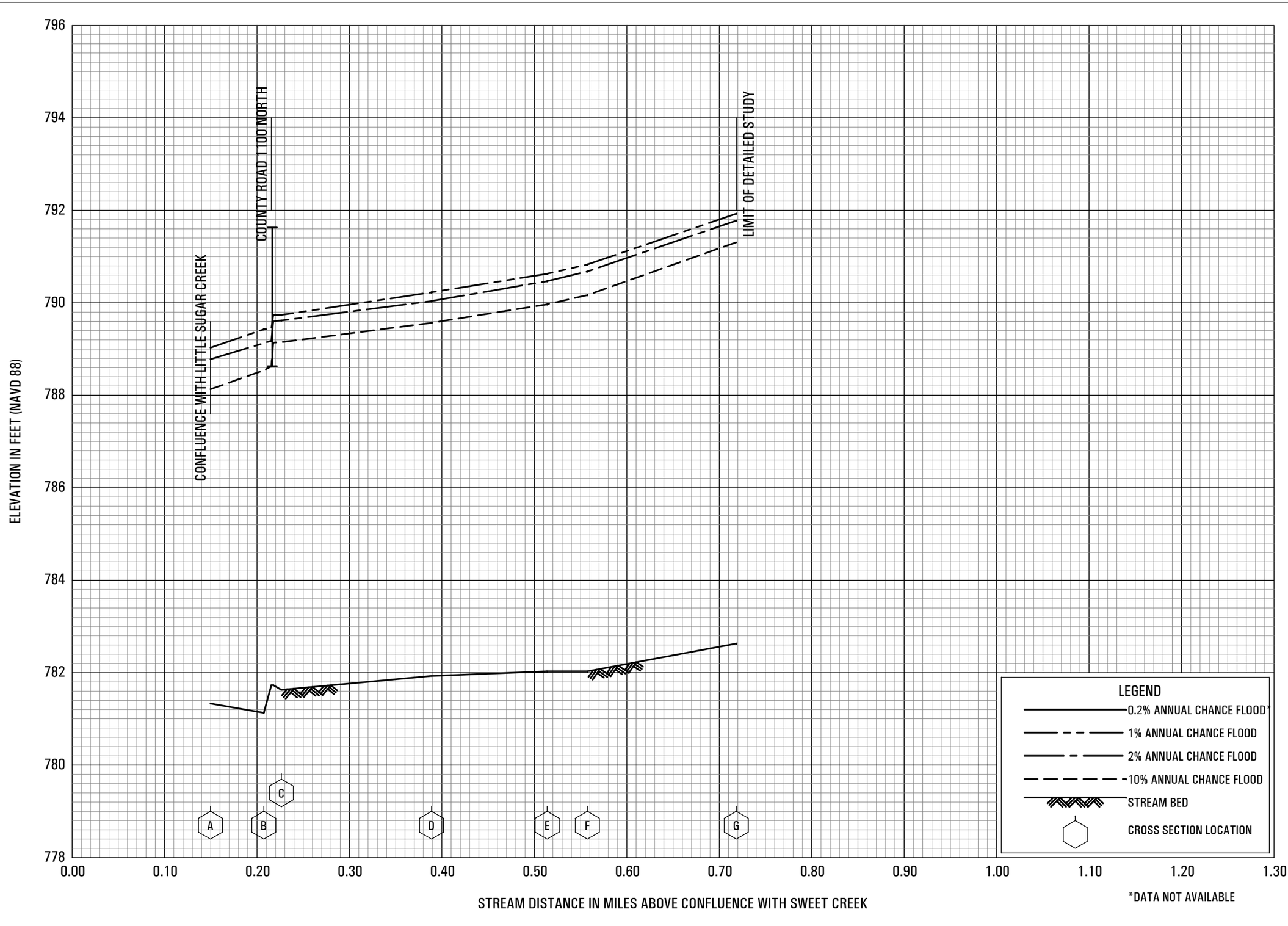
FLOOD PROFILES

SWEET CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS



FLOOD PROFILES

WEST LITTLE SUGAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF SHELBY, IN

AND INCORPORATED AREAS