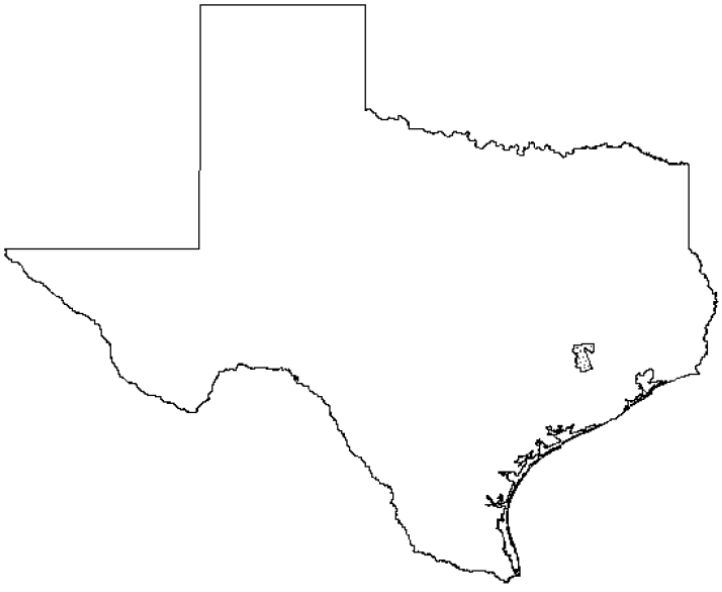
FLOOD INSURANCE STUDY

WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
BROOKSHIRE, CITY OF	481097
HEMPSTEAD, CITY OF	481045
KATY, CITY OF	480301
PATTISON, CITY OF	481527
PINE ISLAND, CITY OF	480080
PRAIRIE VIEW, CITY OF	481544
WALLER, CITY OF	480641
WALLER COUNTY UNINCORPORATED AREAS	480640



REVISED: May 16, 2019

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER

48473CV000B

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 may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

Part or all of this Flood Insurance Study may be revised and republished at any time. In addition, part of this Flood Insurance Study may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the Flood Insurance Study. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current Flood Insurance Study components.

This FIS was revised on May 16, 2019. Users should refer to Section 10.0 Revision Description, for further information. Section 10.0 is intended to present the most up-to-date information for specific portions of this FIS report. Therefore, users of the FIS report should be aware that the information presented in Section 10.0 supersedes information in Section 1.0 through 9.0 of this FIS report.

This publication incorporates revision to the original FIS report.

Initial Countywide FIS Effective Date: February 18, 2009

First Revised Countywide FIS Revision Date: May 16, 2019 to update corporate limits, to change Base Flood Elevations, to change Special Flood Hazard Areas, to change zone designations, to update map format, to add roads, and road names, to incorporate previously issued Letters of Map Revision, and to reflect updated topographic information.

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EXHIBITS

FLOOD INSURANCE STUDY
WALLER COUNTY AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and updates information on the existence and severity of flood hazards in the geographic area of Waller County, Texas, including the Cities of Brookshire, Hempstead, Katy, Pattison, Pine Island, Prairie View, Waller, and the unincorporated areas of Waller County (referred to collectively herein as Waller County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood-risk data for various areas of the county and community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. 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.

Please note that the City of Katy is geographically located in Waller, Harris, and Fort Bend Counties. This study includes the entire City of Katy in Waller County flood maps with Harris and Fort Bend counties publishing City of Katy flood maps for information purposes. The City of Waller is geographically located in Waller and Harris Counties.

Please note that the City of Pine Island does not participate in the NFIP.

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.

1.2 Authority and Acknowledgments

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

This restudy was prepared to include incorporated communities within Waller County, as well as unincorporated areas, into a countywide Flood Insurance Study. In this study, the hydrologic and hydraulic analyses for Spring Creek, Cypress Creek/Mound Creek and Cane Island Branch were provided by the Harris County's Tropical Storm Allison Recovery Project (TSARP) (References 1, 2, 3, 4, 5, 6). Results of the analyses extending into Waller County were incorporated by the Comprehensive Flood Risk Resources & Response Joint Venture (here in after referred to as CF3R, a joint venture) for the Department of Homeland Security's Federal Emergency Management Agency (FEMA) under Contract No. EMT-2002-CO-0049 (Reference 7). In addition, the hydrologic and hydraulic analyses for other streams studied by detailed methods and approximate methods were taken from the FIS reports of the following communities.

Unincorporated Areas

The original hydrologic and hydraulic analyses for the unincorporated areas of Waller County study were performed by Espey, Huston & Associates, Inc., for FEMA, under contract

No H-4569. This work was completed in January 1982. The hydrologic and hydraulic analyses for portions of the Brazos River have been revised by Espey, Huston & Associates, Inc. This revised work was completed in March 1986. The floodway on Bessies Creek from cross-section F downstream to the Fort Bend County boundary was revised as a result of a compromise settlement agreement, Civic Action No. H-86-3239, December 10, 1986, U.S District Court of Southern District of Texas (Houston Division). The floodways on Brookshire Creek and Tributary to resulting Kellner Creek were revised as part of the appeal resolution from the compromise settlement agreement (Reference 8).

City of Brookshire

The original hydrologic and hydraulic analyses for the City of Brookshire were performed by Espey, Huston & Associates Inc., for FEMA, under Contract No. H-4569. The work for the original study was completed in March 1980. The hydraulic analysis for the Tributary to Kellner Creek and Brookshire Creek was revised by Dewberry & Davis under agreement with FEMA. The work for this revised study was completed in January 1988 (Reference 9).

City of Hempstead

The original hydrologic and hydraulic analyses for the City of Hempstead study were performed by Espey, Huston & Associates, Inc., for the Federal Insurance Administration (FIA), under Contract No. H-4569. This study was completed in March 1980 (Reference 10).

City of Katy

The original hydrologic and hydraulic analyses for the City of Katy were performed by the U.S. Army Corp of Engineers, Galveston District, for FIA under Inter-Agency Agreement No. H-07-06; Project Order No. 14, Amendment 3 thereto and Inter-Agency Agreement No. H-10-77, Project Order No. 1, Amendment 7 thereto. The original study was completed in 1978. Additional analysis was performed by Espey, Huston & Associates Inc. during their study of Fort Bend County which included the Willow Fork and Buffalo Bayou (Reference 11).

City of Pattison

The original hydrologic and hydraulic analyses for the City of Pattison were performed by Espey, Huston & Associates Inc., for FEMA, under Contract No. H-4569. This study was completed in March 1980 (Reference 12).

City of Prairie View

The original hydrologic and hydraulic analyses for the City of Prairie View were performed by Espey, Huston & Associates, Inc., for FIA, under Contract No. H-4569. This study was completed in March 1980 (Reference 13).

City of Waller

The original hydrologic and hydraulic analyses for the City of Waller were performed by the U.S. Army Corps of Engineers, Galveston District, for FIA under Inter-Agency Agreement No. H-07-06; Project Order No. 14, and Amendment 3 thereto and Inter-Agency Agreement No. H-10-77, Project Order No 1, Amendment 7 thereto. This work was completed in January 1978 (Reference 14).

1.3 Coordination

The initial Consultation Coordination Officer (CCO) meeting was held on November 9, 2005, and attended by representatives of FEMA and CF3R.

The results of the study were reviewed at the final CCO meeting held on May 9, 2007, and attended by representatives of FEMA and CF3R. All problems raised at that meeting have been addressed in this study.

2.0 AREA STUDIED

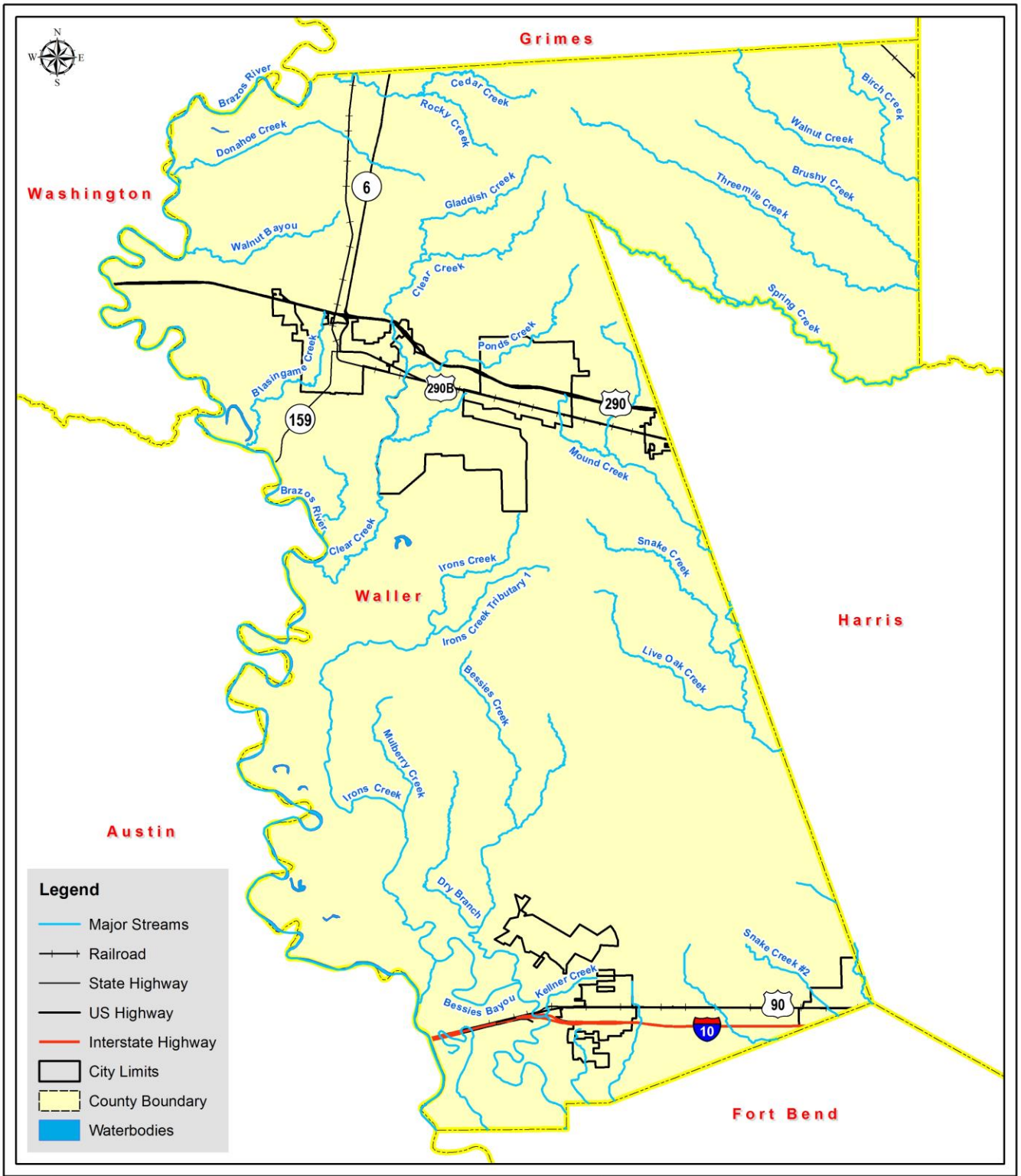
2.1 Scope of Study

This FIS covers the geographic area of Waller County, Texas, including the incorporated communities listed in Section 1.1. The area of study is shown on the Vicinity Map (see Figure 1).

In this countywide FIS, the detailed studied streams were included from the previous FISs for the unincorporated areas of Waller County dated May 4, 1988, the City of Brookshire dated February 17, 1989, the City of Hempstead dated December 15, 1980, the City of Katy dated February 1983, the City of Pattison dated August 3, 1981, the City of Prairie View dated October 15, 1981, and the City of Waller dated March 1979. The streams that were studied by detailed methods are listed in Table 1. The Base Flood Elevations (BFEs) for these detailed studied streams were adjusted to reflect the datum change from the National Geodetic Vertical Datum of 1929 (NGVD29) to the North American Vertical Datum of 1988 (NAVD88).

Table 1. Streams Studied by Detailed Methods

Bell Bottom Creek	North Branch of Gladdish Creek
Bessies Bayou	Irons Creek
Bessies Creek	Kellner Creek/Tributary to Kellner Creek
East Tributary of Bessies Creek	Mill Creek
Birch Creek	Mound Creek
West Tributary of Birch Creek	East Fork of Mound Creek
Blasingame Creek	Middle Fork of Mound Creek
Brazos River (West of Brookshire)	South Fork of Mound Creek
Brazos River (West of Hempstead)	West Fork of Mound Creek
Brookshire Creek	Tributary 7.62 to Mound Creek
West Fork of Brookshire Creek	Ponds Creek
Brookshire Creek Drainage Ditch	East Tributary of Ponds Creek
Brushy Creek	North Tributary of Ponds Creek
Cane Island Branch	Snake Creek
Cedar Creek	Spring Creek
South Fork of Cedar Creek	Threemile Creek
Clear Creek	North Branch of Threemile Creek
North Branch of Clear Creek	South Branch of Threemile Creek
Cypress Creek	Walnut Creek
Gladdish Creek	Willow Fork Buffalo Bayou


Grimes
Washington
Waller
Harris
Austin
Fort Bend
Brazos River
Donahoe Creek
Cedar Creek
Rocky Creek
Birch Creek
Walnut Creek
Brushy Creek
Threemile Creek
Spring Creek
Gladdish Creek
Walnut Bayou
Clear Creek
Ponds Creek
Blasingame Creek
Mound Creek
Brazos River
Clear Creek
Irons Creek
Snake Creek
Irons Creek Tributary 1
Live Oak Creek
Bessies Creek
Mulberry Creek
Irons Creek
Dry Branch
Snake Creek #2
Kellner Creek
Bessies Bayou
6
159
290B
290
90
10
Legend
Major Streams
Railroad
State Highway
US Highway
Interstate Highway
City Limits
County Boundary
Waterbodies
FIGURE 1
FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TX
AND INCORPORATED AREAS
4 2 0 4
Miles
VICINITY MAP

Numerous streams or portions of streams studied by approximate methods were also included in this countywide FIS from previous FISs. They are listed in Table 2. The scope and methods of study were proposed to and agreed upon by FEMA and Waller County.

Table 2. Streams Studied by Approximate Methods

Big Sandy Creek	Live Oak Creek
Donahoe Creek	Rocky Creek
Harris Creek	Walnut Bayou
and portions of	
Bessies Creek	Gladdish Creek
Birch Creek	Kellner Creek
West Tributary of Birch Creek	Middle Fork of Mound Creek
Blasingame Creek	South Fork of Mound Creek
Brazos River	West Fork of Mound Creek
Brushy Creek	Ponds Creek
Cane Island Branch	East Tributary of Ponds Creek
Cedar Creek	Snake Creek
South Fork of Cedar Creek	Threemile Creek
Clear Creek	North Branch of Threemile Creek
North Branch of Clear Creek	Willow Fork Buffalo Bayou

As part of this countywide FIS, updated detailed studies from the TSARP project were included for the flooding sources shown in Table 3, "Scope of Revision".

Table 3. Scope of Revision

Spring Creek
Cypress Creek
Mound Creek
East Fork of Mound Creek
Tributary 7.62 to Mound Creek
Cane Island Branch

2.2 Community Description

Waller County is located in southeast Texas. It is bordered by Harris and Montgomery Counties to the east, Austin and Washington Counties to the west, Grimes County to the north, and Fort Bend County to the south. The population of Waller County was 19,798 in 1980. The population has increased to 23,381 by 1990 and to 32,663 by 2000 (Reference 15). The county includes seven incorporated communities. According to the 2000 Census, the population of the incorporated communities were: City of Brookshire, 3,450; City of Hempstead, 4,691; City of Katy, 11,775 (total population including population within Harris and Fort Bend Counties); City of Pattison, 447; City of Pine Island, 849; City of Prairie View, 4,410; and City of Waller, 2,092 (total population including population within Harris County).

Waller County was named for Edwin Waller, a Republic of Texas leader. The county was created in 1873 from portions of Grimes and Austin Counties and occupies an area of approximately 509 square miles (Reference 16). In 1988, approximately 75 percent of the land in the county is used for agriculture, 20 percent is forestland, and 5 percent is urbanized. Approximately half of the agricultural land can be classified as rangeland. Most of the rangeland and cropland is located in the south-central and western portion of the county. The northern section contains most of the county's hardwood and pine forests (Reference 17).

Waller County has a temperate climate characterized by mild winters and warm summers. The average minimum temperature in January is 39 degrees Fahrenheit (ºF), and the average maximum temperature in July is 95 ºF (Reference 17). The average annual rainfall within the county is 41.67 inches.

The county has several distinct topographies. The southern part of the county is similar to the flat coastal areas of Texas, while the northern portions are characterized by rolling prairie and timberlands. The western edge of the county is marked by the broad meander belt of the Brazos River. The majority of the soils in the county are clay loam soils, classified as very slowly to moderately slowly permeable. The soil in the Brazos River Valley is used primarily for agriculture (Reference 8).

2.3 Principal Flood Problems

Unincorporated Areas

Major flooding occurred on the Brazos River during the storm of June 17 to July 1, 1899, which is said to have caused the worst Brazos River flood of record. The flood of December 1913, however, had peak flood stages greater than the 1899 flood. Peak flows from the 1899 and 1913 storms were approximately 214,000 cubic feet per second (cfs) and 350,000 cfs, respectively (Reference 18). These floods occurred prior to the regulation on the Brazos River.

Several factors contribute to the flood problems in Waller County. The most apparent of these is the meander belt topography that is characteristic of large areas of western Waller County. The meandering of the Brazos River over geologic time has created a broad, flat floodplain that is marked by numerous old stream channels and oxbow lakes. Because of the extremely flat topography of the floodplain, these streams flow very slowly and frequently overtop their banks.

Another flooding problem arises from the rapid change from rural land uses to urban land use in several parts of the county. Several subdivisions have been built in flood-prone areas with insufficient internal drainage. Most of the county's bridges and drainage structures were designed to accommodate runoff from short return interval storms. They are inadequate to handle the runoff from the longer recurrence interval events, such as the 50-, 100-, and 500-year events. Many of the flood problems are also caused by a lack of adequate information on flood elevations. This is especially true along the western boundary of the county, which is formed by the Brazos River. The lack of detailed flood elevations along the Brazos River has made it difficult to accurately identify areas that can be safely used for development and those that should be restricted for uses other than residential.

City of Brookshire

Most of the area within the corporate limits of Brookshire drains into Brookshire Creek. That part of Brookshire south of Interstate Highway 10 and west of FM 359 drains into West Fork of Brookshire Creek. The area west of FM 362 and north of Interstate Highway 10 drains into Tributary to Kellner Creek and the drainage ditch that extends east of Tributary to Kellner Creek. All these creeks are tributaries of the Brazos River. The City of Brookshire is subject to riverine flooding. Most of the flooding is a result of flat topography that causes the floodwaters to drain slowly and obstructions such as railroad embankments that cause the floodwaters to pond.

City of Hempstead

Most of the area within the corporate limits of the City of Hempstead drains into Blasingame Creek. The southeastern part of the city, which is largely undeveloped drains into a tributary of Clear Creek. Flood problems exist in the areas that are adjacent to Blasingame Creek. However, the majority of Hempstead lies outside of the 1-percent chance flood plain of Blasingame Creek and the entire city is outside the 1-percent chance flood plain of Clear Creek.

City of Katy

Most of the flooding in the City of Katy is caused by obstructions in the path of floodwaters. Road and railroad crossings create obstructions, which are responsible for much of the flooding within Katy.

City of Pattison

Although the City of Pattison is located on the edge of the Brazos River valley, the surrounding geography protects it from serious flood problems. The center of the community is situated on top of a bluff approximately 170 feet above NAVD. The land slopes rapidly away from the city in the direction of the Brazos River, thus, the surrounding creeks help carry floodwaters away from the city center.

City of Prairie View

Most of the area within the city limits of Prairie View drains into Ponds Creek. A portion of the southeast part of the city drains into Mound Creek. The remainder of the city south of the Southern Pacific Railroad drains into tributaries of Three Mile Creek. The City of Prairie View is subject to riverine flooding. Most of the flooding is a result of obstructions such as railroad embankments, which cause the floodwaters to pond.

City of Waller

Flood problems exist in the western and eastern portions of the City of Waller. The Middle Fork of Mound Creek floods from the north to the south along the east side of Waller; the East Fork of Mound Creek floods from the north to the south along the west side. However, a substantial portion of Waller lies outside of the 1-percent chance flood plain of either stream.

2.4 Flood Protection Measures

Unincorporated Areas

There are several dams and reservoirs upstream on the Brazos River that serve to regulate flood flows in Waller County. As of 2006, stream flow in the Brazos River basin below Possum Kingdom Reservoir is controlled by the following ten major flood control and water storage reservoirs: Whitney, Waco, Proctor, Belton, Stillhouse Hollow, Granbury, Georgetown, Aquila, Limestone, and Somerville. The reservoirs now provide control for more than 85 percent of the basin. Other than the dams and reservoirs located on the Brazos River, there are very few structures within the county that can be classified as flood protection structures. Non-structural measures of flood protection are also being used to prevent flood damages.

City of Brookshire

A system of drainage ditches and storm sewers exists in the city to alleviate f1ooding in the developed areas of City of Brookshire. Channel improvements were made on Brookshire Creek and Kellner Creek. The natural channels for both creeks were lengthened. A drainage channel was extended northward from Brookshire Creek to provide a drainage outfall along the eastern side of the corporate limits. This outfall also serves an area north of the city. Another drainage channel was constructed eastward from Kellner Creek to serve the western part of the city located to the north of the railroad and U.S. Highway 90.

City of Hempstead

A system of drainage ditches and storm sewers exists in the city of Hempstead to alleviate flooding in the developed areas. The storm sewer system in the central portion of the city routes drainage from the east side of the Southern Pacific Railroad to the west side of the railroad and into a tributary of Blasingame Creek.

City of Katy

No significant flood protection measures exist in the City of Katy.

City of Pattison

No flood protection measures have been built in the City of Pattison.

City of Prairie View

No flood protection measures have been built in the City of Prairie View.

City of Waller

No flood control measures exist in the City of Waller.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the county, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which 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, which equals or exceeds the l00-year flood (1 percent chance of annual exceedance) in any 50-year period, is approximately 40 percent (4 in 10), and, 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 performed to establish peak discharge-frequency relationships for each flooding source studied by detailed methods affecting the community.

Flood discharges for all the streams studied by detailed methods except for the Brazos River (West of Brookshire), the Brazos River (West of Hempstead), and the streams restudied by TSARP were calculated using a regionalized methodology developed by the U.S. Geological Survey (USGS) (Reference 19). That methodology was based on a regression analysis and relates peak discharge to drainage area and channel slope by empirical equations. The 500-year floods were extrapolated from the lower frequency values. The flows for Snake Creek were reduced to account for the effects of divided overflow. Just north of the Missouri-Kansas-Texas Railroad, water from Snake Creek flows eastward across the basin divide into the adjacent drainage basin. The amount of water flowing over the divide was computed using Manning's equation with the appropriate coefficients for a shallow, overland flow situation. As a result, Snake Creek exhibits a decrease in peak discharges in the downstream direction.

Flood discharges for Blasingame Creek were calculated using the method presented in USGS open-file report 77-54, "Techniques for Estimating Flood Discharges in Oklahoma Streams" (Reference 20). This method is based on a regression analysis and requires three variables, channel slope, drainage area and mean annual precipitation in the calculation of flood discharges for rural streams. For urban streams (streams that have watersheds which are more than ten percent developed) two additional variables are needed. These variables are the percentage of the watershed area that is impervious and serviced by storm sewers. The Blasingame Creek watershed is classified as urban, thus all five variables are needed in the computation of flood discharges.

Original flood discharges for the Brazos River (West of Brookshire) and the Brazos River (West of Hempstead) measured near Hempstead were computed using a methodology presented in a 1979 report prepared by the study contractor (Reference 21). This methodology was used due to the special problems presented by progressive development of major flood control structures within the Brazos River basin. The staged development of dams and

reservoirs caused non-homogeneity in gage records between 1941 and 1968; therefore, the direct application of the log-Pearson Type III distribution would have given erroneous results. The HEC-l computer program (Reference 22) was utilized to generate a series of records at the Hempstead gage with no reservoir effects. The records were then calibrated to produce flood flows as determined by log-Pearson Type III. Once satisfactory calibration had been obtained without the reservoirs, the effect of the reservoirs was incorporated and a value for each flood flow was determined.

The methodology used to determine flood flows for the Brazos River - West of Brookshire were reanalyzed in the 1988 study. Errors were discovered in some published historic flood data that had been used in the original analyses. These errors were corrected and the hydrologic analysis was redone, while also incorporating updated information concerning two recently constructed reservoirs and the latest flood data. The methodologies used in the updated hydrologic analysis are presented in a 1984 report by the study contractor (Reference 23). The results of this reanalysis were applied to the portion of study near the Waller-Fort Bend County boundary.

The studies for Spring Creek, Cypress Creek/Mound Creek, and Cane Island Branch were conducted based on methodologies developed by TSARP (Reference 7). Watersheds were delineated based on topographic data collected in 2002 using the Light Detection and Ranging (LiDAR) technology; sub-basin parameters were computed based on the Harris County Hydrology Manual (Reference 24), and revised by the TSARP hydrology and hydraulic committees. After calibration to recorded flood events, the HEC-HMS program (Reference 25) was used to generate flows at different recurrence intervals.

Peak discharge-drainage area relationships for Waller County studied streams are summarized in Table 4, Summary of Discharges.

Table 4. Summary of Discharges

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
BELL BOTTOM CREEK					
Approximately 0.28 mile upstream of confluence with Bessies Creek	6.22	2,360	3,680	4,380	6,000
At FM 359	5.41	2,160	3,350	3,980	5,450
At Royal Road	4.98	2,050	3,160	3,760	5,100
BESSIES BAYOU					
Approximately 0.10 mile upstream of confluence with Bessies Creek	2.45	460	1,620	1,640	2,910
Approximately 0.60 mile upstream of Clemons Switch Road	0.50	165	1,200	1,470	2,310
BESSIES CREEK					
At FM 1489	62.12	6,853	11,736	14,098	21,000
At Interstate Highway 10	56.43	6,441	10,991	13,189	19,500
At Wilpitz Road	42.91	5,396	9,119	10,906	16,000
At Clemons Switch Road	39.66	5,128	8,642	10,326	15,300
At FM 1458	32.43	4,503	7,533	8,980	13,100
At FM 359	26.36	3,939	6,540	7,777	11,000
Approximately 1.1 miles downstream of Mikeska Road	17.27	2,997	4,902	5,800	8,250
EAST TRIBUTARY OF BESSIES CREEK					
At Adams Flat Road	7.42	2,490	4,210	4,910	7,200
At Mikeska Road	4.88	1,900	3,160	3,750	5,400
BIRCH CREEK					
At FM 1488	14.91	3,940	6,810	8,200	12,100
At dirt road approximately 1.1 miles upstream of FM 1488	13.42	3,670	6,330	7,610	11,000
Approximately 1.22 miles downstream of confluence of West Tributary of Birch Creek	11.42	3,310	5,670	6,800	9,900

Table 4. Summary of Discharges (Cont'd)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
BIRCH CREEK (Cont'd)					
Approximately 0.47 mile downstream of confluence of West Tributary of Birch Creek	9.71	2,980	5,080	6,080	9,000
Approximately 0.58 mile upstream of confluence of West Tributary of Birch Creek	5.94	2,170	3,630	4,320	6,100
At Carlton Road	4.73	1,870	3,110	3,690	5,200
WEST TRIBUTARY OF BIRCH CREEK					
Approximately 580 feet upstream of confluence with Birch Creek	3.18	1,450	2,370	2,800	4,000
At dam approximately 0.7 mile downstream of Carlton Road	2.35	12,000	1,950	2,290	3,200
At Carlton Road	1.01	690	1,080	1,260	1,730
BLASINGAME CREEK					
At Washington Street	1.53	1,032	1,569	1,829	2,450
At Rice Street	0.89	716	1,081	1,256	1,674
At St. Marys Street	0.69	598	899	1,042	1,385
BRAZOS RIVER (WEST OF BROOKSHIRE)					
Approximately 6.4 miles downstream of Interstate Highway 10	34,384 [1]	101,000	15,700	181,000	242,000
BRAZOS RIVER (WEST OF HEMPSTEAD)					
At U.S. Highway 159	42,640	110,000	182,473	206,962	260,000
BROOKSHIRE CREEK					
At Interstate Highway 10	11.44	2,837	4,350	5,010	6,490
At U. S. Highway 90	11.32	2,814	4,320	4,980	6,450
At Stellar Road	11.25	2,547	3,940	4,560	6,120

[1] Contributes directly to surface runoff; total drainage area is 43,624 square miles

Table 4. Summary of Discharges (Cont'd)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
WEST FORK OF BROOKSHIRE CREEK					
At Rheman Cutoff Road	1.15	831	1,337	1,568	2,180
At Eleventh Street	0.16	123	194	228	310
BROOKSHIRE CREEK DRAINAGE DITCH					
At Hereford Drive	0.28	189	279	319	421
BRUSHY CREEK					
Approximately 0.6 mile downstream of Robin Hood Lane	13.06	3,220	5,450	6,510	9,400
At Robin Hood Lane	12.29	3,100	5,230	6,240	8,900
At Joseph Road	11.33	2,940	4,950	5,900	8,500
Approximately 0.7 mile upstream of Joseph Road	10.45	2,790	4,680	5,580	8,100
At Rice Road	8.07	2,630	3,930	4,660	6,300
Approximately 0.9 mile upstream of Rice Road	7.07	2,170	3,590	4,250	6,050
At FM 1488	5.84	1,920	3,150	3,720	5,200
CANE ISLAND BRANCH					
At mouth	24.72	1,230	2,458	3,383	6,420
Upstream of Stockdick Road	23.90	1,115	2,456	3,381	6,415
Upstream of U.S. Highway 90	23.71	1,088	2,455	3,380	6,414
Upstream of Tenth Street	21.39	1,015	2,380	3,285	6,279
Upstream of Franz Road	20.88	999	2,364	3,265	6,250
Upstream of Morton Road	19.71	947	2,271	3,154	6,017
Upstream of Pitts Road	18.43	890	2,171	3,034	5,764
CEDAR CREEK					
Approximately 300 feet downstream of confluence of South Fork of Cedar Creek	2.74	1,550	2,595	3,085	4,500
SOUTH FORK OF CEDAR CREEK					
At FM 2979	0.96	785	1,270	1,490	2,100

Table 4. Summary of Discharges (Cont'd)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
CLEAR CREEK					
Approximately 1.15 miles downstream of Southern Pacific Railroad	47.12	7,640	13,590	16,510	25,000
Approximately 100 feet upstream of Southern Pacific Railroad	46.41	7,560	13,450	16,340	24,500
At U. S. Highway 290	46.29	7,550	13,430	16,310	24,500
At FM 1488	26.87	5,310	9,270	11,180	15,900
At Laneview Road	5.82	1,980	3,260	3,870	5,550
NORTH BRANCH OF CLEAR CREEK					
Approximately 0.6 mile upstream of confluence with Clear Creek	3.05	1,520	2,530	2,990	4,200
At Kelly Road	2.03	1,170	1,910	2,260	3,190
CYPRESS CREEK					
At stream mile 49.8 between cross-sections D & E	67.34	11,075	20,391	25,485	40,336
GLADDISH CREEK					
At confluence with Clear Creek	9.11	2,670	4,490	5,350	7,700
At Rolling Hills Spillway	6.29	2,120	3,510	4,170	5,950
At FM 1736	3.93	1,560	2,540	2,990	4,250
At Mellman Road	2.41	1,130	1,810	2,120	3,000
NORTH BRANCH OF GLADDISH CREEK					
Approximately 1,650 feet upstream of confluence with Gladdish Creek	0.45	380	580	660	890
Approximately 890 feet upstream of FM 1736	0.32	310	470	530	710
IRONS CREEK					
Approximately 1,480 feet upstream of confluence with Brazos River	55.59	7,090	11,250	12,540	20,100

Table 4. Summary of Discharges (Cont'd)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
IRONS CREEK (Cont'd)					
Approximately 1.40 miles upstream of confluence with Brazos River	55.39	7,070	11,220 [1]	13,450 [1]	19,900 [1]
Approximately 1.0 miles downstream of FM 1458	55.09	7,070	12,270 [1]	14,750 [1]	22,000 [1]
At FM 1458	54.51	7,000	12,410 [1]	14,640 [1]	21,800 [1]
KELLNER CREEK/TRIBUTARY TO KELLNER CREEK					
At FM 1489	0.21	123	188	218	295
At FM 359	0.04	24	36	42	62
MILL CREEK					
At FM 1486	31.53	2,095	5,877	8,303	15,720
MOUND CREEK					
At mouth	35.58	6,932	12,853	16,179	25,158
At stream mile 4.81	31.55	6,510	11,710	14,670	22,780
At stream mile 7.71	22.71	5,560	9,310	11,270	17,020
At U.S. Highway 290	2.78	1,300	1,980	2,330	3,150
EAST FORK OF MOUND CREEK					
At mouth	4.45	1,657	2,593	3,052	4,438
At stream mile 0.81	2.47	1,320	2,040	2,400	3,490
At Business 290	2.13	990	1,620	1,850	2,750
At U.S. Highway 290	1.46	810	1,380	1,610	2,250
MIDDLE FORK OF MOUND CREEK					
At confluence with Mound Creek	2.99	1,040	1,890	2,330	3,550
Approximately 0.7 mile upstream of confluence with Mound Creek	2.39	880	1,545	1,886	2,817
Cross-section 0.0	1.76	740	1,320	1,630	2,470
Cross-section 1.7	1.08	470	780	930	1,320

[1]Peak discharges are attenuated in the downstream direction due to overflow into Bessies Bayou

Table 4. Summary of Discharges (Cont'd)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
WEST FORK OF MOUND CREEK					
At confluence with Mound Creek	2.99	2,165	3,618	4,304	6,200
SOUTH FORK OF MOUND CREEK					
At Kulhanek Lane	0.92	691	1,093	1,276	1,760
TRIBUTARY 7.62 TO MOUND CREEK					
At confluence with Mound Creek	2.06	1,406	2,116	2,443	3,429
PONDS CREEK					
At approximately 1,700 feet upstream of confluence with Clear Creek	17.69	4,140	7,140	8,580	10,250
At FM 1098	6.77	2,230	3,710	4,400	6,380
At Mayer Road	0.86	590	910	1,050	1,410
EAST TRIBUTARY OF PONDS CREEK					
Approximately 580 feet upstream of confluence with Ponds Creek	1.25	860	1,380	1,610	2,290
Approximately 0.92 mile downstream of Mayer Road	0.51	480	750	870	1,180
At Mayer Road	0.18	130	210	250	350
NORTH TRIBUTARY OF PONDS CREEK					
At Mayer Road	0.64	480	740	860	1,190
SNAKE CREEK					
Approximately 1,200 feet downstream of U.S. Highway 90	9.71	1,890	2,520	2,700	3,320
At Missouri-Kansas-Texas Railroad	8.29	1,680	2,140	2,250 [1]	2,520 [1]
Approximately 2.2 miles upstream of U.S. Highway 90	3.67	1,310	2,080	2,450	3,300

[1] Peak discharges are attenuated in the downstream direction due to divided overflow upstream of the Missouri-Kansas-Texas Railroad

Table 4. Summary of Discharges (Cont'd)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
SPRING CREEK					
Downstream of J158-00-00 confluence / Hegar Rd Crossing	34.27	3,800	7,000	9,000	15,500
Downstream of Mayer Rd/Field Store at stream mile 64.48	11.19	2,200	3,800	4,700	7,300
At FM 1736	1.55	550	950	1,200	1,800
THREEMILE CREEK					
At downstream county boundary	29.99	5,145	8,870	10,665	15,700
At Macedonia Road	28.10	4,935	8,485	10,195	15,000
At Kickapoo Road	22.41	4,265	7,270	8,715	12,800
At FM 1488	19.63	3,915	6,640	7,950	11,600
At Bowler Road	17.85	3,680	6,225	7,440	11,000
At FM 362	11.77	2,815	4,685	5,575	8,000
At Robinson Road	4.17	1,440	2,310	2,715	3,800
NORTH BRANCH OF THREEMILE CREEK					
Approximately 740 feet upstream of confluence with Threemile Creek	4.26	2,015	3,405	4,065	6,000
At FM 362	3.03	1,615	2,700	3,510	4,700
At Reids Prairie Road	0.79	678	1,080	1,265	1,800
SOUTH BRANCH OF THREEMILE CREEK					
Approximately 1,000 feet upstream of confluence with Threemile Creek	1.39	985	1,600	1,885	2,650
WALNUT CREEK					
At FM 1488	22.06	4,790	8,310	10,020	14,900

Table 4. Summary of Discharges (Cont'd)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
WILLOW FORK BUFFALO BAYOU					
Approximately 0.6 mile downstream of FM 1463	32.4	4,000	*	7,000	10,000
Approximately 0.45 mile upstream of FM 1463	18.37	2,600	*	4,500	6,750
Approximately 1.74 mile upstream of FM 1463	17.61	2,550	*	4,400	6,500

* Data not available

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were performed 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 tables 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 in conjunction with the data shown on the FIRM.

Natural ground and bridge cross sections used in the backwater analyses for the streams studied by detailed methods were obtained from field surveys conducted by the study contractor, the Corps of Engineers (COE), and the Soil Conservation Service (SCS). These data were supplemented with information from USGS topographic maps (Reference 26). The cross section data for the reanalyzed portion of the Brazos River - West of Brookshire were supplied by the COE. The cross-section data for Spring Creek, Cypress Creek/Mound Creek, and Cane Island Branch were supplied by the study contractors with overbank information from LiDAR topographic data provided by the Harris County Flood Control District.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross-section locations are also shown on the FIRM.

Water-surface elevations of floods of the selected recurrence intervals were computed using the COE HEC-2 step-backwater computer program (Reference 27). The TSARP studies used the HEC-RAS program (Reference 28). Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals. Starting water-surface elevations for the remaining streams studied by detailed methods were calculated using the slope/area method.

The channel roughness coefficients (Manning's "n") used in the hydraulic computations were determined by engineering judgment and were based on field inspections of the streams and floodplains at each cross section. The channel roughness coefficient for the computations along the Brazos River - West of Brookshire was estimated by means of calibration studies. These studies involved calibrating to the most recent major flood (the 1957 flood), which produced near bank full flow conditions in the Richmond area. The methodologies used in this calibration are presented in a 1985 report by the study contractor (Reference 29). The channel "n" and overbank "n" values for the streams studied by detailed methods are shown in the following Table 5.

Table 5 – Summary of Roughness Coefficients

Stream	Channel "n"	Overbank "n"
Bell Bottom Creek	0.055-0.060	0.085
Bessies Bayou	0.015-0.055	0.070
Bessies Creek	0.045	0.070
East Tributary of Bessies Creek	0.015-0.055	0.070
Birch Creek	0.062-0.140	0.110
West Tributary of Birch Creek	0.062	0.110
Blasingame Creek	0.015-0.055	0.090
Brazos River (West of Brookshire)	0.025	0.050-0.130
Brazos River (West of Hempstead)	0.050	0.090
Brookshire Creek	0.040-0.070	0.070-0.100
West Fork of Brookshire Creek	0.060	0.070
Brookshire Creek Drainage Ditch	0.045	0.060
Brushy Creek	0.062	0.110
Cane Island Branch	0.040-0.050	0.060-0.200
Cedar Creek	0.060-0.070	0.100
South Fork of Cedar Creek	0.040-0.060	0.090-0.100
Clear Creek	0.055	0.075
North Branch of Clear Creek	0.015-0.050	0.070
Cypress Creek	0.025-0.140	0.025-0.200
Gladdish Creek	0.015-0.050	0.070-0.085
North Branch of Gladdish Creek	0.028-0.055	0.070
Irons Creek	0.055	0.070
Kellner Creek/Tributary to Kellner Creek	0.040-0.055	0.055-0.090
Mill Creek	0.040-0.120	0.075-0.150
Mound Creek	0.070-0.120	0.026-0.120
East Fork of Mound Creek	0.020-0.080	0.035-0.120
Middle Fork of Mound Creek	0.040-0.045	0.070-0.080
West Fork of Mound Creek	0.015-0.055	0.080
South Fork of Mound Creek	0.045-0.055	0.080
Tributary 7.62 Mound Creek	0.050-0.080	0.050-0.100
Ponds Creek	0.055	0.080-0.090
East Tributary of Ponds Creek	0.045	0.075
North Tributary of Ponds Creek	0.055	0.090
Snake Creek	0.015-0.055	0.080
Spring Creek	0.060-0.080	0.030-0.200 [1]

[1] A “n” value of 0.030 was used for pond areas located on the overbank

Table 5 – Summary of Roughness Coefficients (Cont'd)

Stream	Channel "n"	Overbank "n"
Threemile Creek	0.015-0.070	0.090
North Branch of Threemile Creek	0.015-0.060	0.090
South Branch of Threemile Creek	0.060	0.100
Walnut Creek	0.015-0.060	0.100
Willow Fork Buffalo Bayou	0.040-0.050	0.120

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 used for newly created or revised FIS reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD). With the completion of the North American Vertical Datum of 1988 (NAVD), many FIS reports and FIRMs are now prepared using NAVD as the referenced vertical datum.

Flood elevations shown in this FIS report and on the FIRM are referenced to the NAVD. Flood Elevations for the streams studied as part of TSARP are referenced to the NAVD (2001 adjustment). These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. Most of the data used in this countywide FIS were taken from the prior effective FIS reports and FIRMs and adjusted to NAVD. The datum conversion from NGVD to NAVD in Waller County is 0.045 feet. Since the average vertical adjustment is less than 0.25 feet, a differential adjustment will not be used for the County. Also, since the average adjustment is less than 0.1 feet, no actual vertical adjustments were made in converting the (1979-1989) FIS from NGVD to NAVD. The BFEs, profiles, and elevation values in FIS tables were not modified.

For information regarding conversion between the NGVD and NAVD, visit the National Geodetic Survey website at www.ngs.noaa.gov, or contact the National Geodetic Survey at the following address:

Communications and Outreach Branch, NOAA,
N/NGS12 National Geodetic Survey SSMC-3, #9340
1315 East-West Highway
Silver Spring, MD 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 Technical Support Data Notebook

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

To obtain current elevation, description, and/or location information for benchmarks shown on this map, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

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 (100-year) flood elevations and delineations of the 1- and 0.2-percent-annual-chance (100- and 500-year) floodplain boundaries and 1-percent-annual-chance (100-year) 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 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 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 (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance (500-year) 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. Between the cross-sections, the boundaries were interpolated using topographic data.

The 1-percent and 0.2-percent-annual-chance floodplain boundaries are shown on the FIRM. On this map, the 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards Zones A, AE, AO, 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 streams studied by approximate methods, the boundary of the 1-percent chance flood was delineated using the previously printed FIRMs for Waller County.

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 flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1 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 floodways presented in this study were computed for certain stream segments on the basis of equal-conveyance reduction from each side of the floodplain. The exceptions were portions of Bessies Creek, Indian Sloughs and McNally Sloughs. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections (see Table 6, "Floodway Data"). In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary is shown.

As a result of the compromise settlement agreement, the floodway delineation on Bessies Creek from cross section F downstream to the Fort Bend County boundary has been revised. The floodway for this reach of stream is not based on hydraulic computations, but is the result of negotiations between FEMA and Waller County. An additional negotiated overflow floodway has been designated along Indian Slough and McNally Slough from Bessies Creek to the Fort Bend County boundary. The floodways on the affected reach of Bessies Creek and Indian and McNally Sloughs are contained within the channel banks. In addition to designation of overflow routes from Bessies Creek, an addendum to Waller County Building Regulations must be adopted to ensure that unobstructed flow paths remain in the floodway fringe areas along Bessies Creek (Reference 8).

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 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 2.

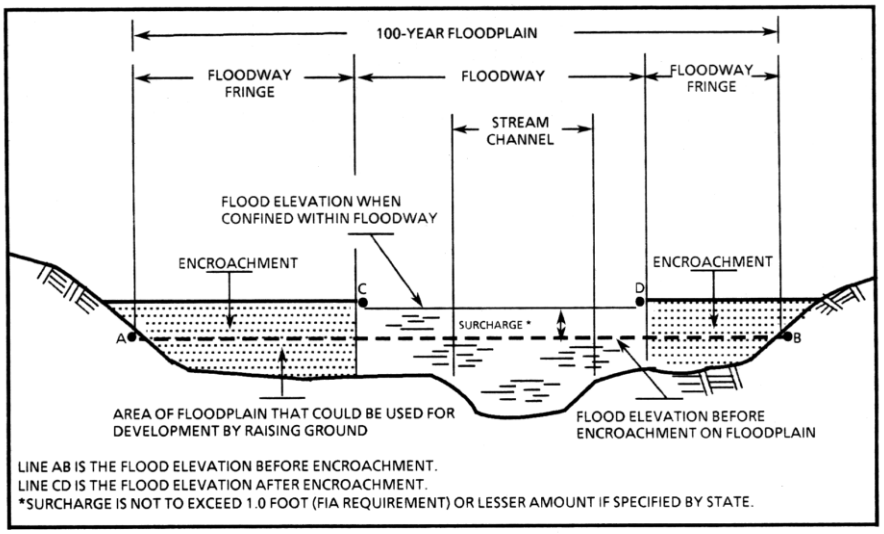


Figure 2. Floodway Schematic

Near the mouths of streams studied in detail, floodway computations are made without regard to flood elevations on the receiving water body. Therefore, "Without Floodway" elevations presented in Table 6 for certain downstream cross sections of Bell Bottom Creek, Bessies Bayou, Irons Creek, Kellner Creek/Tributary to Kellner Creek, East Fork of Mound Creek, Middle Fork of Mound Creek, East Tributary of Ponds Creek, and Tributary 7.62 to Mound Creek are lower than the regulatory flood elevations in that area, which must take into account the 1-percent chance event flooding due to backwater from other sources.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Bell Bottom Creek								
A	0.284[1]	252	1,372	2.2	124.3	120.4[3]	121.4	1.0
B	0.928[1]	402	1,826	2.30	127.3	127.3	128.3	0.9
C	1.547[1]	346	2,552	1.6	145.7	145.7	146.6	0.9
D	2.060[1]	100	665	5.7	150.3	150.3	151.1	0.8
Bessies Bayou								
A	0.17[1]	133	1,031	1.9	124.1	119.1[3]	119.9	0.8
B	1.10[1]	275	1,773	1.1	124.1	120.6[3]	121.3	0.7
C	1.89[1]	302	2,209	0.9	124.1	121.1[3]	122.1	1.0
D	2.82[1]	230	1,980	0.9	124.1	121.5[3]	122.4	0.9
E	3.46[1]	230	1,998	0.9	124.1	121.7[3]	122.6	0.9
F	4.01[1]	230	2,007	0.8	124.1	121.9[3]	122.7	0.8
G	4.55[1]	169	1,486	1.1	124.1	122.3[3]	123.1	0.8
H	5.15[1]	133	1,199	1.2	124.1	122.7[3]	123.5	0.8
I	5.64[1]	207	928	1.6	124.1	123.5[3]	124.4	0.9
Bessies Creek								
A	0.000[2]	*	*	*	117.0	117.0	*	*
B	1.722[2]	*	*	*	118.3	118.3	*	*
C	3.501[2]	*	*	*	119.3	119.3	*	*
D	6.292[2]	*	*	*	120.6	120.6	*	*
E	8.773[2]	*	*	*	122.3	122.3	*	*
F	10.132[2]	*	*	*	124.0	124.0	*	*

[1] Miles above confluence with Bessies Creek *Floodway contained within channel banks

[2] Miles about county boundary

[3] Elevation computed without consideration of backwater effects from Bessies Creek

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

BELL BOTTOM CREEK - BESSIES BAYOU - BESSIES CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Bessies Creek (continued)								
G	11.327	4,875	23,473	0.50	125.8	125.8	126.7	0.9
H	12.899	690	5,068	2.2	126.5	126.5	127.4	0.9
I	13.600	2,200	9,699	1.1	127.7	127.7	128.3	0.6
J	14.660	546	1,246	7.2	127.9	127.9	128.9	1.0
K	15.000	550	5,073	1.8	130.8	130.8	131.0	0.2
L	15.549	400	3,114	2.4	131.3	131.3	131.6	0.3
M	16.043	393	2,251	4.0	132.8	132.8	133.1	0.3
N	16.457	240	2,196	4.1	135.5	135.5	136.1	0.6
O	16.122	379	1,864	4.5	137.5	137.5	138.5	1.0
P	17.100	650	5,162	1.6	138.7	138.7	139.6	0.9
Q	17.497	216	1,570	5.3	139.6	139.6	140.1	0.5
R	18.145	336	1,169	4.7	145.8	145.8	146.8	1.0
S	18.466	654	4,457	1.7	147.9	147.9	148.7	0.8
T	18.807	519	4,612	1.7	148.5	148.5	149.3	0.8
U	19.140	525	4,141	1.9	148.9	148.9	149.7	0.8
V	19.564	315	1,109	3.4	149.8	149.8	150.4	0.6
W	19.980	187	1,810	3.1	151.4	151.4	152.3	0.9
X	20.358	250	1,809	3.2	152.5	152.5	153.4	0.9
Y	20.685	333	1,789	3.2	154.9	154.9	155.7	0.8
Z	21.040	305	2,285	2.5	156.9	156.9	157.9	1.0
AA	21.364	353	1,891	2.8	158.1	158.1	159.1	1.0

[1] Miles about county boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

BESSIES CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
East Tributary of Bessies Creek								
A	0.913	635	2,354	2.10	153.2	153.2	154.1	0.9
B	1.213	275	919	5.3	155.6	155.6	156.2	0.6
C	1.783	1,246	6,177	0.7	159.9	159.9	160.9	1.0
D	2.194	660	1,810	2.1	161.9	161.9	162.8	0.9
E	3.360	493	1,119	2.7	180.0	180.0	180.7	0.7
Birch Creek								
A	0.160	340	3,759	2.2	232.5	232.5	233.5	1.0
B	1.290	420	4,483	1.7	237.7	237.7	238.7	1.0
C	2.370	253	1,621	4.2	246.1	246.1	247.1	1.0
D	3.120	534	4,905	1.2	251.2	251.2	252.2	1.0
E	4.170	223	1,691	2.6	254.9	254.9	255.9	1.0
F	4.890	321	2,056	1.8	262.6	262.6	263.6	1.0
West Tributary of Birch Creek								
A	0.110	227	1,949	1.4	252.7	252.7	253.7	1.0
B	1.060	203	685	3.3	259.6	259.6	260.3	0.7
C	1.780	118	635	2.0	270.6	270.6	271.4	0.8

[1] Miles above mouth

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

EAST TRIBUTARY OF BESSIES CREEK - BIRCH CREEK - WEST TRIBUTARY OF BIRCH CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Blasingame Creek								
A-J[2]	*	*	*	*	*	*	*	*
K	25,018[1]	253	792	5.3	180.5	180.5	181.5	1.0
L	26,249[1]	306	773	4.8	183.5	183.5	184.0	0.5
M	27,192[1]	179	630	5.4	184.9	184.9	185.4	0.5
N	28,102[1]	415	1,137	4.2	186.9	186.9	187.6	0.7
O	29,183[1]	371	1,138	3.4	188.7	188.7	189.5	0.8
P	30,161[1]	371	978	3.5	191.4	191.4	191.7	0.8
Q	31,353[1]	372	981	3.6	192.9	192.9	193.7	0.8
R	32,560[1]	480	834	0.5	195.9	195.9	196.2	0.3
S	33,807[1]	385	835	3.8	197.9	197.9	198.1	0.3
T	34,510[1]	230	647	5.2	199.9	199.9	200.7	0.8
U	35,332[1]	263	390	4.5	202.6	202.6	203.1	0.5
V	36,421[1]	162	560	3.2	209.3	209.3	209.4	0.1
W	37,624[1]	66	238	3.3	212.2	212.2	212.3	0.2
X	38,743[1]	74	142	4.0	214.9	214.9	215.4	0.5
Y	39,623[1]	87	157	3.8	218.8	218.8	219.1	0.3
Z	40,123[1]	68	352	2.20	224.0	224.0	224.6	0.5
AA	41,182[1]	213	1,507	0.5	230.2	230.2	231.0	0.8
AB	42,221[1]	98	462	0.9	230.3	230.3	231.1	0.8
AC	43,571[1]	14	83	1.7	232.0	232.0	232.2	0.2

[1] Stream distance in feet above confluence with Brazos River

[2] Floodway not calculated

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

BLASINGAME CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Brazos River (West of Brookshire)								
A	139.71[1]	3,500[2]	30,177	6.0	116.7	116.7	117.7	1.0
B	141.17[1]	3,000[2]	36,464	5.0	118.6	118.6	119.5	0.9
C	142.00[1]	2,600[2]	30,927	5.9	119.5	119.5	120.5	1.0
D	142.98[1]	725[2]	20,199	9.0	120.7	120.7	121.6	0.9
E	143.14[1]	845[2]	19,552	9.3	121.0	121.0	121.8	0.8
F	143.22[1]	768[2]	23,294	7.8	121.8	121.8	122.6	0.8
G	144.19[1]	950[2]	25,774	7.0	122.9	122.9	123.6	0.7
H	145.46[1]	1,160[2]	28,031	6.5	124.2	124.2	125.0	0.8
I	147.11[1]	1,600[2]	34,380	5.3	125.7	125.7	126.5	0.8
J	148.25[1]	2,500[2]	33,889	5.3	126.3	126.3	127.2	0.9
K	148.95[1]	2,700[2]	31,288	5.8	127.1	127.1	128.1	1.0

[1] Miles above confluence with Intercoastal Waterway

[2] This width extends beyond county boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

BRAZOS RIVER (WEST OF BROOKSHIRE)

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Brazos River (West of Hempstead)								
A	0.000	4,965[2]	102,255	2.0	162.2	162.2	163.2	1.0
B	0.587	5,121[2]	97,480	2.1	162.9	162.9	163.9	1.0
C	1.228	4,930[2]	118,296	1.7	163.4	163.4	164.4	1.0
D	2.121	6,490[2]	134,520	1.5	163.8	163.8	164.8	1.0
E	2.594	6,766[2]	123,149	1.1	164.0	164.0	165.0	1.0
F	4.659	4,931[2]	106,090	2.0	165.0	165.0	166.0	1.0
G	6.174	15,368[2]	238,197	0.9	165.7	165.7	166.7	1.0
H	7.178	12,404[2]	229,331	0.9	165.9	165.9	166.9	1.0
I	7.765	11,630[2]	130,862	1.6	166.0	166.0	167.0	1.0
J	10.454	10,300[2]	150,926	1.4	167.4	167.4	168.4	1.0
K	12.384	11,055[2]	140,150	1.5	168.4	168.4	169.4	1.0
L	13.945	10,610[2]	125,297	1.7	169.5	169.5	170.5	1.0
Brookshire Creek								
A	0.000	660[3]	3,386	1.9	118.4	118.4	119.4	1.0
B	0.230	496	3,372	1.9	121.8	121.8	122.8	1.0
C	0.980	94	855	7.4	127.3	127.3	128.0	0.7
D	1.767	711	2,623	2.2	135.2	135.2	136.0	0.8
E	2.322	229	1,592	3.3	144.3	144.3	145.3	1.0
F	2.550	188	1,467	3.6	147.0	147.0	147.9	0.9
G	3.001	80	782	6.4	152.0	152.0	152.8	0.8
H	3.513[1]	694[3]	3,106	1.6	159.2	159.2	160.2	1.0
I	3.526[1]	551[3]	2,989	1.7	161.6	161.6	161.9	0.3

[1] Miles above downstream limit of detailed study

[2] This width extends beyond county boundary

[3] Floodway lies outside county boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

BRAZOS RIVER (WEST OF HEMPSTEAD) - BROOKSHIRE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Brookshire Creek (continued)								
J	3.545[1]	1,073[3]	6,181	0.8	161.6	161.6	162.1	0.5
K	3.674[1]	1,073[3]	5,831	0.9	161.6	161.6	162.2	0.6
L	4.110[1]	950[3]	3,466	1.3	161.7	161.7	162.7	1.0
West Fork of Brookshire Creek								
A	1.000[2]	168	657	2.4	117.0	117.0	118.0	1.0
B	1.140[2]	73	301	5.2	118.9	118.9	119.7	0.8
C	1.700[2]	53	412	3.8	130.0	130.0	131.0	1.0
D	1.900[2]	49	393	4.0	133.3	133.3	134.0	0.7
E	2.130[2]	33	147	8.2	139.6	139.6	140.1	0.5
F	3.070[2]	21[4]	96	2.4	158.1	158.1	158.1	0.0
Brookshire Creek Drainage Ditch								
A	0.120[5]	16	85	3.9	156.0	156.0	156.5	0.5
B	0.190[5]	15	78	4.1	157.2	157.2	157.8	0.6
C	0.250[5]	136	207	1.5	157.7	157.7	158.4	0.7

[1] Miles above downstream limit of detailed study
[2] Miles above county boundary
[3] This width extends beyond county boundary
[4] Floodway lies outside county boundary
[5] Miles above mouth

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

BROOKSHIRE CREEK - WEST FORK OF BROOKSHIRE CREEK - BROOKSHIRE CREEK DRAINAGE DITCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Brushy Creek								
A	0.150[1]	281	2,253	2.9	211.0	211.0	211.9	0.9
B	0.743[1]	279	2,163	2.9	216.1	216.1	217.1	1.0
C	1.880[1]	285	2,167	2.7	224.4	224.4	225.4	1.0
D	2.590[1]	589	2,319	2.4	229.9	229.9	230.8	0.9
E	4.284[1]	399	2,425	1.9	244.4	244.4	245.3	0.9
F	5.150[1]	292	1,688	2.5	250.7	250.7	251.6	0.9
G	6.443[1]	547	1,870	2.0	261.2	261.2	262.1	0.9
H	7.120[1]	492	2,384	1.5	265.0	265.0	265.9	0.9
I	7.770[1]	165	609	5.3	271.0	271.0	271.8	0.8
J	8.370[1]	836	3,426	0.9	275.8	275.8	276.8	1.0
K	8.890[1]	425	1,545	1.7	278.6	278.6	279.5	0.9

[1] Miles above downstream limit of detailed study

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

BRUSHY CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[3] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Cane Island Branch								
A	449	310/0	1,425	2.4	131.7[2]	129.1	130.1	1.0
B	1,594	500/0	2,844	1.2	132.7[2]	130.0	131.0	1.0
C	2,519	450/0	3,017	1.1	133.2[2]	130.3	131.3	1.0
D	2,883	450/0	1,577	2.1	133.1[2]	130.4	131.3	0.9
E	3,345	450/0	1,650	2.1	133.2[2]	131.0	131.9	0.9
F	4,258	157/0	1,248	2.7	133.2[2]	133.0	133.8	0.9
G	4,820	278/0	1,180	2.9	133.7	133.7	134.2	0.5
H	5,085	292/0	1,068	3.2	133.6	133.6	134.6	1.0
I	5,961	300/0	1,581	2.1	135.2	135.2	136.1	0.9
J	6,777	245/0	1,012	3.3	136.2	136.2	137.0	0.8
K	7,600	260/0	1,385	2.4	137.8	137.8	138.7	0.9
L	8,507	67/67	631	5.3	138.3	138.3	139.2	0.9
M	9,516	182/182	1,182	2.8	139.5	139.5	140.4	0.9
N	10,517	130/130	878	3.8	140.5	140.5	141.1	0.9
O	11,304	330/330	1,302	2.5	141.0	141.0	141.9	0.9
P	11,622	430/430	1,853	1.8	141.4	141.4	142.4	1.0
Q	12,591	470/310	1,991	1.7	141.9	141.9	142.9	1.0
R	13,458	445/6	1,765	1.9	142.5	142.5	143.3	0.8
S	14,162	300/115	1,303	2.5	143.2	143.2	144.2	1.0
T	15,767	420/420	1,762	1.8	144.9	144.9	145.8	0.9
U	16,358	460/460	1,773	1.8	145.2	145.2	146.2	1.0
V	16,772	200/200	1,086	2.9	145.6	145.6	146.5	0.9
W	17,776	180/180	1,007	3.2	146.6	146.6	147.5	0.9

[1] Stream distance in feet above confluence with Willow Fork Buffalo Bayou

[2] Elevation computed with consideration of backwater from Willow Fork Buffalo Bayou

[3] Width/width within county boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

CANE ISLAND BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Cane Island Branch (continued)								
X	18,217[1]	245/0	1,078	3.0	147.1	147.1	148.0	0.9
Y	19,118[1]	235/0	1,160	2.7	148.1	148.1	149.0	0.9
Z	20,143[1]	200/0	1,125	2.8	149.2	149.2	150.2	1.0
AA	21,176[1]	480/0	1,635	1.9	151.2	151.2	152.1	0.9
AB	22,196[1]	500/0	1,896	1.7	152.6	152.6	153.6	1.0
AC	23,183[1]	285/0	1,697	1.8	153.8	153.8	154.5	0.7
AD	24,264[1]	250/0	1,272	2.4	154.8	154.8	155.4	0.6
AE	25,327[1]	290/0	1,752	1.8	155.7	155.7	156.4	0.7
AF	26,206[1]	650/0	2,679	1.1	156.2	156.2	157.1	0.9
AG	26,873[1]	675/0	2,276	1.3	156.6	156.6	157.5	0.9
AH	27,141[1]	605/0	2,158	1.4	156.7	156.7	157.7	1.0
AI	27,968[1]	700/0	2,046	1.5	157.8	157.8	158.5	0.7
AJ	29,093[1]	850/0	2,599	1.2	158.4	158.4	159.3	0.9

[1] Stream distance in feet above confluence with Willow Fork Buffalo Bayou

[2] Width/width within county boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

CANE ISLAND BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Cedar Creek								
A	0.000[1]	138	1,038	3.3	242.3	242.3	243.2	0.9
B	0.440[1]	95	730	4.2	246.6	246.6	247.6	1.0
C	0.970[1]	43	288	6.2	265.0	265.0	265.5	0.5
South Fork of Cedar Creek								
A	0.543[2]	44	250	6.0	256.5	256.5	257.5	1.0
B	0.660[2]	36	140	7.7	259.6	259.6	260.4	0.8
Clear Creek								
A	0.000[1]	751	7,219	2.3	176.0	176.0	177.0	1.0
B	1.150[1]	603	6,133	2.7	182.9	182.9	183.9	1.0
C	1.177[1]	557	5,276	3.1	183.0	183.0	184	1.0
D	1.338[1]	246	2,648	6.2	183.8	183.8	184.8	1.0
E	1.709[1]	926	9,218	1.3	185.2	185.2	186.1	0.9
F	2.547[1]	174	1,580	7.1	193.9	193.9	194.7	0.8
G	3.191[1]	696	5,297	1.9	195.6	195.6	196.6	1.0
H	3.854[1]	560	3,294	2.9	199.7	199.7	200.5	0.8
I	4.820[1]	250	1,563	5.5	209.0	209.0	209.9	0.9
J	5.956[1]	235	1,902	4.3	219.0	219.0	219.9	0.8
K	6.770[1]	210	1,415	3.4	226.1	226.1	227.0	0.9
L	7.319[1]	230	1,363	3.4	231.1	231.1	231.9	0.8
M	8.265[1]	101	840	4.9	241.5	241.5	242.4	0.9
N	8.454[1]	166	1,214	3.2	243.5	243.5	244.4	0.9

[1] Miles above downstream limit of detailed study

[2] Miles above mouth

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

CEDAR CREEK - SOUTH FORK OF CEDAR CREEK - CLEAR CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
North Branch of Clear Creek								
A	0.570[1]	145	834	3.6	216.0	216.0	217.0	1.0
B	1.330[1]	211	1,435	1.6	226.7	226.7	227.7	1.0
C	2.160[1]	140	601	3.0	236.3	236.3	237.2	0.9
Cypress Creek								
A	254,087[2]	7,187/2,643[3]	17,767	1.3	170.7	170.7	171.4	0.7
B	256,348[2]	7,148/1,885[3]	19,262	1.2	171.5	171.5	172.3	0.8
C	259,337[2]	5,774/1,784[3]	15,098	1.6	172.8	172.8	173.5	0.7
D	262,434[2]	5,902/1,926[3]	19,471	1.3	174.8	174.8	175.7	0.9
E	264,165[2]	5,713/2,226[3]	16,504	1.2	175.6	175.6	176.5	0.9
F	266,065[2]	5,563/2,798[3]	13,790	1.4	176.5	176.5	177.0	1.0
G	268,288[2]	5,594/3,265[3]	14,649	1.3	178.4	178.4	179.3	0.9
H	270,356[2]	4,590/2,677[3]	9,989	1.9	180.7	180.7	181.3	0.6
I	272,601[2]	5,112/1,762[3]	12,719	1.5	183.6	183.6	184.4	0.8
J	274,030[2]	3,812/830[3]	8,963	2.1	184.9	184.9	185.5	0.6

[1] Miles above mouth

[2] Feet above confluence with Spring Creek

[3] Width/width within county boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

NORTH BRANCH OF CLEAR CREEK - CYPRESS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Gladdish Creek								
A	0.190	138	1,160	4.6	220.2	220.2	221.2	1.0
B	0.910	199	1,292	3.9	227.1	227.1	228.1	1.0
C	1.520	149	1,033	4.8	233.6	233.6	234.5	0.9
D	2.510	178	1,085	3.8	246.7	246.7	247.1	0.4
E	2.580	115	1,176	3.5	249.2	249.2	249.2	0.0
F	3.196	219	1,117	3.1	253.6	253.6	254.5	0.9
G	4.196	474	3,075	1.0	265.2	265.2	266.2	1.0
H	4.800	236	787	3.3	270.9	270.9	271.8	0.9
I	5.370	127	1,006	2.1	276.4	276.4	277.3	0.9
North Branch of Gladdish Creek								
A	0.323	60	91	7.2	250.3	250.3	250.5	0.2
B	0.463	40	205	3.2	251.0	251.0	251.9	0.9
C	0.577	38	182	3.6	253.7	253.7	254.6	0.9
D	0.745	60	199	2.7	257.6	257.6	258.6	1.0

[1] Miles above mouth

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

GLADDISH CREEK - NORTH BRANCH OF GLADDISH CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Irons Creek								
A	0.280[1]	1,534	5,204	2.6	123.5	121.3[2]	122.3	1.0
B	0.974[1]	2,189	7,936	1.7	124.1	123.1[2]	124.1	1.0
C	1.400[1]	256	4,780	2.8	124.2	123.6[2]	124.5	0.9
D	2.030[1]	540	6,357	2.3	124.7	124.6[2]	125.4	0.8
E	2.370[1]	380	5,812	2.5	125.2	125.2	125.9	0.7
F	3.183[1]	274	5,453	2.7	126.2	126.2	127.2	1.0
G	4.323[1]	336	5,589	2.5	128.2	128.2	129.1	0.9
H	4.910[1]	430	4,440	3.2	129.5	129.5	130.4	0.9
I	5.530[1]	740	8,768	1.6	130.4	130.4	131.4	1.0
Kellner Creek/ Tributary to Kellner Creek								
A	0.038[3]	80	461	6.4	122.0	118.6[4]	119.6	1.0
B	0.114[3]	81	614	4.8	122.1	120.6[4]	121.1	0.5
C	0.215[3]	120	1,108	2.7	122.2	121.3[4]	122.3	1.0
D	0.312[3]	83	553	4.5	122.4	121.8[4]	122.3	0.5
E	0.710[3]	50	104	6.5	134.2	134.2	134.4	0.2
F	1.180[3]	40	145	1.5	163.9	163.9	163.9	0.0
G	1.506[3]	223	95	0.9	163.9	163.9	164.2	0.3
H	1.797[3]	18	65	0.6	163.9	163.9	164.2	0.3

[1] Miles above confluence with Brazos River (West of Brookshire)

[2] Elevation computed without consideration of backwater effects from Brazos River

[3] Miles above Interstate Route 10 westbound rest area exit ramp

[4] Elevation computed without consideration of backwater effects from Bessies Creek

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

IRONS CREEK - KELLNER CREEK/TRIBUTARY TO KELLNER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Mound Creek								
A	796	3,770/0[2]	6,694	2.4	185.5	185.5	186.5	1.0
B	2,871	2,955/0[2]	8,354	1.9	188.9	188.9	189.8	0.9
C	4,959	4,457/0[2]	12,906	1.3	191.1	191.1	191.8	0.7
D	7,093	3,986/0[2]	8,905	1.8	192.3	192.3	193.1	0.8
E	9,299	3,539/0[2]	12,083	1.3	193.7	193.7	194.7	1.0
F	11,632	2,901/0[2]	9,704	1.6	196.2	196.2	197.1	0.9
G	13,585	3,388/312[2]	8,871	1.7	197.4	197.4	198.3	0.9
H	15,857	2,026/526[2]	8,514	1.8	198.1	198.1	199.0	0.9
I	17,909	1,477/1,149[2]	6,785	2.3	201.0	201.0	201.7	0.7
J	19,747	1,509	7,606	2.0	202.8	202.8	203.5	0.7
K	21,483	1,549	7,495	2.0	204.2	204.2	205.0	0.8
L	23,736	1,821/1,476[2]	9,921	1.5	206.1	206.1	206.9	0.8
M	25,409	1,446/1,341[2]	8,244	1.8	207.0	207.0	207.8	0.8
N	28,594	1,403/0[2]	6,648	1.8	208.6	208.6	209.3	0.7
O	30,280	1,383/0[2]	6,905	1.8	209.8	209.8	210.6	0.8
P	31,160	1,125/0[2]	5,274	2.3	210.2	210.2	211.0	0.8
Q	33,233	1,328/0[2]	6,270	1.9	211.5	211.5	212.4	0.9
R	35,353	768/0[2]	4,863	2.4	213.2	213.2	214.1	0.9
S	37,473	1,176/0[2]	6,330	1.8	215.3	215.3	216.2	0.9
T	39,923	734/0[2]	4,853	2.3	217.2	217.2	218.0	0.8
U	41,549	990/0[2]	5,203	2.0	218.0	218.0	218.7	0.7
V	43,671	927/0[2]	4,530	2.3	219.6	219.6	220.2	0.6
W	45,058	1,895/0[2]	5,991	1.7	222.0	222.0	222.7	0.7
X	45,830 (8.68)	1,050	6,567	1.6	223.7	223.7	224.7	1.0

[1] Stream distance in feet (miles) above confluence with Cypress Creek

[2] Width/width within county boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

MOUND CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Mound Creek (continued)								
Y	46,992 (8.90)[1]	915	5,087	2.0	224.7	224.7	225.7	1.0
Z	47,520 (9.00)[1]	512	2,903	3.4	225.9	225.9	226.9	1.0
AA	48,206 (9.13)[1]	1,738	6,814	1.4	228.4	228.4	229.4	1.0
AB	50,688 (9.60)[1]	1,260	7,330	0.9	229.8	229.8	230.4	0.6
AC	52,324 (9.91)[1]	1,114	5,549	1.2	230.1	230.1	230.7	0.6
AD	53,750 (10.18)[1]	733	3,281	2.0	230.8	230.8	231.5	0.7
AE	56,548 (10.71)[1]	450	1,924	2.0	234.1	234.1	235.1	1.0
AF	59,347 (11.24)[1]	387	1,594	2.1	237.3	237.3	238.3	1.0
AG	61,723 (11.69)[1]	629	2,158	1.4	239.8	239.8	240.8	1.0
AH	62,251 (11.79)[1]	290	1,086	2.8	240.7	240.7	241.7	1.0
AI	64,204 (12.16)[1]	335	1,457	1.9	244.4	244.4	245.4	1.0
AJ	67,108 (12.71)[1]	602	1,227	2.1	249.4	249.4	250.4	1.0
AK	68,640 (13.00)[1]	536	2,021	1.2	253.4	253.4	254.0	0.6
AL	69,854 (13.23)[1]	357	1,771	1.2	255.7	255.7	256.1	0.4
AM	71,966 (13.63)[1]	634	878	2.1	256.4	256.4	257.2	0.8
East Fork of Mound Creek								
A	1,907[2]	224/224[3]	831	3.7	223.3	223.3	224.0	0.7
B	4,283.4[2]	158/158[3]	517	4.6	229.3	229.3	230.1	0.8
C	5,284.9[2]	220/220[3]	834	2.4	233.0	233.0	233.9	0.9

[1] Stream distance in feet (miles) above confluence with Cypress Creek

[2] Stream distance in feet above confluence with Mound Creek

[3] Width/width within county boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

MOUND CREEK - EAST FORK OF MOUND CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
East Fork of Mound Creek (continued)								
D	7,568.5[1]	133	682	2.9	239.4	239.4	240.1	0.7
E	8,408.9[1]	349	1,202	1.5	243.3	243.3	243.8	0.5
F	9,798.2[1]	188/0[2]	1,190	1.5	248.7	248.7	249.6	0.9
G	10,584.8[1]	371/0[2]	901	2.3	250.2	250.2	250.9	0.7
H	11,760.9[1]	92/0[2]	430	3.9	257.2	257.2	257.8	0.6
I	13,224.5[1]	251/0[2]	540	3.0	265.3	265.3	266.2	0.9
Middle Fork of Mound Creek								
A	0.000[3]	1062	5,217	0.4	229.4	229.4[4]	230.3	0.9
B	0.163[3]	705	3,999	0.6	229.9	229.5[4]	230.4	0.9
C	0.240[3]	642	3,767	0.6	229.9	229.5[4]	230.4	0.9
D	0.370[3]	556	2,850	0.7	229.9	229.6[4]	230.5	0.9
E	0.500[3]	360	1,252	1.6	229.9	229.7[4]	230.6	0.9
F	0.550[3]	192	645	3.2	229.9	229.9	230.8	0.9
G	0.736[3]	346	1,438	1.4	232.4	232.4	233.4	1.0
H	0.900[3]	134	412	4.6	233.6	233.6	234.5	0.9
I	1.040[3]	87	344	5.5	235.1	235.1	236.1	1.0
J	1.197[3]	181	471	4.0	238.2	238.2	238.8	0.6

[1] Stream distance in feet above confluence with Mound Creek

[2] Width/width within county boundary

[3] Miles above the mouth

[4] Elevation computed without consideration of backwater effects from Mound Creek

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

EAST FORK OF MOUND CREEK - MIDDLE FORK OF MOUND CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Middle Fork of Mound Creek (continued)								
K	1.220	526	3,103	0.6	242.0	242.0	242.9	0.9
L	1.230	531	3,109	0.5	242.0	242.0	242.9	0.9
M	1.300	644	1,626	1.0	242.2	242.2	243.1	0.9
N	1.360	737	3,271	0.5	242.2	242.2	243.1	0.9
O	1.670	745	1,272	1.1	243.2	243.2	243.6	0.4
P	1.950	149	201	4.6	247.4	247.4	248.4	1.0
West Fork of Mound Creek								
A	0.324	726	2,980	1.4	231.6	231.6	232.4	0.8
B	0.440	71	434	9.9	232.0	232.0	232.9	0.9
C	0.640	355	1,332	3.2	237.5	237.5	237.8	0.3
D	0.830	293	1,283	3.4	238.8	238.8	239.4	0.6
E	0.834	218	1,554	2.8	239.5	239.5	240.3	0.8
F	0.920	660	8,891	0.5	239.7	239.7	240.6	0.9
G	1.081	243	636	6.3	241.3	241.3	241.6	0.3
H	1.140	818	5,742	0.7	245.4	245.4	246.2	0.8
I	1.230	565	4,063	1.0	245.5	245.5	246.3	0.8
South Fork of Mound Creek								
A	0.080	175	531	2.4	236.8	236.8	237.8	1.0
B	0.370	143	330	3.9	243.7	243.7	244.6	0.9
C	0.840	131	378	2.5	255.1	255.1	256.1	1.0

[1] Miles above mouth

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

MIDDLE FORK OF MOUND CREEK - WEST FORK OF MOUND CREEK - SOUTH FORK OF MOUND CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Tributary 7.62 to Mound Creek								
A	1279[1]	32	152	5.3	218.0	216.6[2]	216.7	0.1
B	2169[1]	95	311	1.9	219.6	219.6	219.3	0.4
C	4,207[1]	230	770	2.7	223.8	223.8	224.7	0.9
Ponds Creek								
A	0.322[3]	268	3,332	2.6	185.1	185.1	186.1	1.0
B	0.672[3]	660	3,951	1.8	186.5	186.5	187.5	1.0
C	1.619[3]	227	1,750	4.0	197.4	197.4	198.4	1.0
D	2.045[3]	512	2,747	2.5	201.5	201.5	202.4	0.9
E	2.311[3]	194	1,247	5.4	204.6	204.6	205.4	0.8
F	3.542[3]	268	1,962	2.9	217.0	217.0	217.9	0.9
G	3.821[3]	279	2,075	2.7	219.0	219.0	219.9	0.9
H	4.223[3]	235	1,638	3.0	222.1	222.1	223.0	0.9
I	4.476[3]	130	1,068	4.5	224.7	224.7	225.7	1.0
J	5.402[3]	98	861	5.1	235.3	235.3	236.0	0.7
K	6.070[3]	194	1,212	3.1	241.7	241.7	242.4	0.7
L	6.439[3]	132	824	3.9	245.2	245.2	246.1	0.9
M	6.951[3]	96	435	4.3	251.4	251.4	252.3	0.9
N	7.140[3]	102	464	4.0	254.4	254.4	255.2	0.8
O	7.386[3]	94	463	4.0	258.6	258.6	259.1	0.5
P	7.898[3]	244	598	1.8	267.2	267.2	267.6	0.4

[1] Feet above confluence with Mound Creek

[2] Elevation computed without consideration of backwater effects from Mound Creek

[3] Miles above the mouth

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

TRIBUTARY 7.62 TO MOUND CREEK - PONDS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
East Tributary of Ponds Creek								
A	0.110[1]	55	362	4.4	247.2	242.2[3]	24..5	1.0
B	0.436[1]	72	201	8.0	251.6	251.6	251.6	0.0
C	0.739[1]	61	331	4.3	257.4	257.4	258.3	0.9
D	1.335[1]	54	132	8.2	268.8	268.8	269	0.2
E	1.818[1]	61	311	2.8	279.0	279.0	279.8	0.8
F	2.273[1]	24	65	3.9	291.8	291.8	292.0	0.2
North Tributary of Ponds Creek								
A	0.190[1]	54	101	8.5	263.4	263.4	263.9	0.5
Snake Creek								
A	0.000[2]	210	683	4.0	138.9	138.9	139.8	0.9
B	0.235[2]	45	377	6.0	143.6	143.6	144.6	1.0
C	0.253[2]	66	571	3.9	145.8	145.8	146.5	0.7
D	0.773[2]	441	1,131	3.7	149.0	149.0	149.9	0.9
E	1.262[2]	1,026	2,973	1.2	153.8	153.8	154.8	1.0
F	1.587[2]	844	2,298	1.4	155.4	155.4	156.3	0.9
G	1.909[2]	794	1,584	1.8	158.3	158.3	159.2	0.9
H	2.120[2]	877	1,917	1.3	160.2	160.2	161.1	0.9
I	2.382[2]	1,837	2,784	0.9	161.2	161.2	162.1	0.9

[1] Miles above the mouth

[2] Miles above the downstream limit of detailed study

[3] Elevation computed without consideration of backwater effects from Ponds Creek

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

EAST TRIBUTARY OF PONDS CREEK - NORTH TRIBUTARY OF PONDS CREEK - SNAKE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Spring Creek								
A	284,885	585/160	4,637	2.1	204.6	204.6	205.4	0.8
B	286,811	685/660	6,038	1.6	206.7	206.7	207.7	1.0
C	288,255	715/120	5,641	1.7	208.3	208.3	209.3	1.0
D	290,617	640/630	5,824	1.7	210.4	210.4	211.4	1.0
E	292,719	740/500	7,664	1.2	212.4	212.4	213.4	1.0
F	295,217	1,422/1,327	8,952	1.1	213.9	213.9	214.9	1.0
G	298,614	785/20	6,537	1.4	217.7	217.7	218.6	0.9
H	300,588	790/421	5,439	1.7	219.3	219.3	220.3	1.0
I	301,169	410/300	3,630	1.9	219.6	219.6	220.6	1.0
J	305,093	355/75	3,259	2.0	224.4	224.4	225.4	1.0
K	307,032	545/115	4,297	1.5	225.6	225.6	226.6	1.0
L	308,858	360/25	2,523	2.5	226.4	226.4	227.4	1.0
M	310,621	340/260	2,777	2.2	229.6	229.6	230.5	0.9
N	313,556	530/470	4,407	1.4	233.4	233.4	234.3	0.9
O	314,686	480/445	3,271	1.9	234.1	234.1	334.9	0.8
P	318,256	550/301	4,116	1.4	238.1	238.1	239.2	1.1
Q	319,540	325/20	2,234	2.6	239.2	239.2	240.2	1.0
R	322,050	530/20	3,751	1.5	242.3	242.3	243.3	1.0
S	324,126	740/290	4,305	1.3	244.0	244.0	244.9	0.9
T	324,699	755/360	4,794	1.2	244.8	244.8	245.8	1.0
U	327,681	1,155/1080	5,725	0.9	246.7	246.7	247.6	0.9
V	329,870	1,055/317	5,886	0.9	247.8	247.8	248.7	0.9
W	331,810	1,110/1,080	3,834	1.4	248.7	248.7	249.6	0.9
X	333,742	620/600	3,073	1.6	250.9	250.9	251.7	0.8
Y	337,168	965/59	2,649	1.9	252.6	252.6	253.5	0.9

[1] Stream distance in feet above confluence with G103-00-00 (West Fork San Jacinto River)

[2] Width/width within county boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

SPRING CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Spring Creek (continued)								
Z	337,922	954/933	3,351	1.4	254.3	254.3	255.2	0.9
AA	340,800	845/545	4,908	0.9	257.0	257.0	258.0	1.0
AB	342,135	561/221	2,521	1.8	257.6	257.6	258.6	1.0
AC	346,570	370/350	1,661	2.5	261.5	261.5	262.4	0.9
AD	348,411	495/475	2,454	1.6	265.2	265.2	266.0	0.8
AE	351,184	495/300	2,324	1.6	267.4	267.4	268.4	1.0
AF	352,449	625/105	2,287	1.4	268.5	268.5	269.4	0.9
AG	354,502	410/390	1,579	2.0	270.5	270.5	271.4	0.9
AH	355,819	455/440	1,385	2.0	272.4	272.4	273.4	1.0
AI	357,928	295/15	948	2.6	274.6	274.6	275.6	1.0
AJ	358,760	90/40	615	4.1	277.4	277.4	277.9	0.5
AK	360,651	517/300	1,637	1.3	278.8	278.8	279.7	0.9
AL	362,623	380/30	1,153	1.7	281.8	281.8	282.8	1.0
AM	363,768	70/35	383	4.2	284.0	284.0	284.5	0.5
AN	364,609	45/25	296	5.4	286.8	286.8	287.6	0.8
AO	366,281	257/55	1,451	0.8	288.6	288.6	289.4	0.8
AP	366,584	210/50	902	1.3	289.7	289.7	290.4	0.7
AQ	367,287	340/15	963	1.1	290.3	290.3	291.3	1.0
AR	367,736	155/105	685	1.6	291.3	291.3	292.3	1.0

[1] Stream distance in feet above confluence with G103-00-00 (West Fork San Jacinto River)

[2] Width/width within county boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

SPRING CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Threemile Creek								
A	0.283	466	2,916	3.7	211.0	211.0	211.8	0.8
B	0.720	320	2,246	4.7	215.8	215.8	216.6	0.8
C	1.163	768	5,408	1.9	219.6	219.6	220.5	0.9
D	1.563	449	3,624	2.8	222.6	222.6	223.5	0.9
E	2.370	1,462	6,917	1.4	226.9	226.9	227.7	0.8
F	3.030	1,040	5,558	1.8	229.6	229.6	230.4	0.8
G	3.600	613	4,535	2.2	231.8	231.8	232.6	0.8
H	4.300	834	5,078	1.9	234.7	234.7	235.5	0.8
I	5.130	1,250	5,550	1.6	238.0	238.0	238.8	0.8
J	5.810	1,126	5,465	1.8	241.2	241.2	242.2	1.0
K	6.043	830	4,245	2.1	242.9	242.9	243.9	1.0
L	6.783	951	5,071	1.7	247.9	247.9	248.7	0.8
M	7.593	396	3,013	2.6	253.7	253.7	254.5	0.8
N	8.483	1,046	7,470	1.0	259.1	259.1	259.9	0.8
O	9.344	796	2,940	2.4	261.6	261.6	262.4	0.8
P	10.190	685	3,263	1.9	267.0	267.0	267.7	0.7
Q	10.800	749	3,794	1.6	270.6	270.6	271.4	0.8
R	11.273	919	5,759	1	274.8	274.8	275.6	0.8
S	11.603	824	5,369	0.9	275.3	275.3	276.1	0.8
T	11.930	537	3,413	1.5	275.9	275.9	276.7	0.8
U	12.310	537	1,947	2.6	278.2	278.2	279.0	0.8
V	12.773	595	2,893	0.9	281.2	281.2	282.0	0.8
W	13.070	750	2,682	1.0	282.0	282.0	282.8	0.8

[1] Miles above county line

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

THREEMILE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Threemile Creek (continued)								
X	13.220[1]	470	1,262	0.7	282.4	282.4	283.2	0.8
Y	13.350[1]	219	469	1.9	283.1	283.1	283.9	0.8
Z	13.560[1]	216	467	1.9	287.3	287.3	288.1	0.8
North Branch of Threemile Creek								
A	0.470[2]	296	1,300	3.1	278.3	278.3	279.3	1.0
B	0.766[2]	1,100	5,521	0.6	284.4	284.4	285.3	0.9
C	1.330[2]	661	899	2.5	285.3	285.3	286.2	0.9
D	1.610[2]	308	960	2.3	294.7	294.7	295.5	0.8
E	1.750[2]	236	735	1.7	297.0	297.0	297.8	0.8
F	1.950[2]	125	407	3.1	299.3	299.3	300.3	1.0
South Branch of Threemile Creek								
A	0.190[2]	249	1,155	1.6	275.5	275.5	276.5	1.0
B	0.470[2]	137	788	2.2	217.6	217.6	278.6	1.0
Walnut Creek								
A	0.000[3]	653[4]	5,441	2.8	222.7	222.7	223.5	0.8
B	0.480[3]	619	5,585	2.7	225.5	225.5	226.3	0.8
C	1.190[3]	276	3,224	4.5	230.1	230.1	230.8	0.7

[1] Miles above county line
[2] Miles above the mouth
[3] Miles from downstream of county boundary
[4] This width extends beyond county boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

THREEMILE CREEK - NORTH BRANCH OF THREEMILE CREEK - SOUTH BRANCH OF THREEMILE CREEK - WALNUT CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Walnut Creek (continued)								
D	1.800[1]	1,000	4,163	2.4	233.2	233.2	234.1	0.9
E	2.390[1]	521	4,365	2.3	235.9	235.9	236.1	0.2
F	3.160[1]	450	3,069	3.0	241.5	241.5	242.1	0.6
G	4.430[1]	217	2,143	4.2	250.7	250.7	251.1	0.4
H	4.920[1]	538	6,168	1.4	252.3	252.3	252.8	0.5
I	5.810[1]	185	1,310	3.8	254.2	254.2	254.7	0.5
J	6.330[1]	545	2,388	2.1	265.9	265.9	266.7	0.8
K	6.910[1]	150	978	5.1	271.3	271.3	271.4	0.1
L	7.390[1]	370	2,153	2.1	278.5	278.5	279.5	1.0
M	7.560[1]	520	3,266	1.3	279.5	279.5	280.4	0.9
N	8.140[1]	100	541	3.9	281.8	281.8	282.5	0.7
O	8.560[1]	750[2]	3,714	0.6	289.9	289.9	290.9	1.0
P	9.000[1]	80	429	4.5	291.1	291.1	291.5	0.4
Q	9.280[1]	90	452	4.2	299.3	299.3	299.5	0.2
R	9.470[1]	204[2]	818	2.1	306.0	306.0	306.9	0.9

[1] Miles from downstream county boundary

[2] This width extends beyond county boundary

[3] Floodway lies outside county boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

WALNUT CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Willow Fork Buffalo Bayou								
A	0.000	193	2,278	5.1	105.0	105.0	105.4	0.4
B	0.200	195	2,330	5.0	105.6	105.6	105.8	0.2
C	0.400	175	2,024	5.8	106.6	106.6	106.8	0.2
D	0.682	158	1,874	6.2	109.4	109.4	109.5	0.1
E	1.012	161	1,953	6.0	110.3	110.3	110.4	0.1
F	1.302	156	1,856	6.3	111.6	111.6	111.6	0.0
G	1.542	165	1,756	6.7	112.6	112.6	112.6	0.0
H	1.862	129	1,681	6.6	114.0	114.0	114.0	0.0
I	2.272	193	2,158	5.1	116.2	116.2	116.3	0.1
J	2.592	197	1,401	7.9	117.4	117.4	117.6	0.2
K	2.820	650	2,101	5.2	120.6	120.6	121.1	0.5
L	3.540	1,932	11,346	1.0	124.4	124.4	125.4	1.0
M	3.990	2,300	9,448	1.1	125.3	125.3	126.2	0.9
O	4.510	2,200	7,971	0.3	126.2	126.2	127.1	0.9
P	4.630	1,800	7,621	0.4	127.0	127.0	127.8	0.8
Q	4.820	1,444	6,075	1.7	128.5	128.5	129.1	0.6
R	5.080	1,203	5,421	1.9	129.8	129.8	130.5	0.7
S	5.590	1,148	6,990	1.5	131.5	131.5	132.3	0.8
T	5.980	673	5,215	1.3	132.7	132.7	133.6	0.9
U	6.330	1,298	7,224	1.0	133.4	133.4	134.3	0.9
V	6.550	505	1,571	3.6	133.6	133.6	134.7	1.0
W	6.560	506	2,723	2.1	134.0	134.0	135.0	1.0
X	6.690	335	719	7.9	134.5	134.5	134.8	0.4
Y	7.000	708	2,735	1.3	138.5	138.5	139.2	0.7
Z	11.920	1,400	3,710	1.0	139.0	139.0	139.7	0.7

[1] Miles from Grand Parkway (State Route 99)

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

WILLOW FORK BUFFALO BAYOU

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					FEET (NAVD 88, 2001 Adjustment)			
Willow Fork Buffalo Bayou								
AA	12.28	662	1,478	2.3	139.8	139.8	140.3	0.5
AB	12.81	482	1,382	2.4	141.6	141.6	142.0	0.4
AC	13.03	738	2,401	1.4	142.0	142.0	142.6	0.6
AD	13.32	87	648	3.4	142.2	142.2	142.9	0.7
AE	13.52	456	1,134	2.0	143.0	143.0	143.5	0.5
AF	13.79	290	348	6.4	144.6	144.6	144.7	0.1
AG	13.97	2,000	1,696	1.3	146.6	146.6	146.9	0.3
AH	14.14	947/345[2]	1,128	2.0	147.1	147.1	147.5	0.4

[1] Miles from downstream county boundary

[2] Width/width within county boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALLER COUNTY, TEXAS
AND INCORPORATED AREAS

FLOODWAY DATA

WILLOW FORK BUFFALO BAYOU

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 rate 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 depths are shown within this zone.

Zone AE

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

Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 1-percent shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 foot and 3 feet. Average whole-foot depths derived from the detailed hydraulic analyses are shown within this zone.

Zone X

Zone X is the flood insurance rate 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 sq. mi., and areas protected from the 1.0-percent flood by levees. No BFEs or 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 rate 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-percent and 0.2-percent-annual-chance floodplains, floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.
The countywide FIRM presents flooding information for the entire geographic area of Waller County. Previously, FIRMs were prepared for each incorporated community and the unincorporated areas of the County identified as flood-prone. Historical data relating to the maps prepared for each community prior to their inclusion in the initial countywide FIS are presented in Table 7, "Community Map History."

7.0 OTHER STUDIES

Under the Map Modernization Program, FEMA is revising the FIRMs for several counties surrounding Waller County. The FIS for Harris County was completed in 2004. Studies for Montgomery and Fort Bend Counties are under way.

This FIS report either supersedes or is compatible with all previous studies published on streams studied in this report and should be considered authoritative for the 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 FEMA Region VI, Federal Insurance and Mitigation Division, 800 North Loop 288, Denton, Texas 76209.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISION DATE (S)	INITIAL FIRM DATE	FIRM REVISION DATE(S)
Brookshire, City of	May 12, 1977	None	September 2, 1981	None
Hempstead, City of	July 30, 1976	None	June 15, 1981	None
Katy, City of	June 28, 1974	July 9, 1976 January 24, 1978	March 2, 1981	February 8, 1983
Pattison, City of	June 12, 1979	None	February 3, 1982	None
Pine Island, City of	February 18, 2009	None	February 18, 2009	None
Prairie View, City of	March 31, 1981	None	April 15, 1982	None
Waller, City of	November 1, 1974	June 18, 1976	September 14, 1979	None
Waller County, Unincorporated Areas	August 23, 1977	None	December 18, 1986	May 4, 1988

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

9.0 BIBLIOGRAPHY AND REFERENCES

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10.0 REVISION DESCRIPTIONS

This section has been added to provide information regarding significant revisions made since the original FIS was printed. Future revisions may be made that do not result in the republishing of the FIS report. To assure that user is aware of all revisions, it is advisable to contract the community repository of flood hazard data listed on the FIRM index.

10.1 First Revision – May 16, 2019

10.1.1 Acknowledgements

This Physical Map Revision (PMR) revises the map panels associated with the Lower Brazos watershed. It incorporates Risk Mapping, Assessment, and Planning (RiskMAP) products based on the hydrology and hydraulic models that were updated to reflect key changes in the Lower Brazos Watershed. The study update involved one-dimensional limited detail and detailed study streams using HEC-RAS, two-dimensional limited detail study streams using FLO-2D, and model-backed Approximate study streams computed by FLO-2D models. This 2015 Study was a joint effort between FEMA and its mapping partner, RAMPP under FEMA Contract No. order HSFEHQ-09-D-0369. The hydrologic analysis was completed using USACE HEC-HMS computer program. Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied by enhanced methods and updated base methods affecting the communities. Table 8 lists the revised Scope of Study streams for this 2015 Risk MAP Project.

Base map information shown on this FIRM was provided in digital format by Waller County and Houston-Galveston Area Council (H-GAC). This dataset was digitized at a scale of at least 1:24,000 from aerial photography dated 2002 and 2004.The Texas Natural Resources Information System (TNRIS) provided the Texas Department of Transportation (TXDOT) GIS data for community boundaries and transportation layers dated 2015.

10.1.2 Coordination

An final Consultation Coordination Officer's (CCO) Meeting was held on May 9, 2017, and attended by local officials, as well as representatives from the Texas Water Development Board, FEMA Region VI, and RAMPP.

10.1.3 Scope

In this 2015 study update for Waller County, discharges for all new limited detail study streams were based on new hydrologic analysis. These Limited Detail study streams were revised using steady state, one-dimensional (1D) methods and include Alta Vista Bayou, Alta Vista Bayou Tributary, Blasingame Creek, University Bayou, Unnamed Tributary 1-1 to Blasingame Creek, Unnamed Tributary 1 to Blasingame Creek, Unnamed Tributary 2 to Blasingame Creek, and Unnamed Tributary to Clear Creek.

Table 8. Revised Scope of Study- First Revision

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Alta Vista Bayou	Confluence with Ponds Creek	Approximately 460 feet upstream of University Drive	2009 State Regression Equations Region 6	HEC-RAS 4.1	07/21/2015	AE	
Alta Vista Bayou Tributary	Confluence with Alta Vista Bayou	Approximately 0.29 miles upstream of confluence with Alta Vista Bayou	2009 State Regression Equations – Region 6	HEC-RAS 4.1	07/21/2015	AE	
Blasingame Creek	Confluence with Brazos River	Approximately 0.67 miles upstream of St. Marys Street	2009 State Regression Equations – Region 6	HEC-RAS 4.1	07/21/2015	AE	Includes 2.9 miles of detailed floodway study
University Bayou	Confluence with Alta Vista Bayou	Approximately 0.25 miles upstream of T.R. Solomon	2009 State Regression Equations – Region 6	HEC-RAS 4.1	07/21/2015	AE	
Unnamed Tributary 1 to Blasingame Creek	Confluence with Blasingame Creek	Approximately 0.23 miles upstream of Kosse Street	2009 State Regression Equations – Region 6	HEC-RAS 4.1	07/21/2015	AE	
Unnamed Tributary 1-1 to Blasingame Creek	Confluence with Unnamed Tributary 1 to Blasingame Creek	Approximately 0.115 miles upstream of 13th Street	2009 State Regression Equations – Region 6	HEC-RAS 4.1	07/21/2015	AE	
Unnamed Tributary 2 to Blasingame Creek	Confluence with Blasingame Creek	Approximately 200 feet upstream of Calvit Street	2009 State Regression Equations – Region 6	HEC-RAS 4.1	07/21/2015	AE	
Unnamed Tributary to Clear Creek	Confluence with Clear Creek	Approximately 0.246 miles upstream of Shepard Street	2009 State Regression Equations – Region 6	HEC-RAS 4.1	07/21/2015	AE	
West Fork Brookshire Creek	Confluence with Brookshire Creek	Approximately 0.298 miles upstream of Rheman Cutoff Road	HEC-HMS 4.0	FLO-2D Basic 2009.06	10/29/2015	AE	Two-dimensional Modeling

10.1.4 Hydrologic and Hydraulic Analyses

Approximately 2.9 miles of Blasingame Creek was studied using detailed analysis including a floodway.

Regression analysis was performed for ungaged streams to be studied using steady state, 1D hydraulic methods. Regression analysis was also performed for comparison and calibration of the rainfall-runoff hydrologic analyses. The regression analyses were performed in accordance with USGS Scientific Investigation Report (SIR) 2009-5087 (Reference 30).

Regression for Texas utilizes precipitation data rasters to determine the average annual rainfall in a drainage area. The basin mean annual precipitation was determined by clipping the precipitation raster to the sub-basin extents and determining the raster mean value using ArcGIS tools. The USGS SIR 2009-5087 states that any general and authoritative source of mean annual precipitation for any long period is sufficient for substitution in the equation. The precipitation raster dataset was obtained from Oregon State University's Parameter-Elevation Regressions on Independent Slopes Model (PRISM) website, http://www.prism.oregonstate.edu/. The mean annual precipitation data is for the climatological period from 1981 to 2010.

Per FEMA guidance, improved estimates of flood frequency can be obtained on gaged streams by including gage analysis in the hydrologic data development. Stream data is considered as a viable resource if it meets the following criteria:

- Stream gages must have 10 years or more of historic record for general statistical analysis and at least 25 years of record for skew analysis
- Stream gages should not have flood flows appreciably altered by reservoir regulation
- Ungaged cumulative drainage areas must fall within 50 % to 150% of drainage area for a gaged location on the same stream.

The Hydrologic Engineering Center Statistical Software Package (HEC-SSP), Version 2.0, and PeakFQ (PKFQWIN) Program, Version 5.2, were used to perform a flood-frequency analysis on annual peak flow records according to Bulletin 17B guidelines and compute the 1-percent-annual chance storm event discharge for each gage station used in the hydrologic analysis. HEC-SSP and PKFQWIN are FEMA-approved softwares. Weighting estimates and adjustment factors were used to transfer the Bulletin 17B estimates to the discharge locations. Weighted estimates improve peak discharge estimates by combining regression results with the gage records, so regression was determined at gage sites.

For regression and gage analyses completed on all streams studied using steady state, 1D hydraulic methods, the 1-percent plus flow was calculated, derived by using discharges that include the average predictive error for the regression equation discharge calculation for this study. This error was added to the 1-percent annual chance discharge to calculate the new 1-percent plus discharge. The upper 84-percent confidence limit is calculated for the 1-percent annual chance event for the gage analysis of Big Creek.

The USGS has eleven gages in the Lower Brazos Watershed. Of the eleven, three are on study streams for this watershed-wide analysis, with two located on Big Creek and one located on Mill Creek.

Big Creek (Fort Bend County)

There are two USGS gages located on Big Creek. Due to the age and short records of one of the gage locations, only Gage 08115000 near Pleak, Texas, was acceptable for use. The bulletin 17B estimates for all frequencies were used to determine weighted discharge estimates for the streams segments in the reach that fell within the 50% - 150% drainage area range.

Mill Creek (Austin County)

USGS Gage 08111700 is located along Mill Creek near Bellville, Texas. Gage transfer and weighting was not necessary for the Mill Creek gage analysis, as the hydrologic analysis for this stream is using a rainfall-runoff methodology and the gage flows are only to be used to calibrate the combined hydrologic analysis and to update the hydraulic and hydrologic parameters of the watershed.

Peak discharge-drainage area relationships for each stream studied in detail are shown in Table 9, Summary of Discharges.

The hydraulic analysis used the USACE HEC-RAS computer program for 1D hydraulic models. For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles. For stream segments for which a floodway was computed, selected cross sections are also listed on Floodway Data Table.

For the one-dimensional analysis, Manning's *n*-values for both the channel and overbanks were entered into the hydraulic model to represent the values that were estimated from field inspections of floodplain areas, aerial photography, and engineering judgment. Roughness coefficients are provided in Table 10 and Table 11. For the two-dimensional models developed for this study, the Manning's *n*- values were obtained from the 2011 National Land Cover Dataset (NLCD).

Floodplain boundaries were delineated using LiDAR data collected between 2008 and 2011, 2008(H-GAC) LiDAR, and 2011 (TNRIS) LiDAR.

Floodway Data table (Table 6) and Flood Profiles were revised to reflect changes as a result of the study.

Bessies Creek Tie-in Revision at Waller-Fort Bend Boundary

The Lower Brazos 2015 Risk MAP Project included revised engineering analysis and floodplain mapping for reaches Bessies Creek and tributaries within Fort Bend County, from the confluence with Brazos River to the Fort Bend / Waller County boundary. The scope includes tying-in to effective data. However, the upstream limit of scope for Bessies Creek terminates in an area affected by effective floodplain tie-in issues between Brazos River and Bessies Creek southwest of the study limits. The effective BFE of the Brazos River on the downstream side of the boundary is 117 feet, while the connected floodplain for Bessies Creek drops to 115 feet on the upstream side. The Waller County floodplain mapping shows the two flooding sources separated by an island, while the floodplain mapping downstream of the boundary shows a continuous floodplain of constant elevation.

The mapping of the restudy area was adjusted within the 2015 Risk MAP Project study extents for the revised study reach of Bessies Creek to align with the Waller County effective

FIS. The area of this discrepancy is rural and does include any structures within the immediate vicinity of the discrepancy.

A significant portion of the issue is due to a lack of alignment between Waller and Fort Bend County effective studies. The effective BFEs on Bessies Creek in Waller County, at the Fort Bend County boundary, do not reasonably reflect the Brazos River flood elevations that appear to control flooding in this area, based on the more recent Fort Bend County effective data. The Fort Bend County data shows a controlling flood elevation of 117 feet here while Waller shows an elevation 115 feet. It should be noted that while Waller data likely references NGVD29 as opposed to NAVD88, the conversion in this area is only +0.05 feet and is negligible.

In order to address this in the effective Waller County data, the Bessies Creek spatial data (BFEs and cross section "A"), flood profile and floodway data table (FDT) was updated in this PMR to account for the influence of Brazos River floodplain. Because the Fort Bend County study is newer, it is likely the Waller County dataset had not yet been updated to account for the increase in elevation along the Brazos River identified in the more recent study. The effective BFEs of 115 and 116 feet on Bessies Creek in Waller County are to be removed, with the FIS profile marked as being controlled by flooding from Brazos River for this portion of Bessies Creek.

Table 9. Revised Summary of Discharges – First Revision

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10% Annual Chance	4% Annual Chance	2% Annual Chance	0.1% Annual Chance	0.2% Annual Chance
ALTA VISTA BAYOU						
Confluence with Ponds Creek	1.0	671	899	1,084	1,295	1,847
Confluence with University Bayou	0.4	334	427	500	580	780
Confluence with Alta Vista Bayou Tributary	0.3	220	273	313	356	461
At University Dr	0.2	169	206	233	262	331
ALTA VISTA BAYOU TRIBUTARY						
Confluence with Alta Vista Bayou	0.1	110	129	143	157	190
BLASINGAME CREEK						
Confluence with Brazos River, Stream Mile 0.0	9.5	2,280	3,199	3,975	4,869	7,323
Stream Mile 1.22	8.9	2,164	3,031	3,763	4,605	6,912
Stream Mile 2.02	6.5	1,735	2,405	2,964	3,604	5,337
Stream Mile 2.50	5.9	1,608	2,221	2,731	3,313	4,887
Stream Mile 3.34	5.5	1,529	2,105	2,583	3,128	4,597
Approximately 0.71 miles downstream of 25th Street	3.5	1,087	1,472	1,786	2,141	3,082
At Colorado Street, in between 20th and 21st Street	2.6	854	1,143	1,375	1,636	2,319
Approximately 270 feet southwest of the intersection of 17th Street and Allen Street	1.5	558	729	864	1,012	1,393
Approximately 370 feet downstream of Washington Street	1.0	417	535	626	726	978
Approximately 50 feet upstream of Wilkins Street	0.7	302	380	439	503	660
Approximately 0.3 miles upstream of St. Marys Street	0.4	202	248	281	316	401
Approximately 0.5 miles upstream of St. Marys Street	0.2	96	111	121	132	156
UNIVERSITY BAYOU						
Confluence with Alta Vista Bayou	0.31	247	308	355	406	530
Approximately 860 feet upstream of FM 1098	0.21	173	211	239	269	339

Table 9. Revised Summary of Discharges – First Revision (cont'd)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10% Annual Chance	4% Annual Chance	2% Annual Chance	0.1% Annual Chance	0.2% Annual Chance
UNIVERSITY BAYOU (cont'd)						
Approximately 260 feet upstream of TR Solomon	0.15	130	155	173	192	236
UNNAMED TRIBUTARY 1 TO BLASINGAME CREEK						
Confluence with Blasingame Creek	0.8	492	648	772	914	1,279
Approximately 0.16 miles downstream of 13th Street	0.6	398	517	611	716	986
At 11th Street	0.3	235	294	339	390	512
UNNAMED TRIBUTARY 1-1 TO BLASINGAME CREEK						
Approximately 140 feet upstream of Confluence with Unnamed Tributary 1 to Blasingame Creek	0.11	114	136	151	169	209
Upstream of 13th Street	0.09	96	113	125	138	167
Approximately 650 feet upstream of 13th Street	0.07	77	89	97	107	127
UNNAMED TRIBUTARY 2 TO BLASINGAME CREEK						
Confluence with Blasingame Creek	0.3	222	277	319	365	477
Approximately 180 feet upstream of 21st Street	0.2	173	212	241	273	349
Approximately 670 feet downstream of Calvit Street	0.1	114	136	151	168	205
UNNAMED TRIBUTARY TO CLEAR CREEK						
Confluence with Clear Creek	0.6	364	469	550	641	870
Approximately 0.73 miles upstream of confluence with Clear Creek	0.4	244	306	352	404	529
Approximately 600 feet northeast of the intersection of Shepard Street and 5th Street	0.2	152	184	207	232	291

Table 9. Revised Summary of Discharges – First Revision (cont'd)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10% Annual Chance	4% Annual Chance	2% Annual Chance	0.1% Annual Chance	0.2% Annual Chance
WEST FORK BROOKSHIRE CREEK						
Confluence with Brookshire Creek	4.41	*	*	*	2,786	*

*Not calculated for this Flood Risk Project

Table 10. Revised Summary of Roughness Coefficients (1D Models) – First Revision

Stream	Channel "n"	Overbank "n"
Alta Vista Bayou	0.040-0.048	0.06-0.115
Alta Vista Bayou Tributary	0.058	0.078
Blasingame Creek	0.046-0.058	0.075-0.109
University Bayou	0.025-0.048	0.05-0.078
Unnamed Tributary 1 to Blasingame Creek	0.046-0.058	0.075-0.109
Unnamed Tributary 1-1 to Blasingame Creek	0.046-0.058	0.075-0.109
Unnamed Tributary 2 to Blasingame Creek	0.035-0.046	0.05-0.109
Unnamed Tributary to Clear Creek	0.04-0.046	0.09

Table 11. Revised Summary of Roughness Coefficients (2D Models) – First Revision

NLCD Code (2011)	Description	Manning *n*-values
11	Open Water	0.02
21	Developed, Open Space	0.12
22	Developed, Low Intensity	0.12
23	Developed, Medium Intensity	0.13
24	Developed, High Intensity	0.15
31	Barren Land (Rock/Sand/Clay)	0.04
41	Deciduous Forest	0.16
42	Evergreen Forest	0.18
43	Mixed Forest	0.17
52	Shrub/Scrub	0.09
71	Grassland/Herbaceous	0.035
81	Pasture/Hay	0.033
82	Pasture/Hay	0.04
90	Woody Wetlands	0.14
95	Emergent Herbaceous Wetlands	0.035

APPENDIX A

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 3 contains the full list of these notes.

Figure 3: 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. 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 Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to Table 7 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.

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 Non-Coastal 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.

Figure 3: FIRM Notes to Users (Cont'd)

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.

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction.

PROJECTION INFORMATION: The projection used in the preparation of the map was State Plane Lambert Conformal Conic, Texas South Central Zone FIPS 4204. The horizontal datum was North American Datum 1983, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

ELEVATION DATUM: Flood elevations on the FIRM are referenced to 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 www.ngs.noaa.gov/.

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community listed in Section 3.3 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on this FIRM was provided in digital format by Waller County and Houston-Galveston Area Council (H-GAC). This dataset was digitized at a scale of at least 1:24,000 from aerial photography dated 2002 and 2004. The Texas Natural Resources Information System (TNRIS) provided the Texas Department of Transportation (TxDOT) GIS data for community boundaries and transportation layers dated 2015.

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

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

Figure 3: FIRM Notes to Users (Cont'd)

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Waller County, Texas, 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 7 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.

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 May 16, 2019.

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for Waller County, Texas**,** effective, May 16, 2019.

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 4 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Waller County.

Figure 4: Map Legend for FIRM

SPECIAL FLOOD HAZARD AREAS: *The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. See note for specific types. If the floodway is too narrow to be shown, a note is shown.*

	Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)
Zone A	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone.
Zone AE	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone.
Zone AH	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals within this zone.
Zone AO	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the hydraulic analyses are shown within this zone.
Zone AR	The flood insurance rate zone that corresponds to areas that were formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
Zone A99	The flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or flood depths are shown within this zone.
Zone V	The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone.

Figure 4: Map Legend for FIRM (Cont'd)

Zone VE	Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.
	Regulatory Floodway determined in Zone AE.
OTHER AREAS OF FLOOD HAZARD	
	Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.
	Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.
	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.
	Area with Flood Risk due to Levee: Areas where a non-accredited levee, dike, or other flood control structure is shown as providing protection to less than the 1% annual chance flood.
OTHER AREAS	
	Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.
NO SCREEN	Unshaded Zone X: Areas of minimal flood hazard.
FLOOD HAZARD AND OTHER BOUNDARY LINES	
(ortho) (vector)	Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)
	Limit of Study
	Jurisdiction Boundary
	Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet

Figure 4: Map Legend for FIRM (Cont'd)

GENERAL STRUCTURES	
Aqueduct *Channel* *Culvert* *Storm Sewer*	Channel, Culvert, Aqueduct, or Storm Sewer
Dam *Jetty* *Weir*	Dam, Jetty, Weir
	Levee, Dike, or Floodwall
Bridge	Bridge
COASTAL BARRIER RESOURCES SYSTEM (CBRS) AND OTHERWISE PROTECTED AREAS (OPA): *CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.*	
CBRS AREA **09/30/2009**	Coastal Barrier Resources System Area: Labels are shown to clarify where this area shares a boundary with an incorporated area or overlaps with the floodway.
O **THERWISE PROTECTED AREA** **09/30/2009**	Otherwise Protected Area
REFERENCE MARKERS	
22.0	River mile Markers

Figure 4: Map Legend for FIRM (Cont'd)

CROSS SECTION & TRANSECT INFORMATION	
B 20.2	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
5280 21.1	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
17.5	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
8	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.
513	Base Flood Elevation Line
ZONE AE (EL 16)	Static Base Flood Elevation value (shown under zone label)
ZONE AO (DEPTH 2)	Zone designation with Depth
ZONE AO (DEPTH 2) (VEL 15 FPS)	Zone designation with Depth and Velocity
BASE MAP FEATURES	
Missouri Creek	River, Stream or Other Hydrographic Feature
234	Interstate Highway
234	U.S. Highway
234	State Highway
234	County Highway

Figure 4: Map Legend for FIRM (Cont'd)

MAPLE LANE	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
RAILROAD	Railroad
	Horizontal Reference Grid Line
—	Horizontal Reference Grid Ticks
+	Secondary Grid Crosshairs
Land Grant	Name of Land Grant
7	Section Number
R. 43 W. T. 22 N.	Range, Township Number
$^{42}76^{000m}$E	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80° 16' 52.5"	Corner Coordinates (Latitude, Longitude)

FLOOD PROFILES

ALTA VISTA BAYOU

CITY OF PRAIRIE VIEW

1% ANNUAL CHANCE BACKWATER EFFECTS FROM PONDS CREEK

CONFLUENCE WITH PONDS CREEK

1%+ ANNUAL CHANCE BACKWATER FROM PONDS CREEK HAS NOT BEEN CALCULATED

100 YEAR PLUS (1%+) FLOOD ELEVATION IS INFLUENCED BY BACKWATER ELEVATION DOWNSTREAM OF THIS POINT

25 YEAR (4%) FLOOD ELEVATION IS INFLUENCED BY BACKWATER ELEVATION DOWNSTREAM OF THIS POINT

4% ANNUAL CHANCE BACKWATER FROM PONDS CREEK HAS NOT BEEN CALCULATED

CONFLUENCE OF UNIVERSITY BAYOU

CONFLUENCE OF ALTA VISTA BAYOU TRIBUTARY

A

B

C

D

E

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- 1%+ ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 4% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

ELEVATION IN FEET (NAVD)

245
240
235
230
225
220
215
210
205
200

0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500

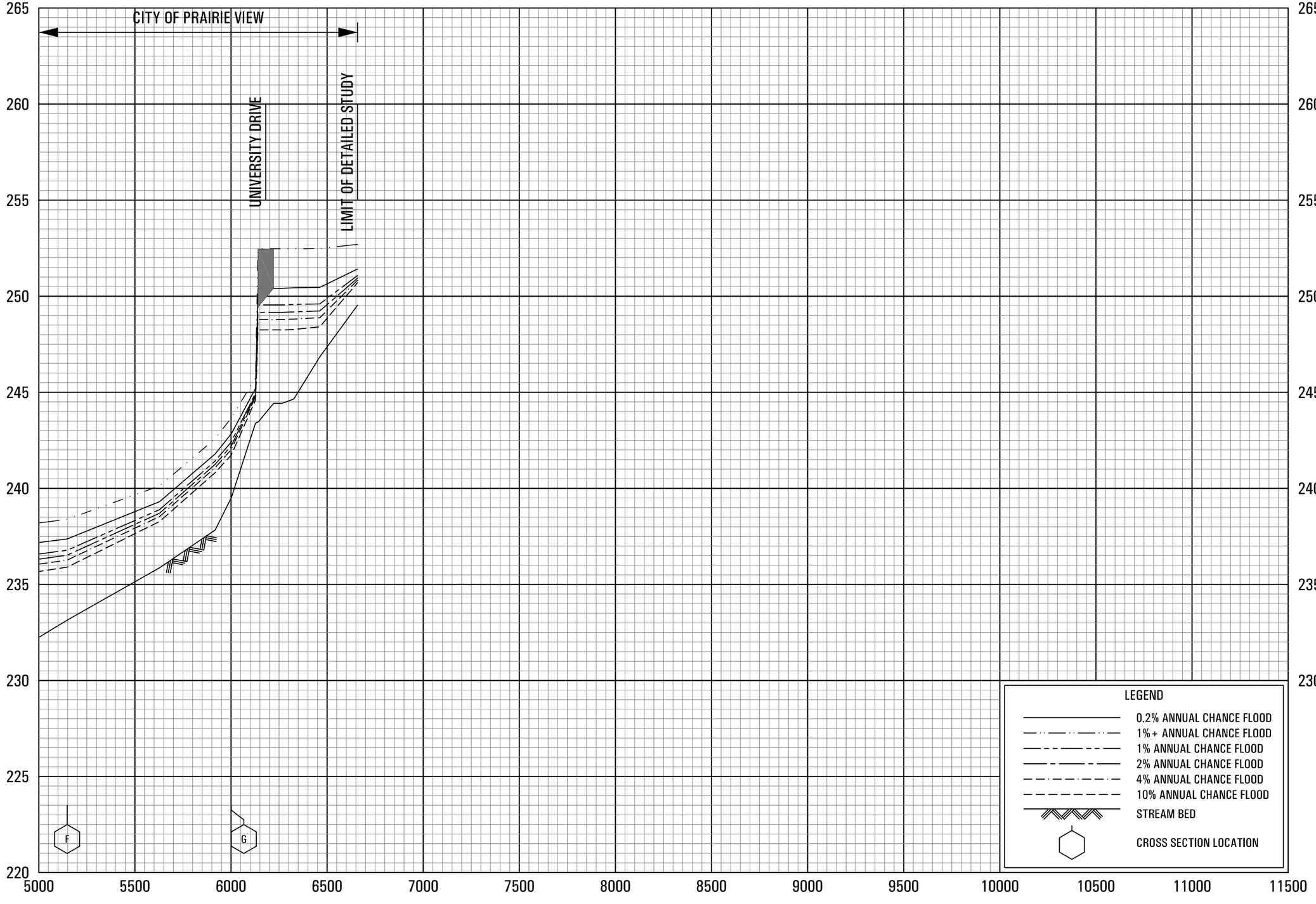
STREAM DISTANCE IN FEET UPSTREAM WITH PONDS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

01(A)P



FLOOD PROFILES

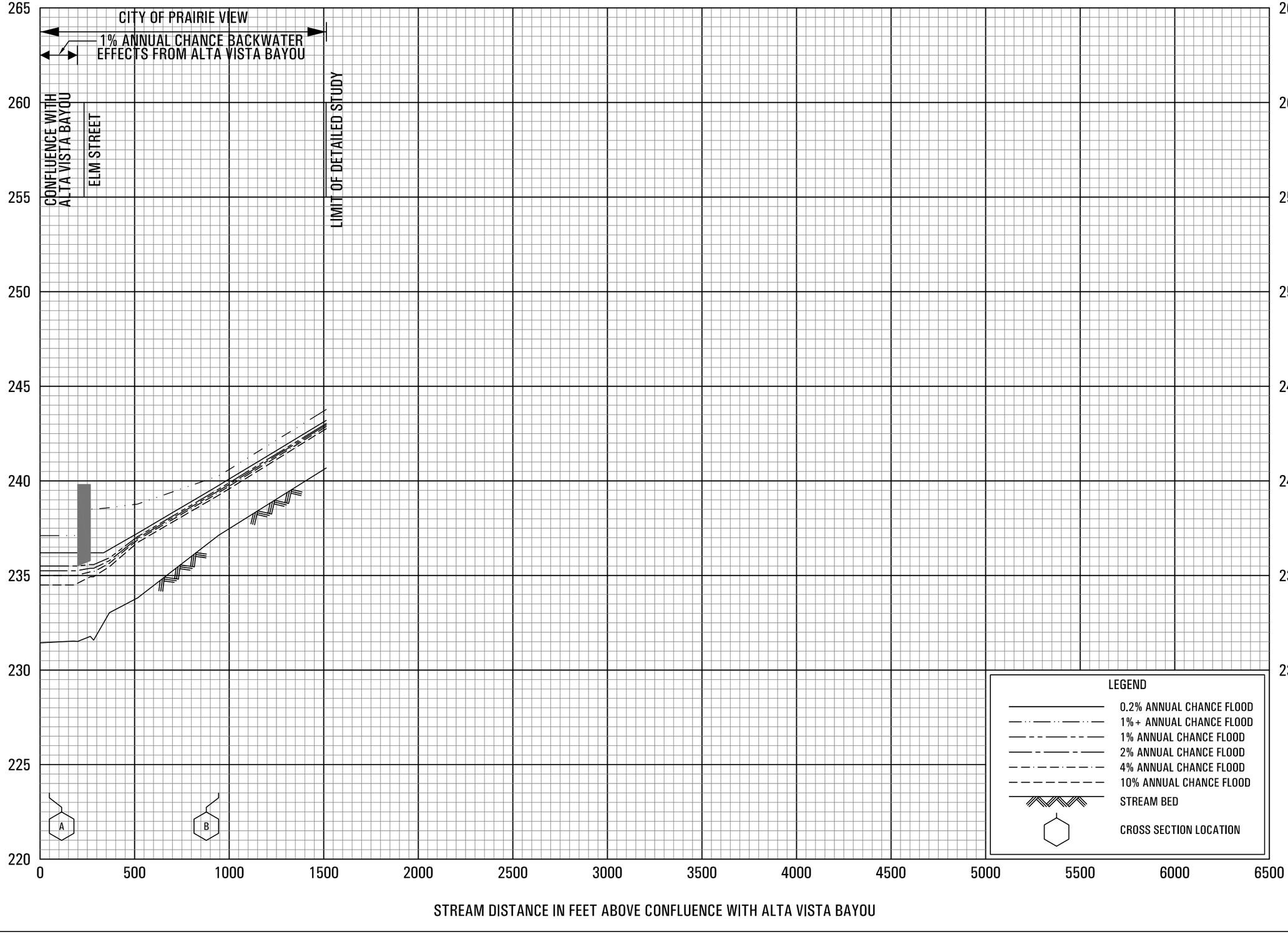
ALTA VISTA BAYOU

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

01(A1)P



FLOOD PROFILES

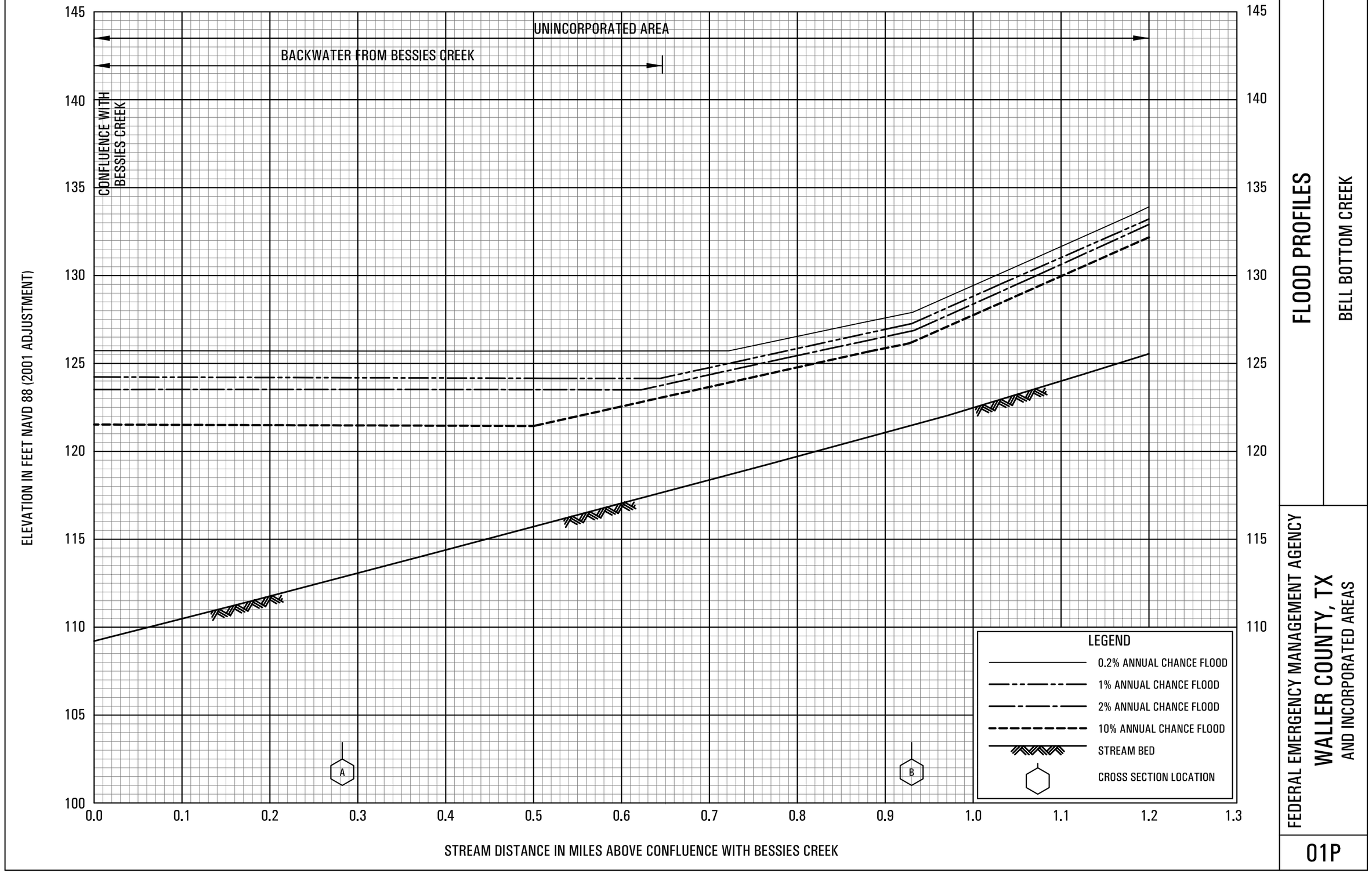
ALTA VISTA BAYOU TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

01(B)P



FLOOD PROFILES

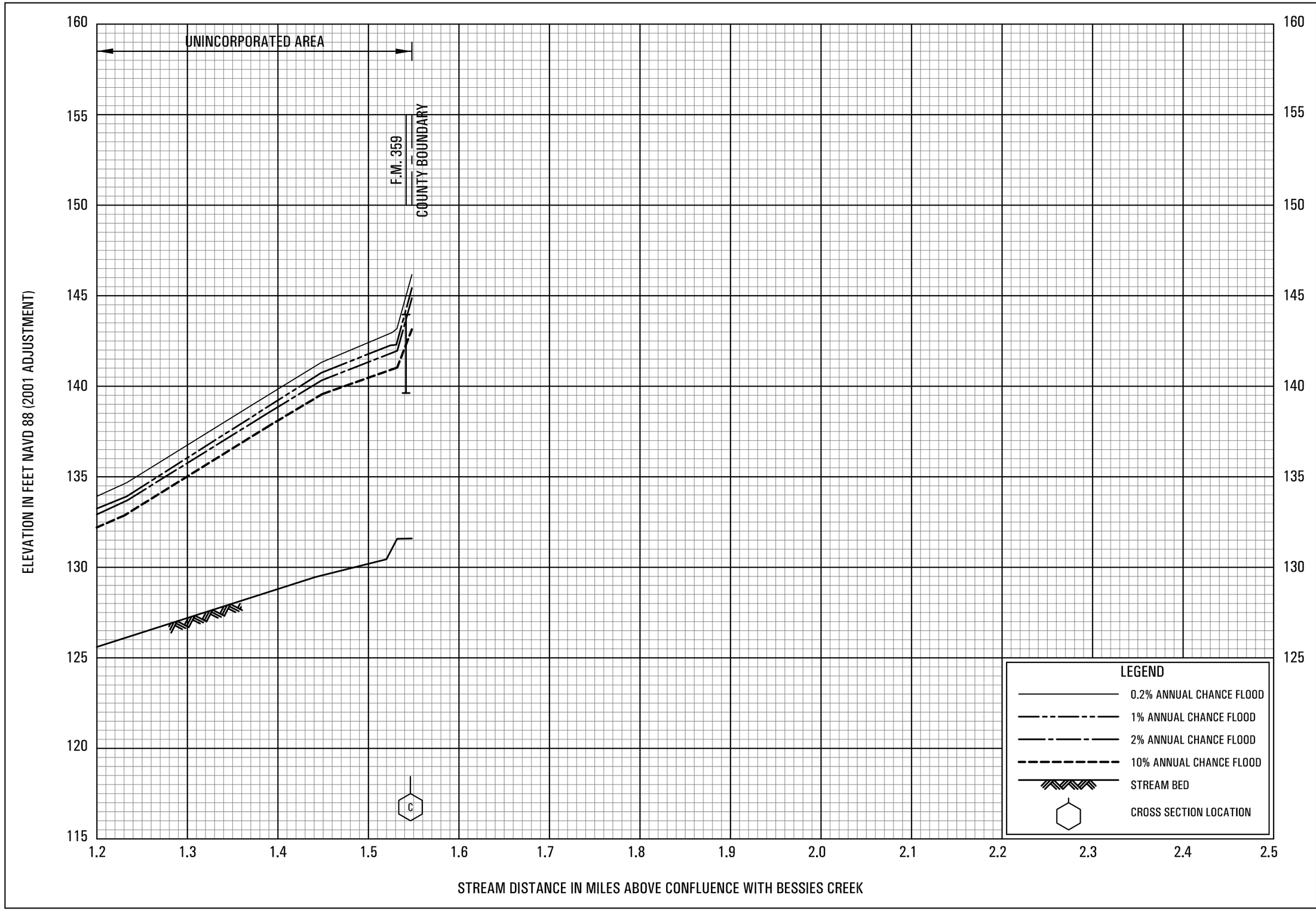
BELL BOTTOM CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

01P



FLOOD PROFILES

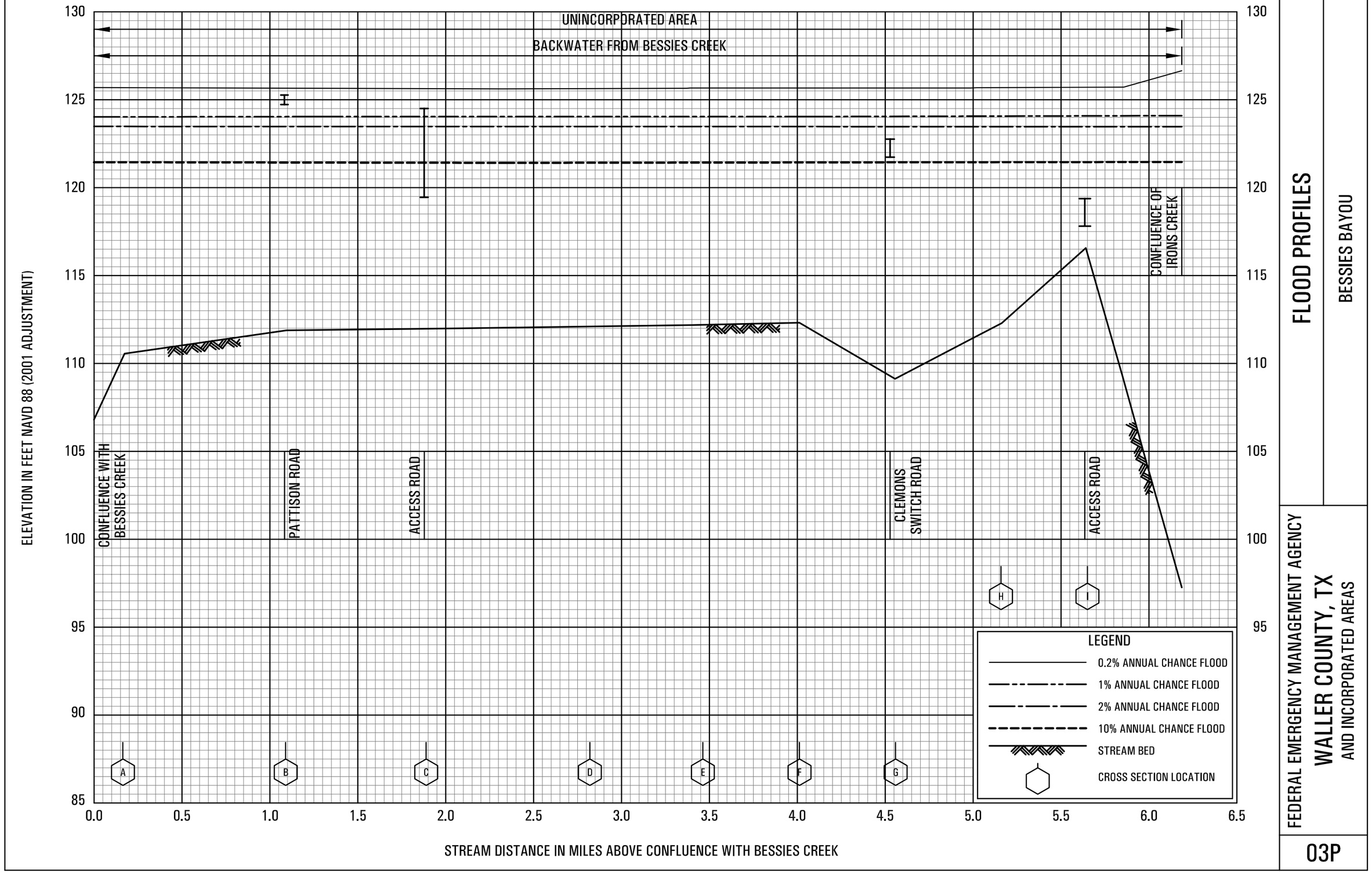
BELL BOTTOM CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

02P



FLOOD PROFILES

BESSIES BAYOU

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

03P

UNINCORPORATED AREA

F.M. 1489

ELEVATION IN FEET (NAVD 88)

135
130
125
120
115
110
105
100
95
90

0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5

STREAM DISTANCE IN MILES ABOVE COUNTY BOUNDARY

A B C D

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- A — CROSS SECTION LOCATION

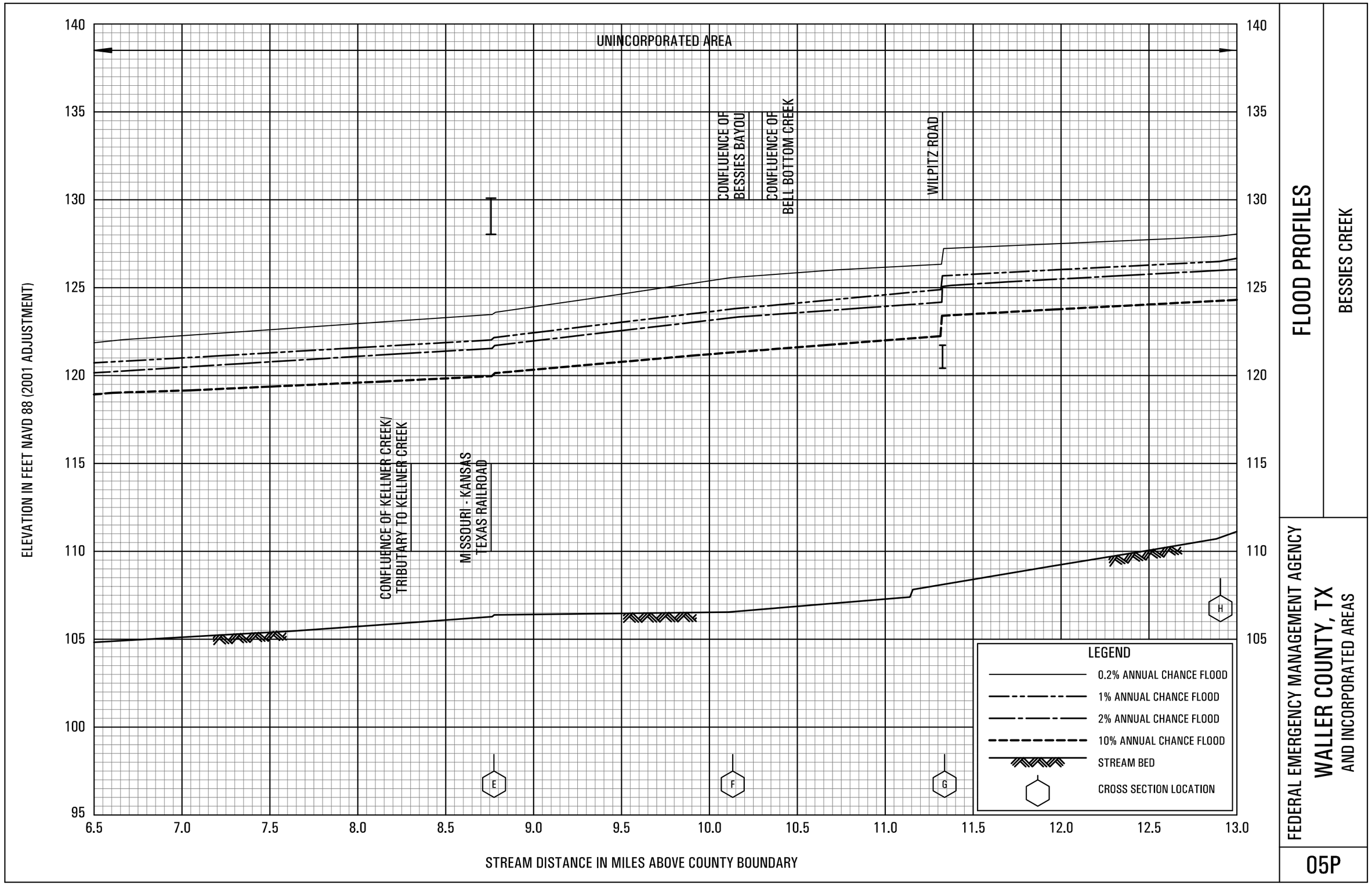
FLOOD PROFILES

BESSIES CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



FLOOD PROFILES

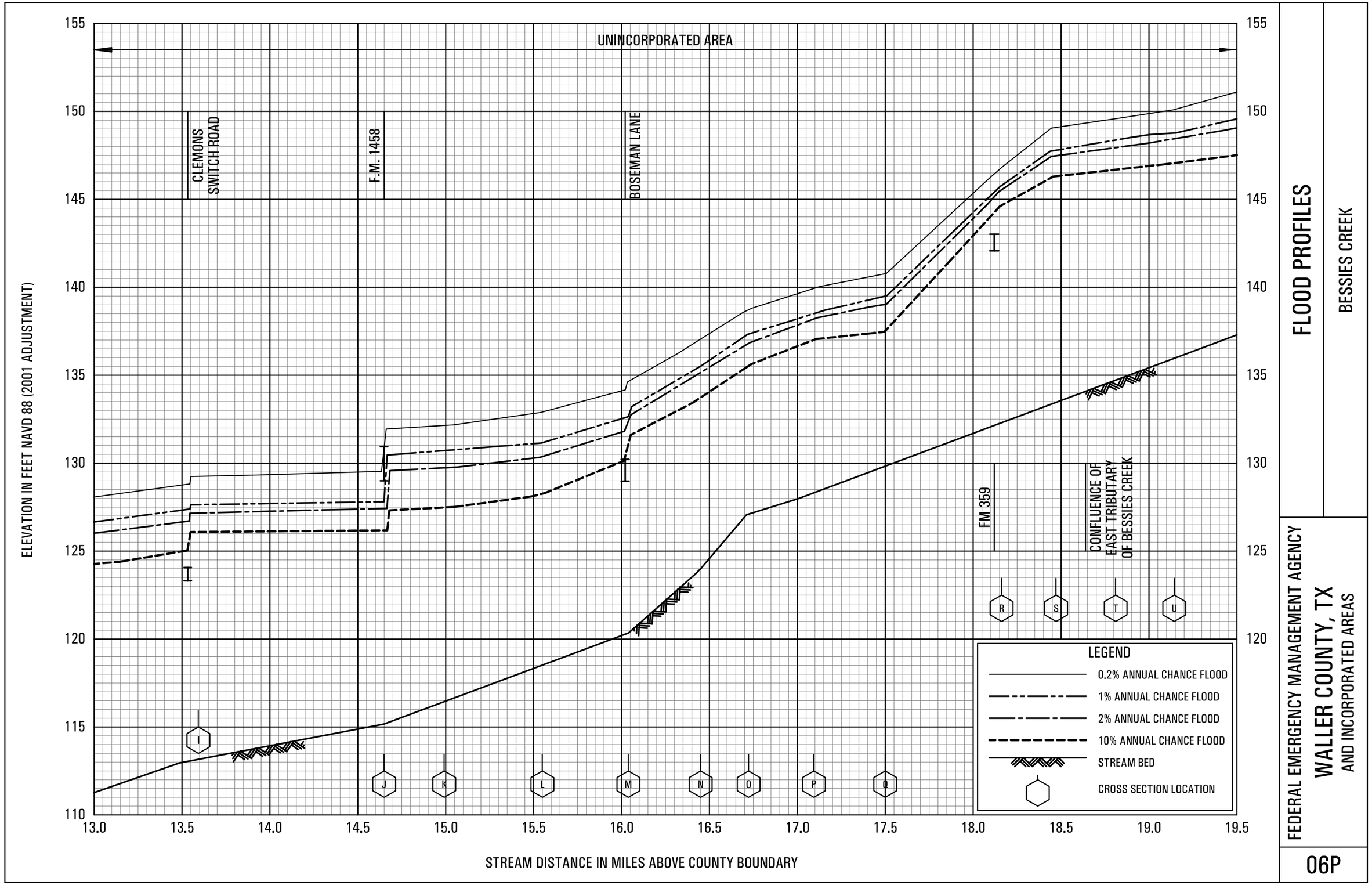
BESSIES CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

05P



FLOOD PROFILES

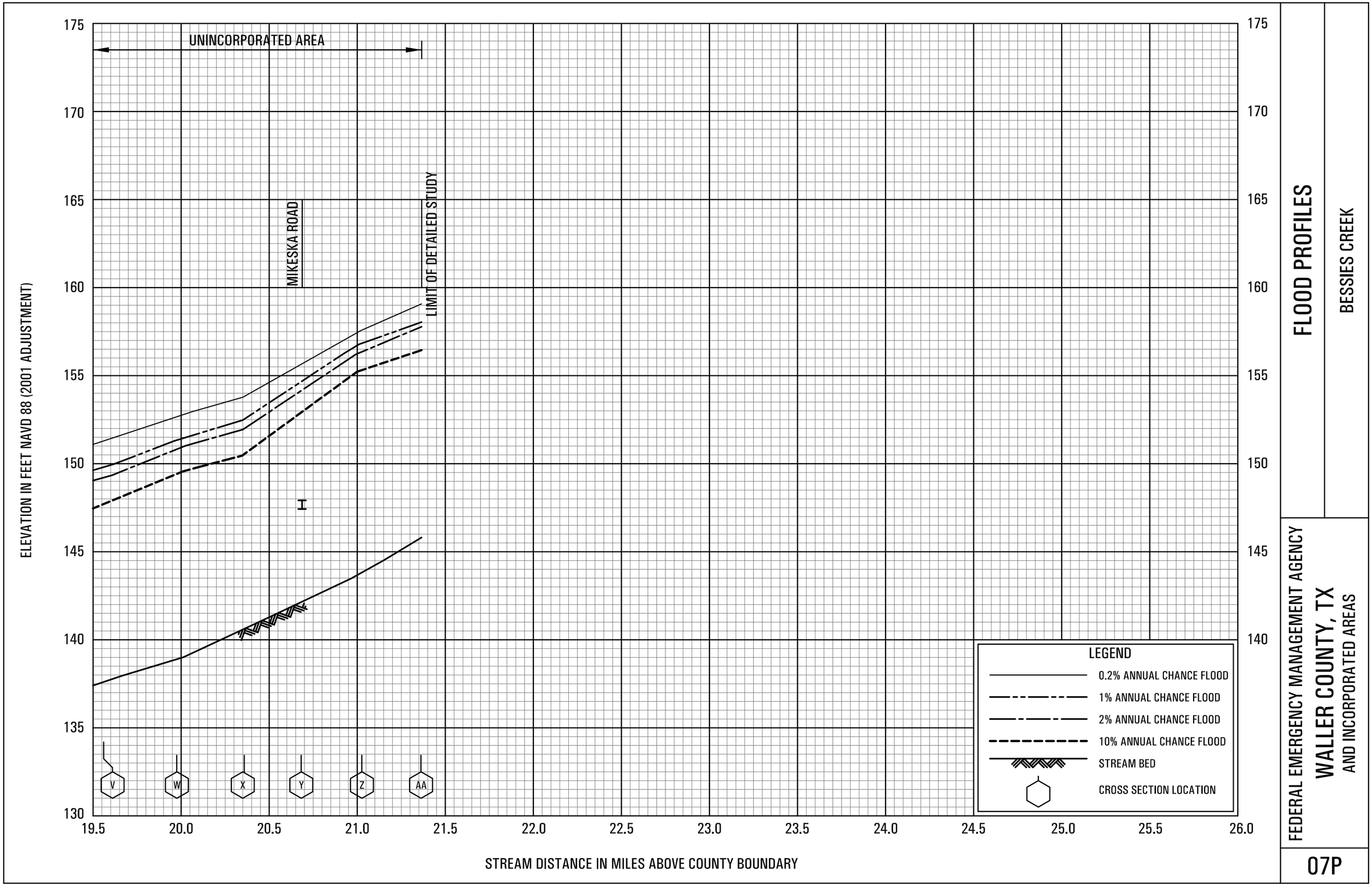
BESSIES CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

06P



FLOOD PROFILES

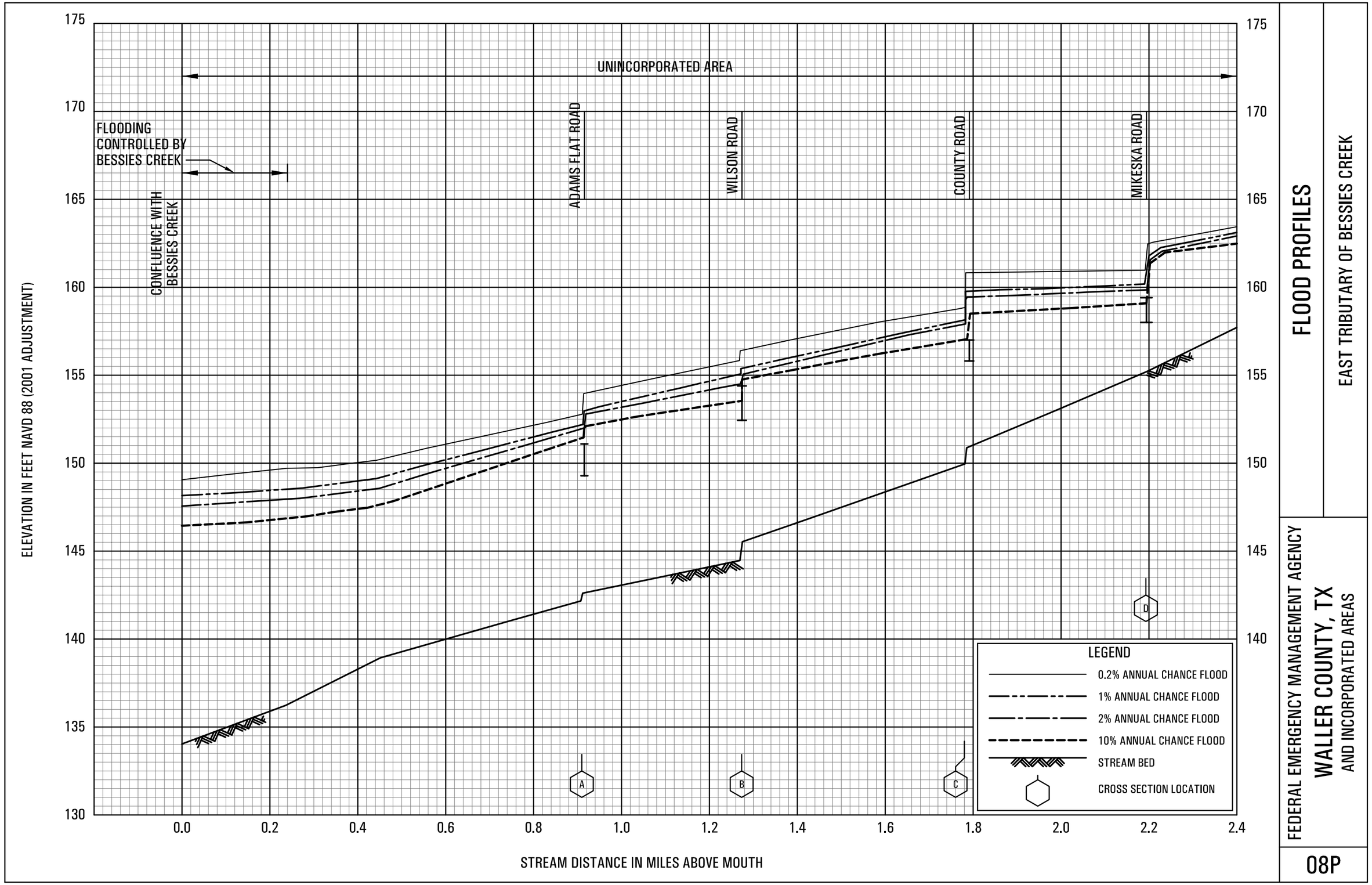
BESSIES CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

07P



FLOOD PROFILES

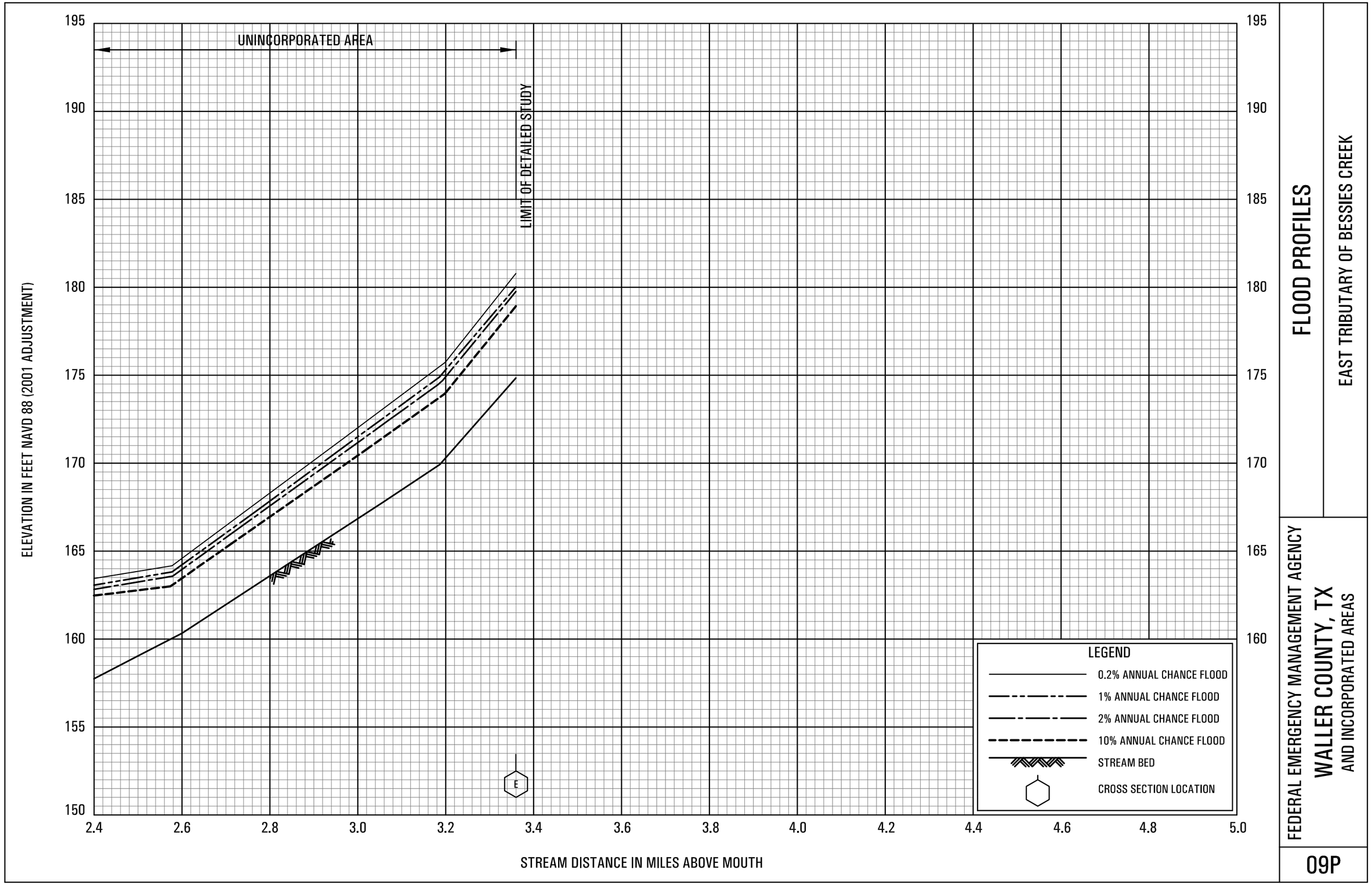
EAST TRIBUTARY OF BESSIES CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

08P



FLOOD PROFILES

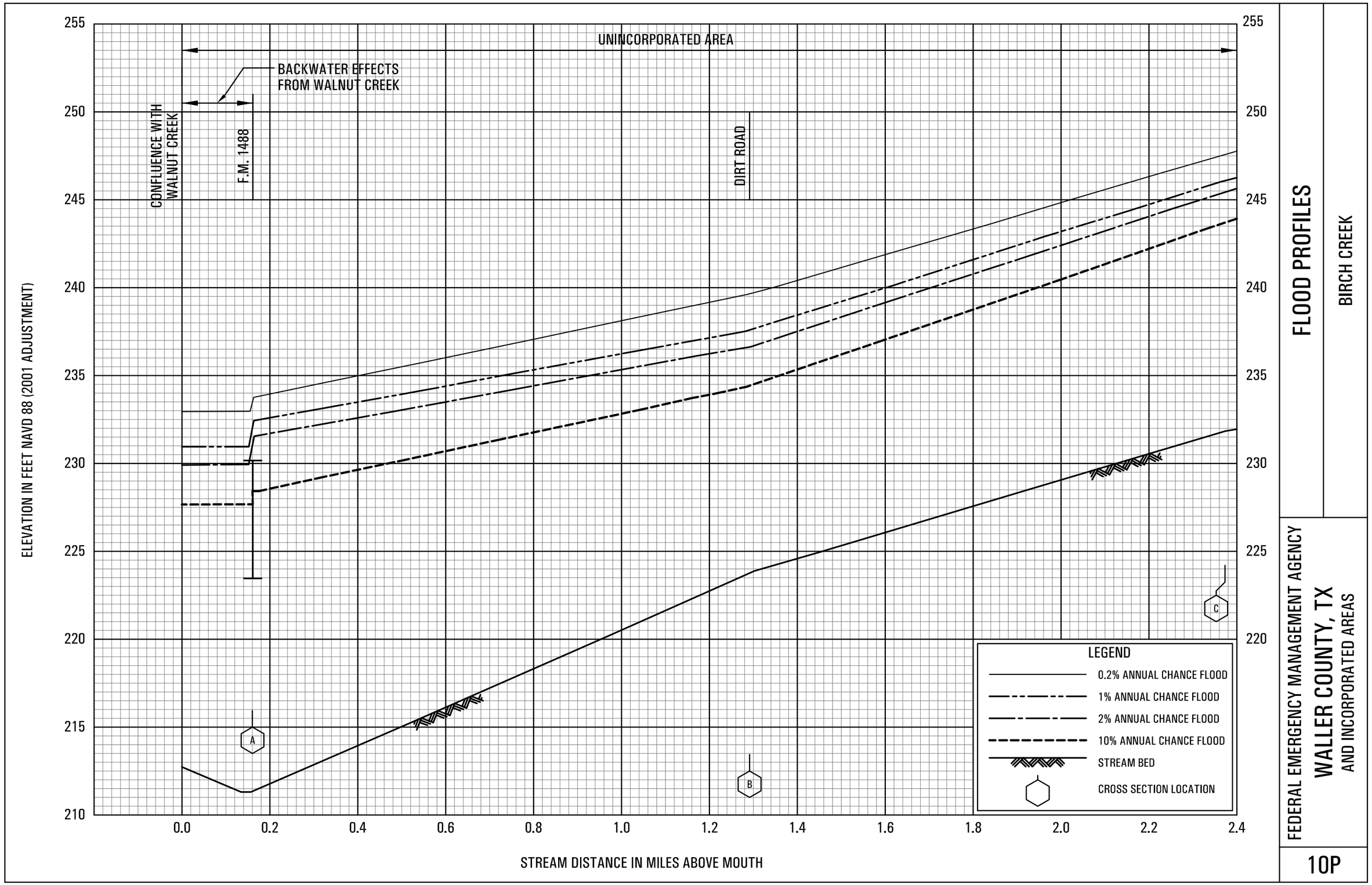
EAST TRIBUTARY OF BESSIES CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

09P



FLOOD PROFILES

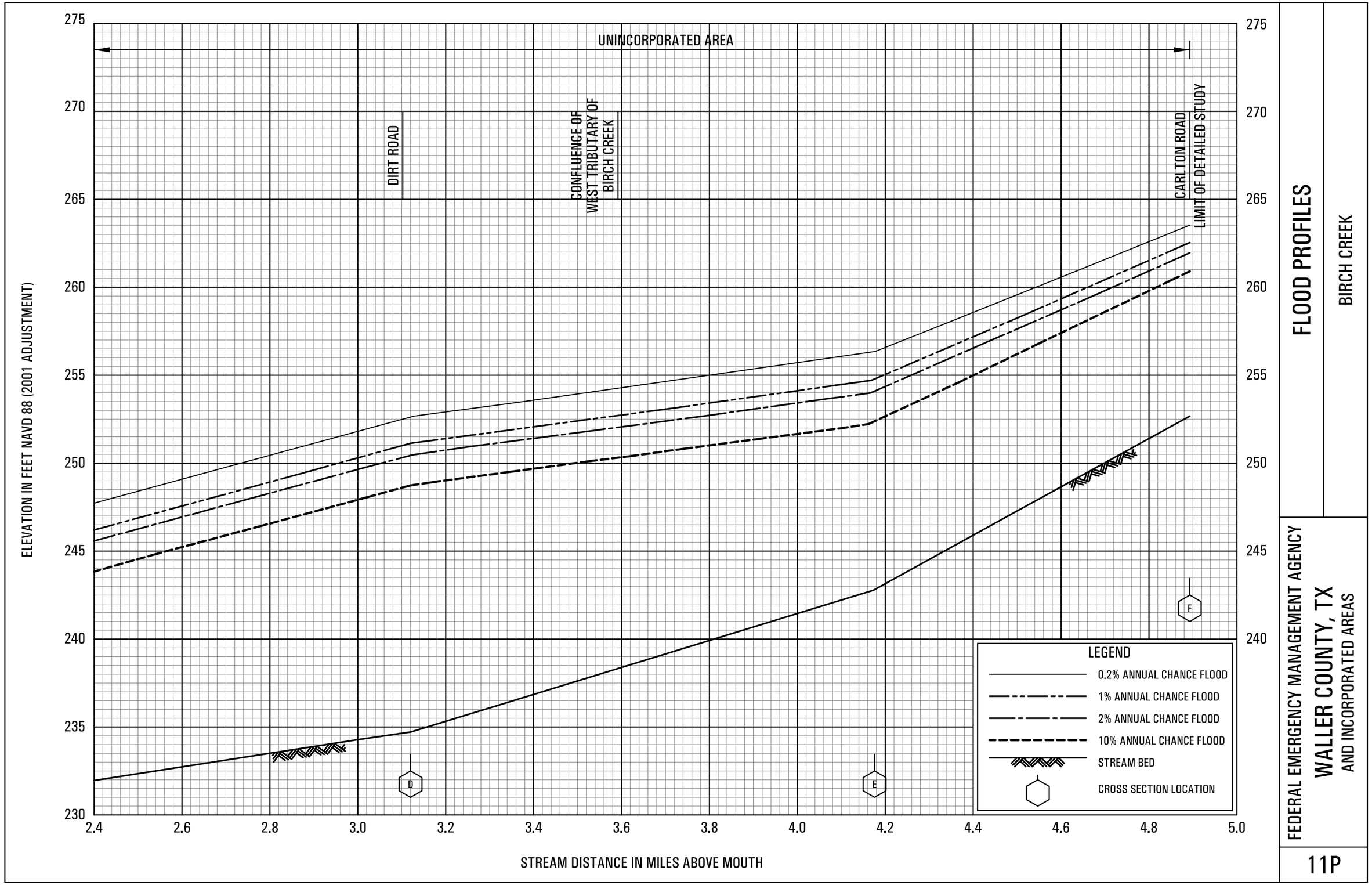
BIRCH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

10P



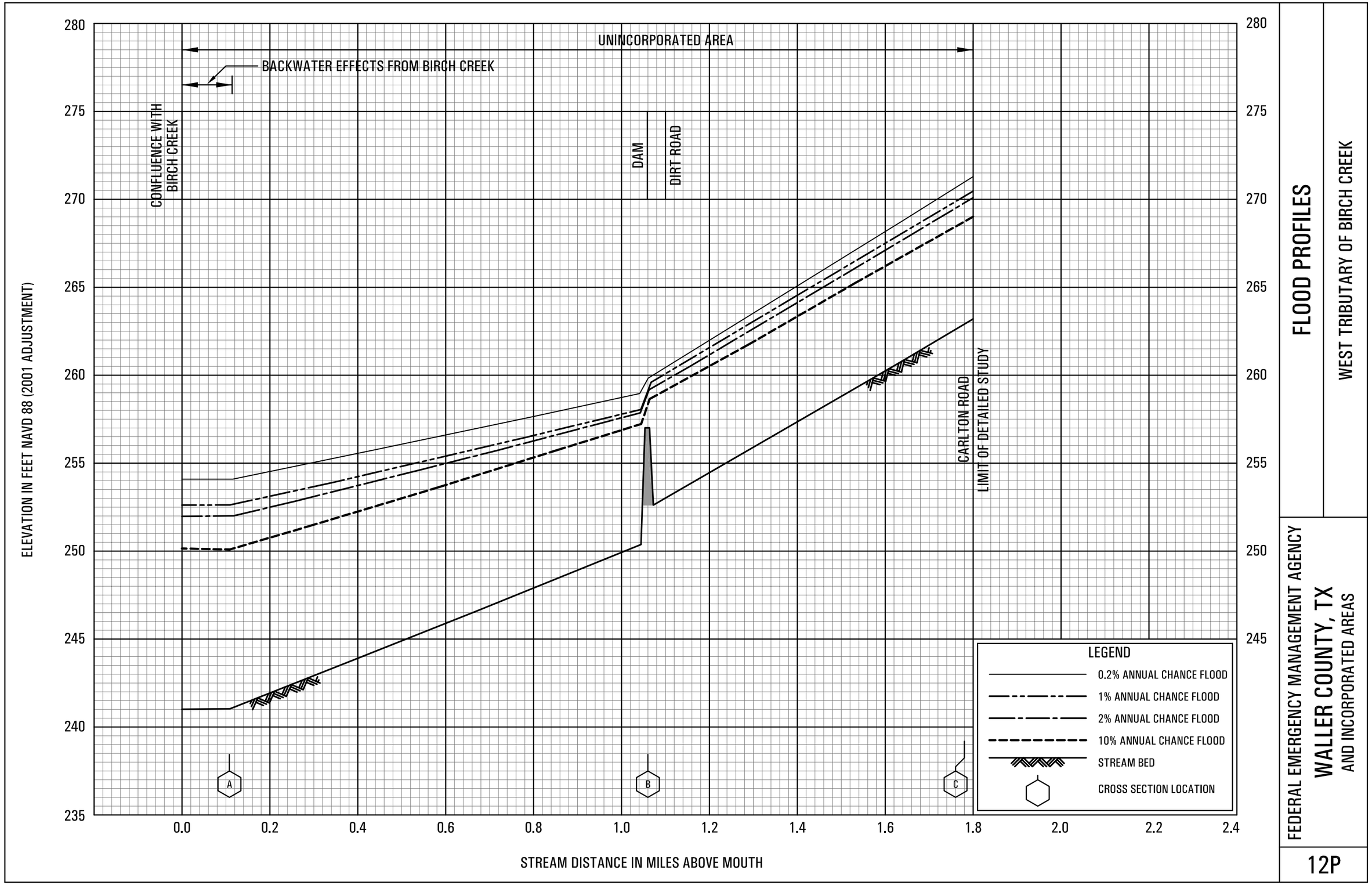
FLOOD PROFILES

BIRCH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



FLOOD PROFILES

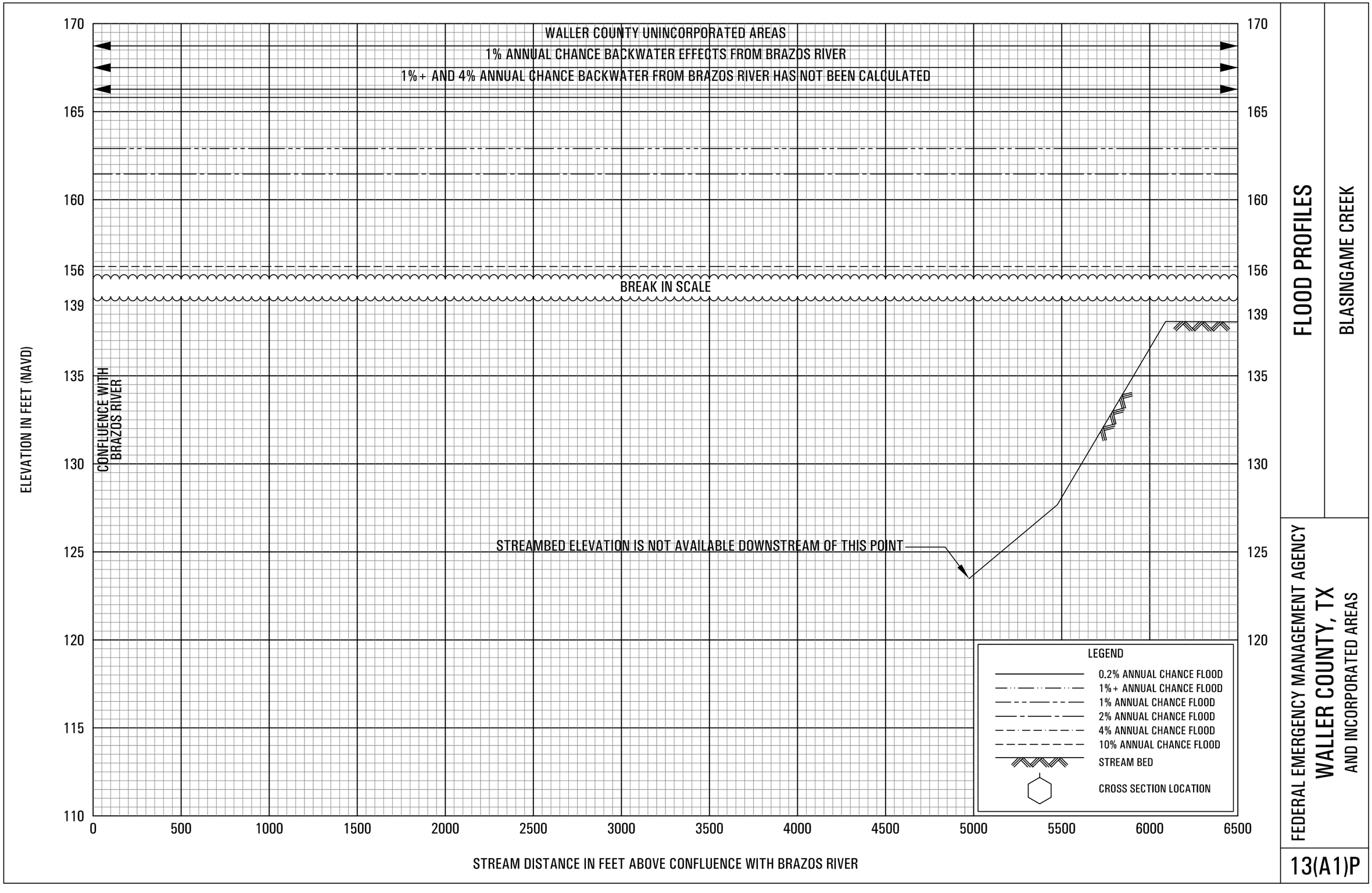
WEST TRIBUTARY OF BIRCH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

12P



FLOOD PROFILES

BLASINGAME CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

13(A1)P

WALLER COUNTY UNINCORPORATED AREAS

1% ANNUAL CHANCE BACKWATER EFFECTS FROM BRAZOS RIVER

1%+ AND 4% ANNUAL CHANCE BACKWATER FROM BRAZOS RIVER HAS NOT BEEN CALCULATED

1%+ ANNUAL CHANCE BACKWATER FROM BRAZOS RIVER HAS NOT BEEN CALCULATED

25 YEAR (4%) FLOOD ELEVATION IS INFLUENCED BY BACKWATER ELEVATION DOWNSTREAM OF THIS POINT

ELEVATION IN FEET (NAVD)

175
170
165
160
155
150
145
140
135
130

6500 7000 7500 8000 8500 9000 9500 10000 10500 11000 11500 12000 12500 13000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH BRAZOS RIVER

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- 1%+ ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 4% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

FLOOD PROFILES

BLASINGAME CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

13(A2)P

WALLER COUNTY UNINCORPORATED AREAS

1% ANNUAL CHANCE BACKWATER EFFECTS FROM BRAZOS RIVER

1%+ ANNUAL CHANCE BACKWATER FROM BRAZOS RIVER HAS NOT BEEN CALCULATED

100 YEAR PLUS (1%+) FLOOD ELEVATION IS influenced BY BACKWATER ELEVATION DOWNSTREAM OF THIS POINT

ELEVATION IN FEET (NAVD)

185
180
175
170
165
160
155
150
145
140

13000 13500 14000 14500 15000 15500 16000 16500 17000 17500 18000 18500 19000 19500

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH BRAZOS RIVER

A B C D E

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- 1%+ ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 4% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

FLOOD PROFILES

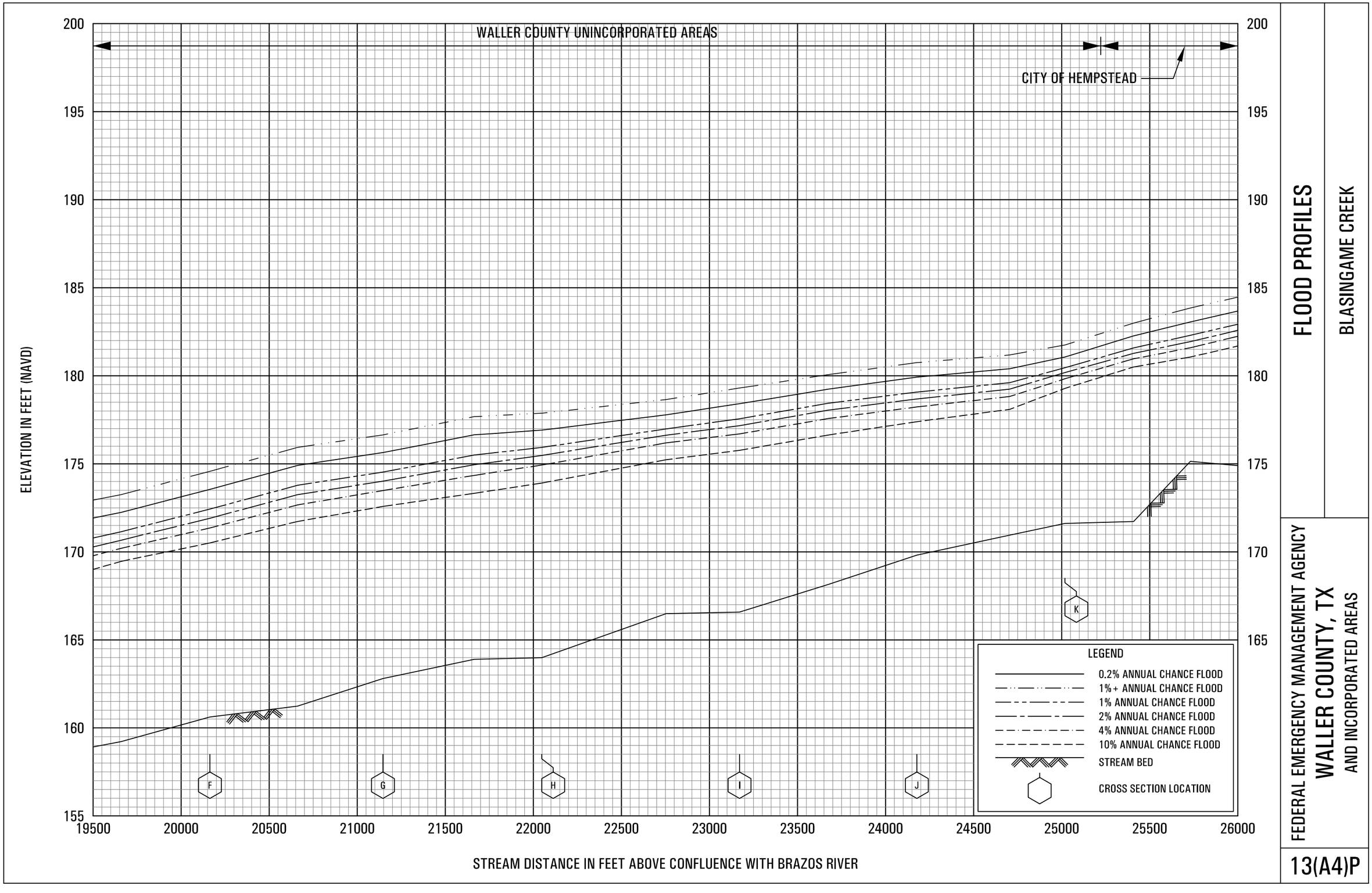
BLASINGAME CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

13(A3)P



FLOOD PROFILES

BLASINGAME CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

13(A4)P

CITY OF HEMPSTEAD

ELEVATION IN FEET (NAVD)

215
210
205
200
195
190
185
180
175
170

26000 26500 27000 27500 28000 28500 29000 29500 30000 30500 31000 31500 32000 32500

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH BRAZOS RIVER

L M N O P Q

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- 1%+ ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 4% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

FLOOD PROFILES

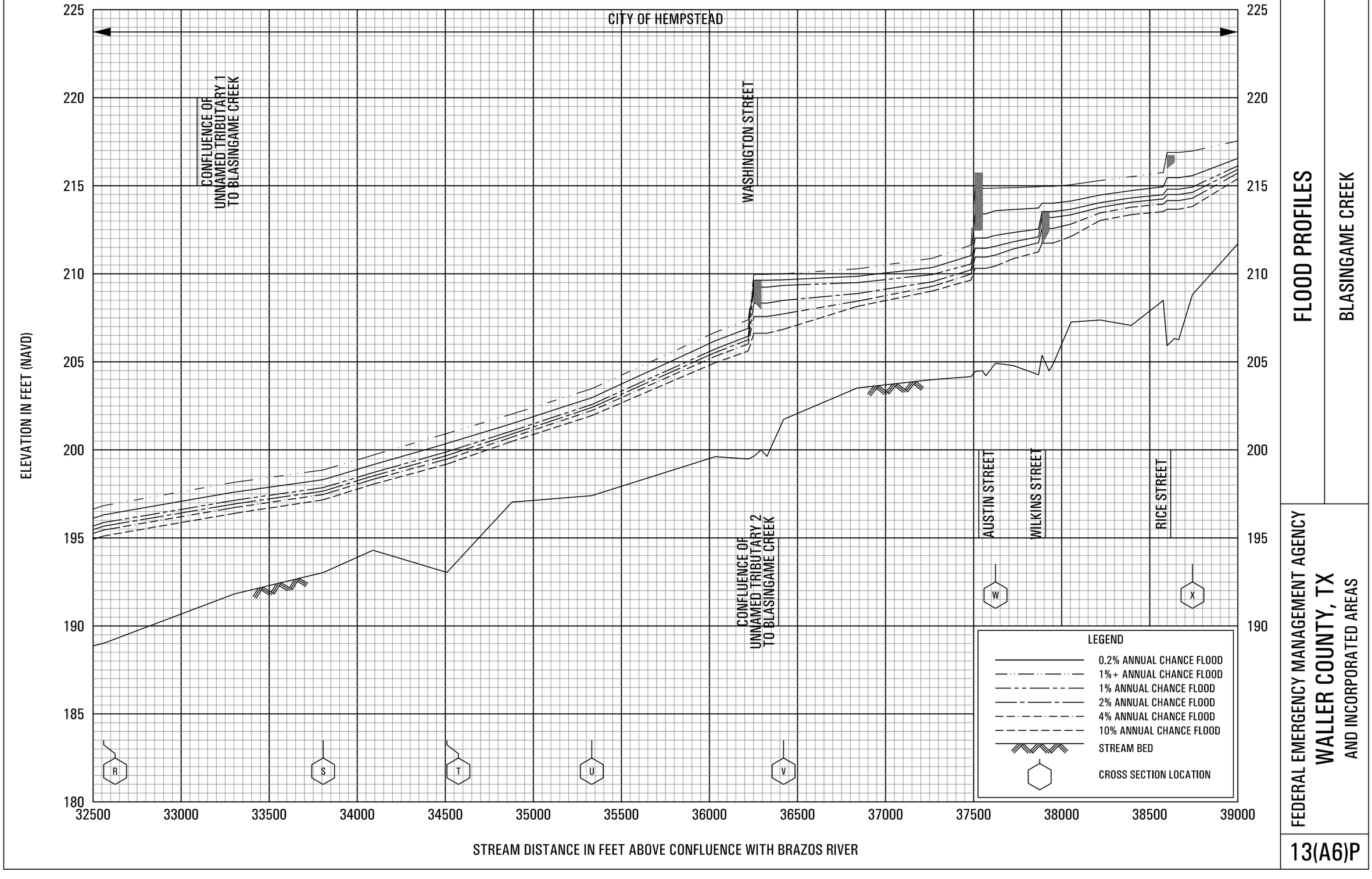
BLASINGAME CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

13(A5)P



FLOOD PROFILES

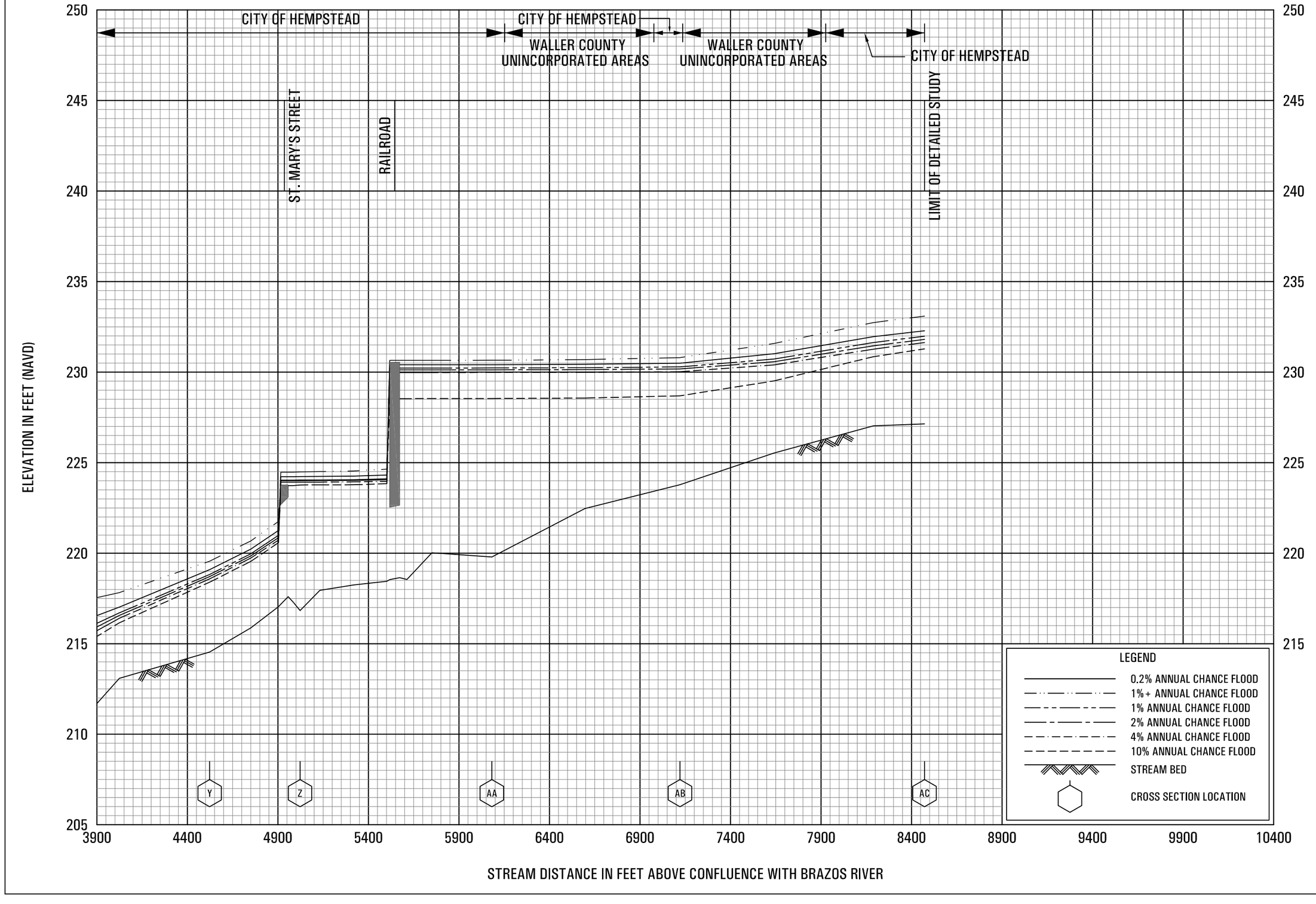
BLASINGAME CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

13(A6)P



FLOOD PROFILES

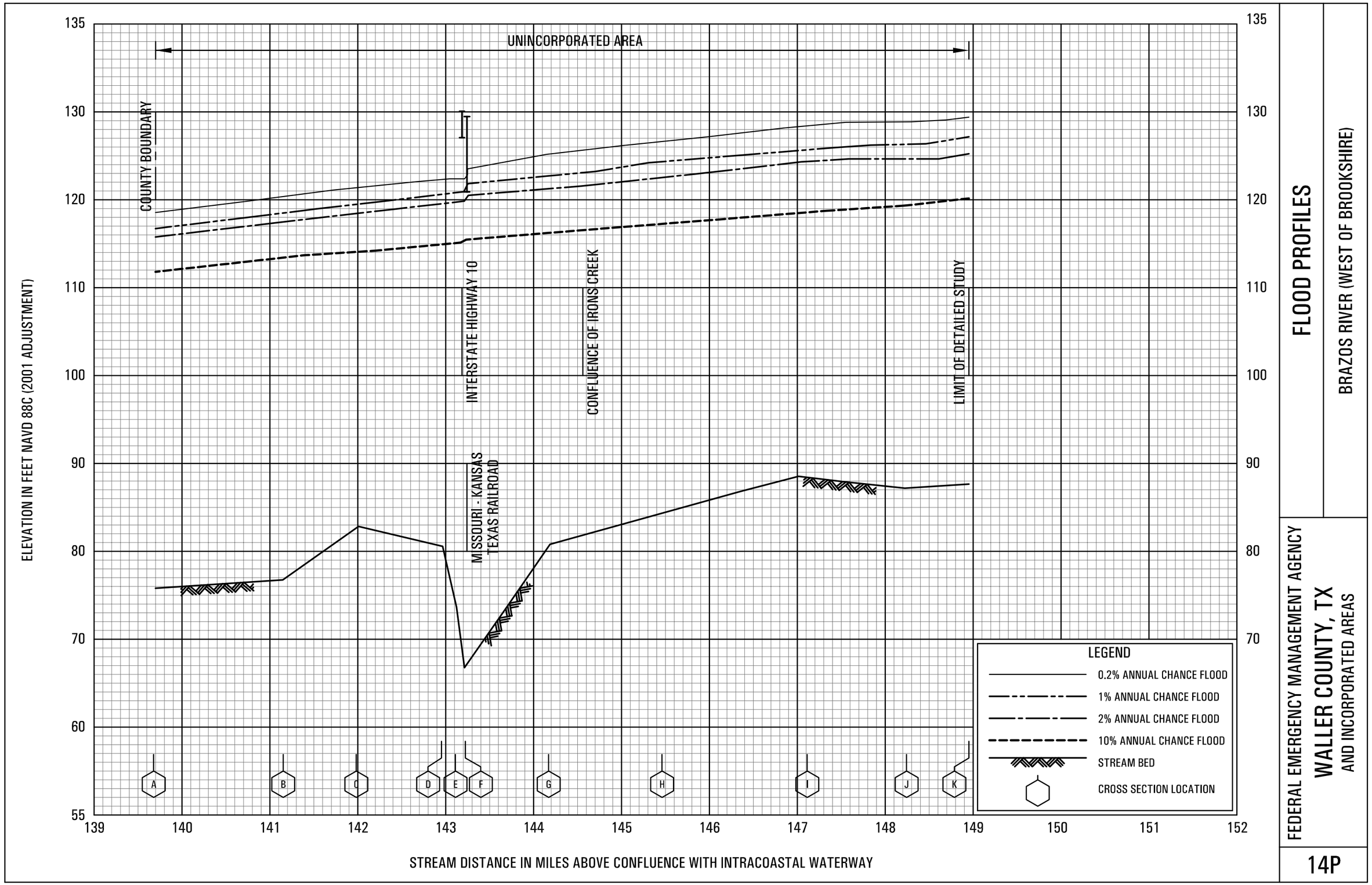
BLASINGAME CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

13(A7)P



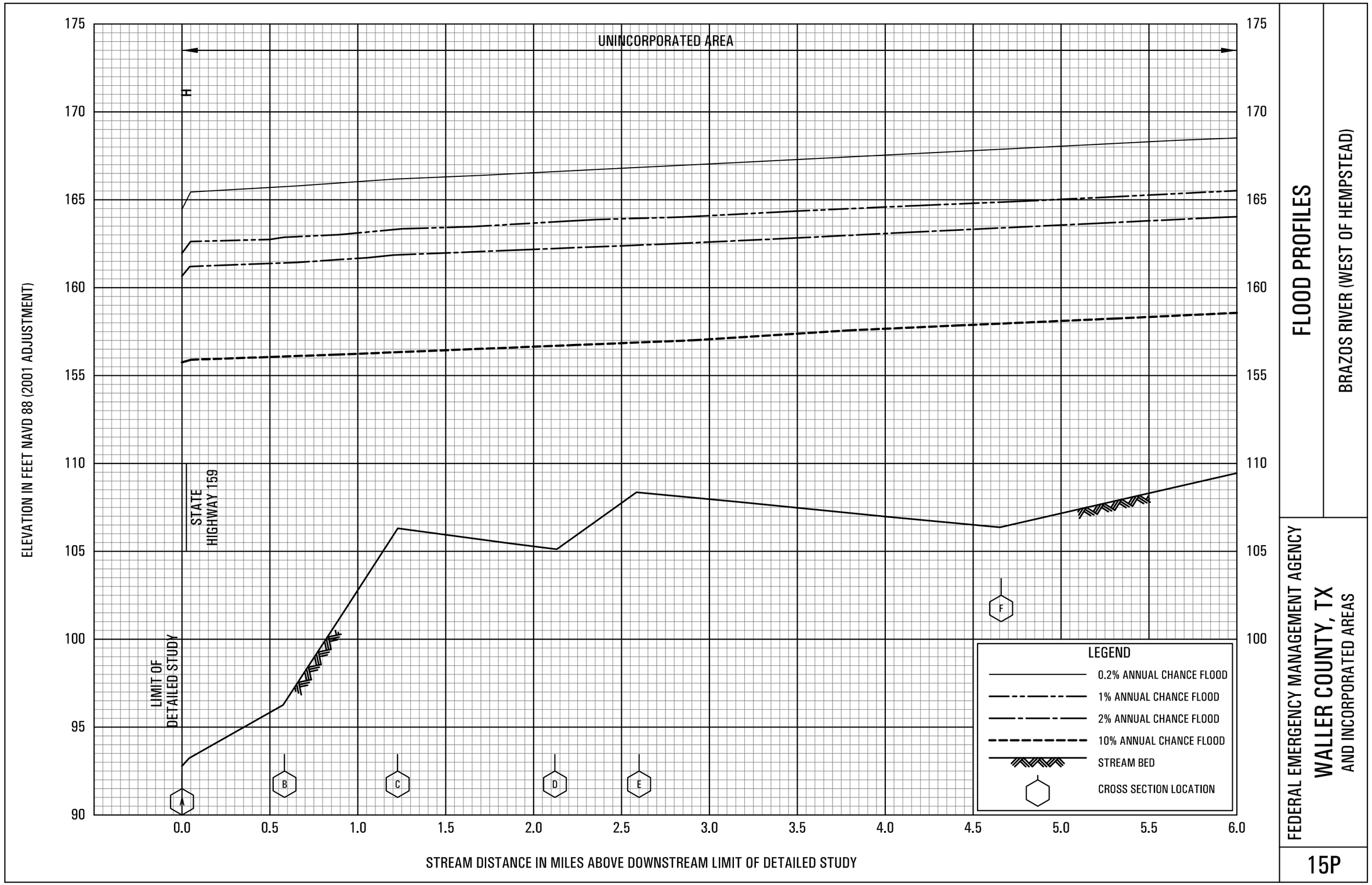
FLOOD PROFILES

BRAZOS RIVER (WEST OF BROOKSHIRE)

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



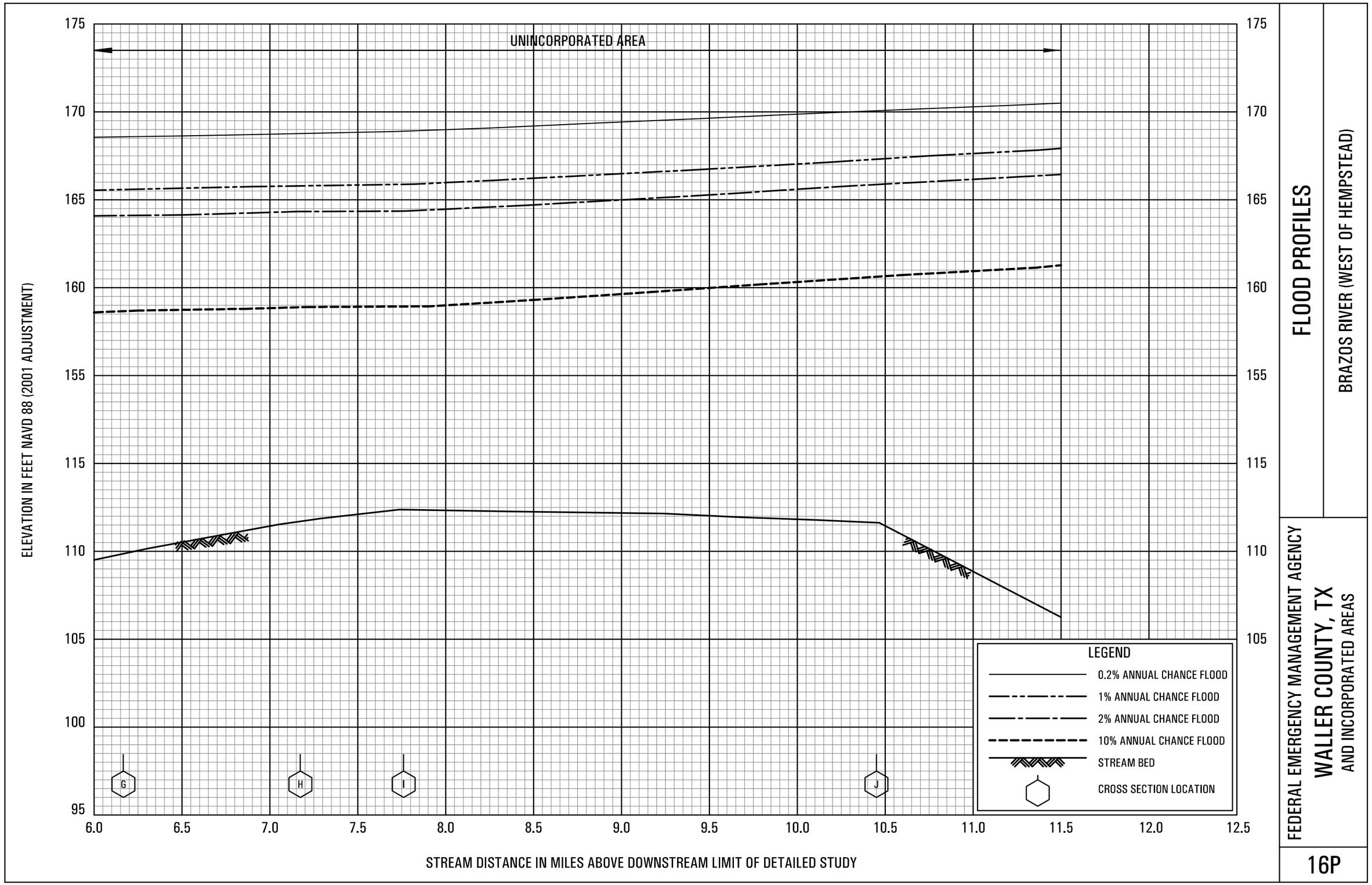
FLOOD PROFILES

BRAZOS RIVER (WEST OF HEMPSTEAD)

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



FLOOD PROFILES

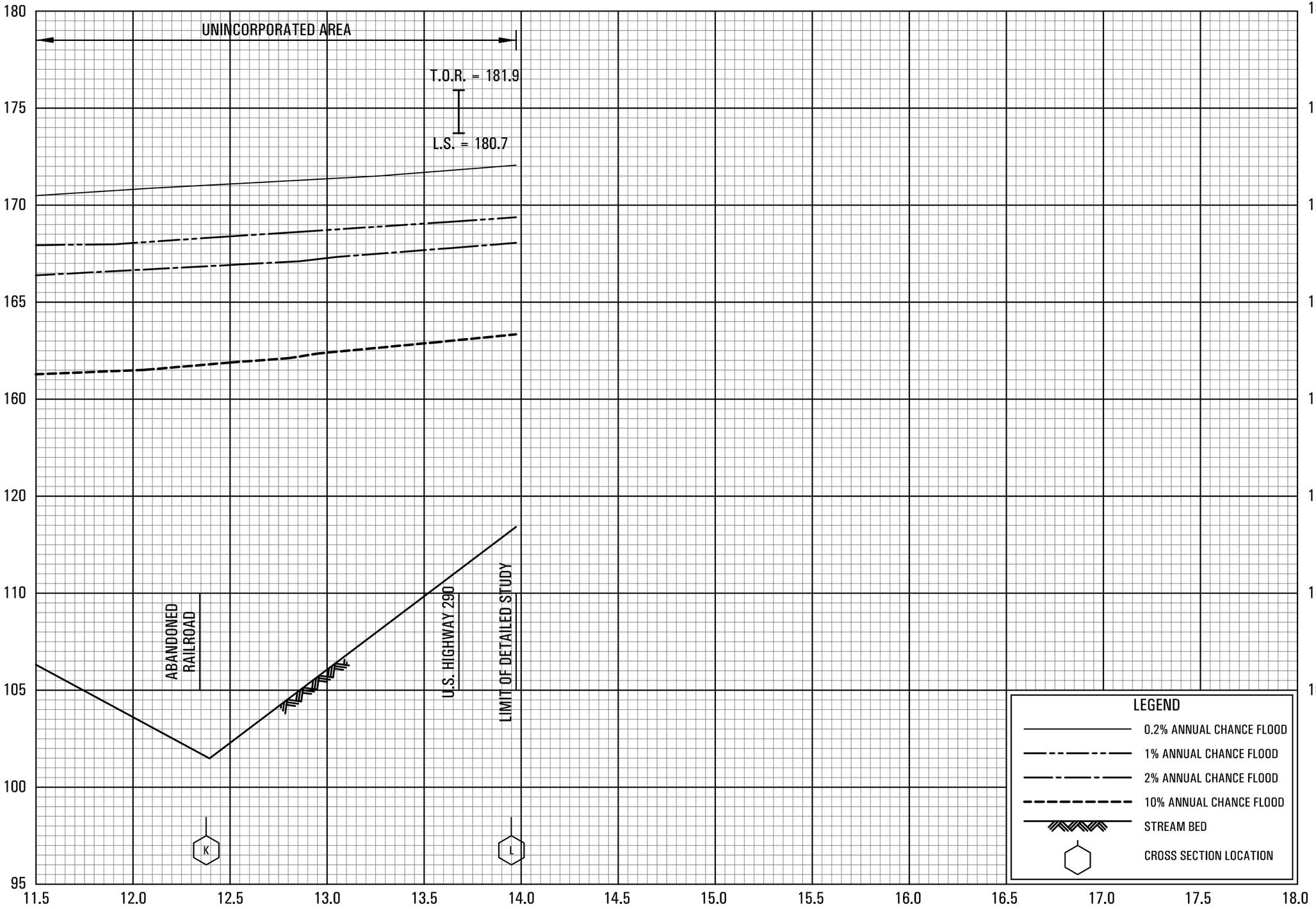
BRAZOS RIVER (WEST OF HEMPSTEAD)

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

16P



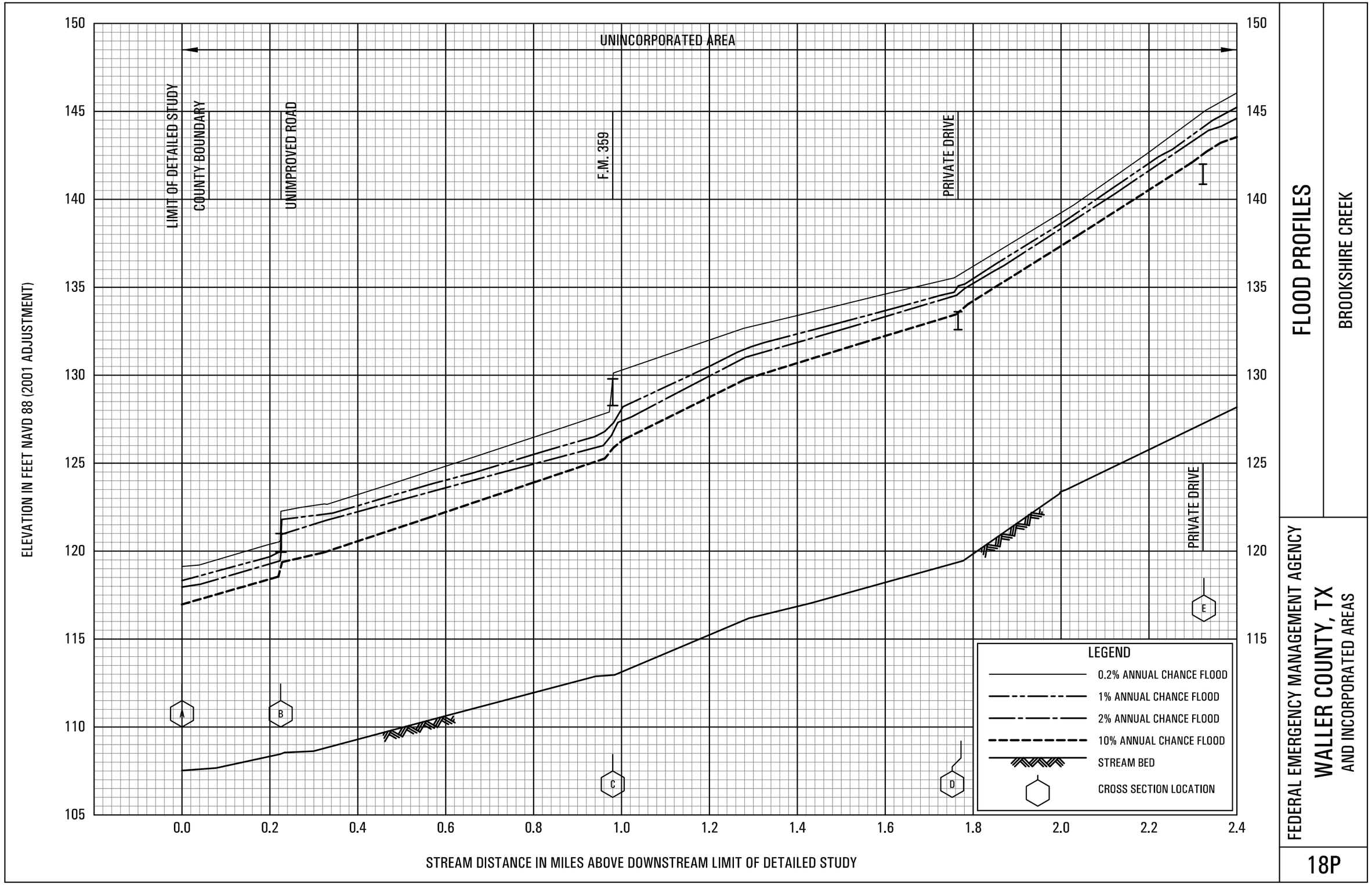
FLOOD PROFILES

BRAZOS RIVER (WEST OF HEMPSTEAD)

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



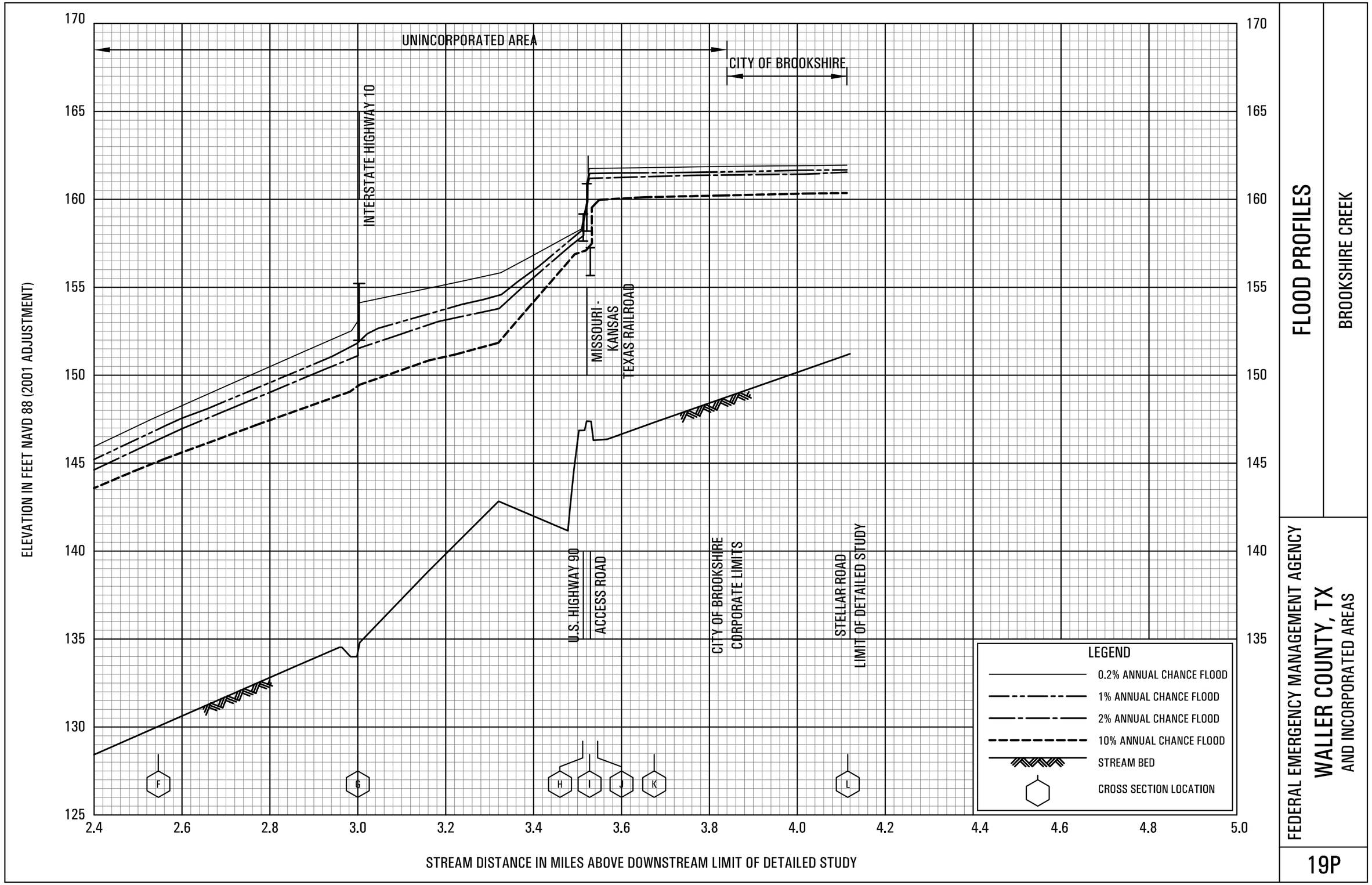
FLOOD PROFILES

BROOKSHIRE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



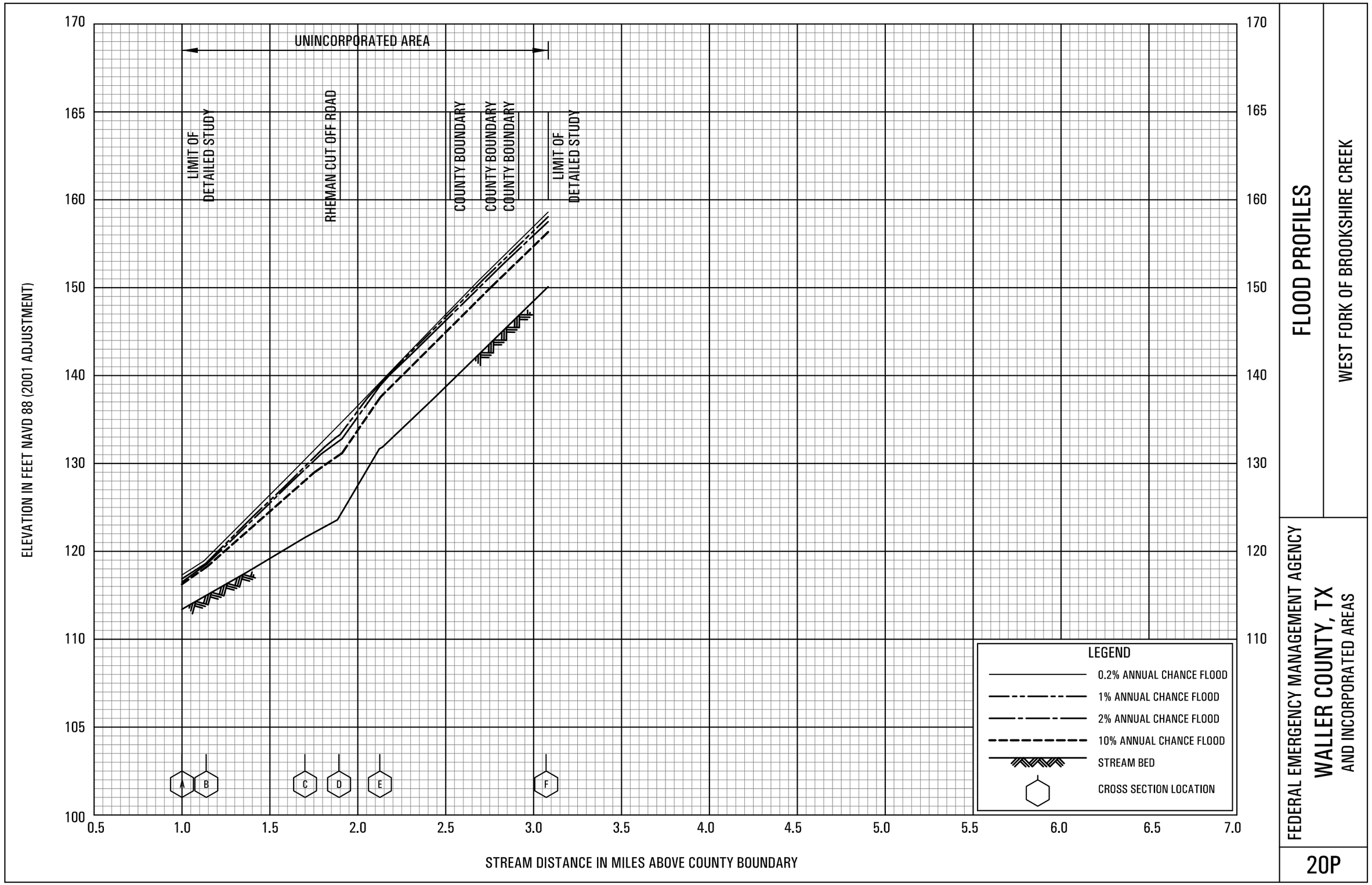
FLOOD PROFILES

BROOKSHIRE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



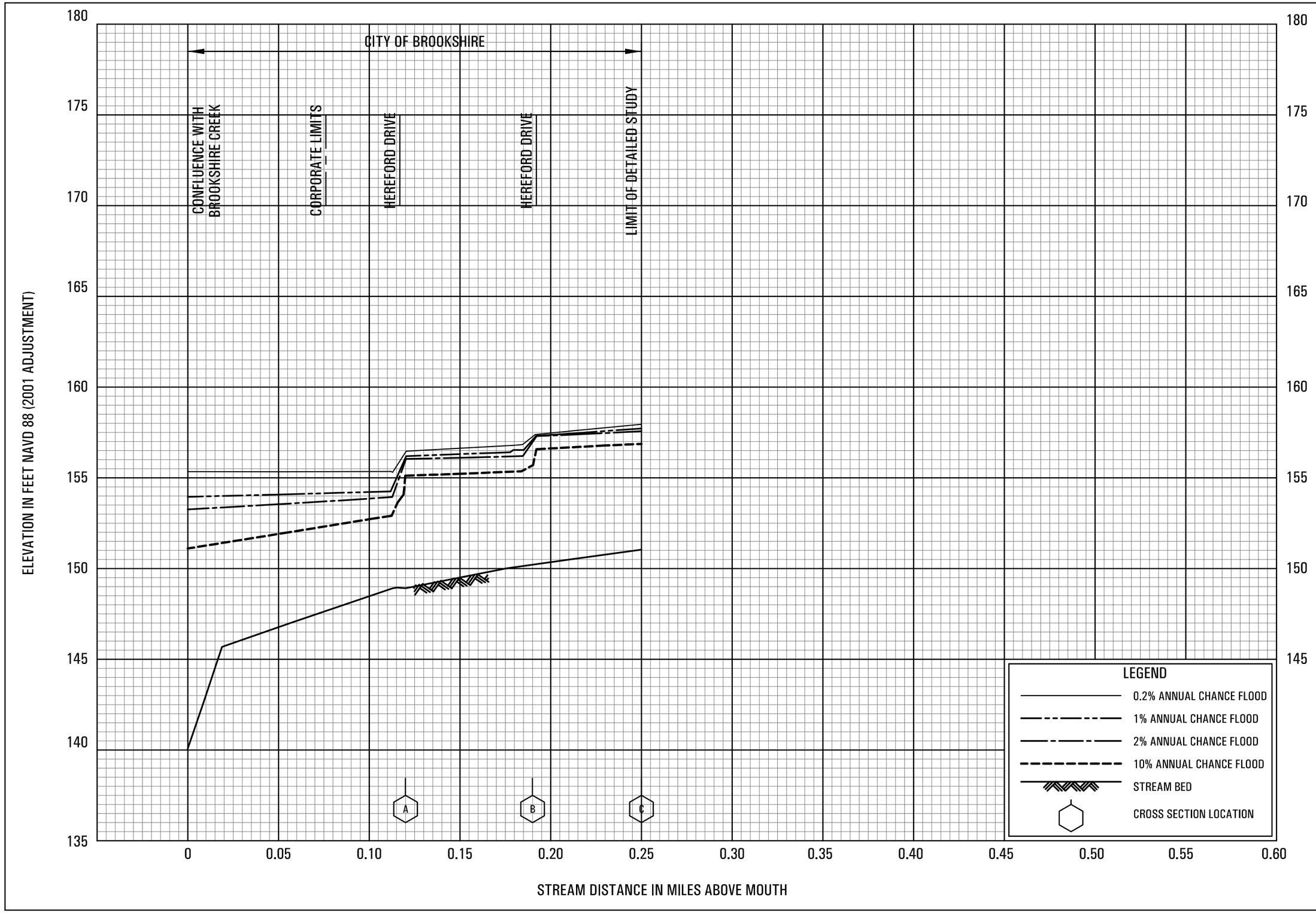
FLOOD PROFILES

WEST FORK OF BROOKSHIRE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



FLOOD PROFILES

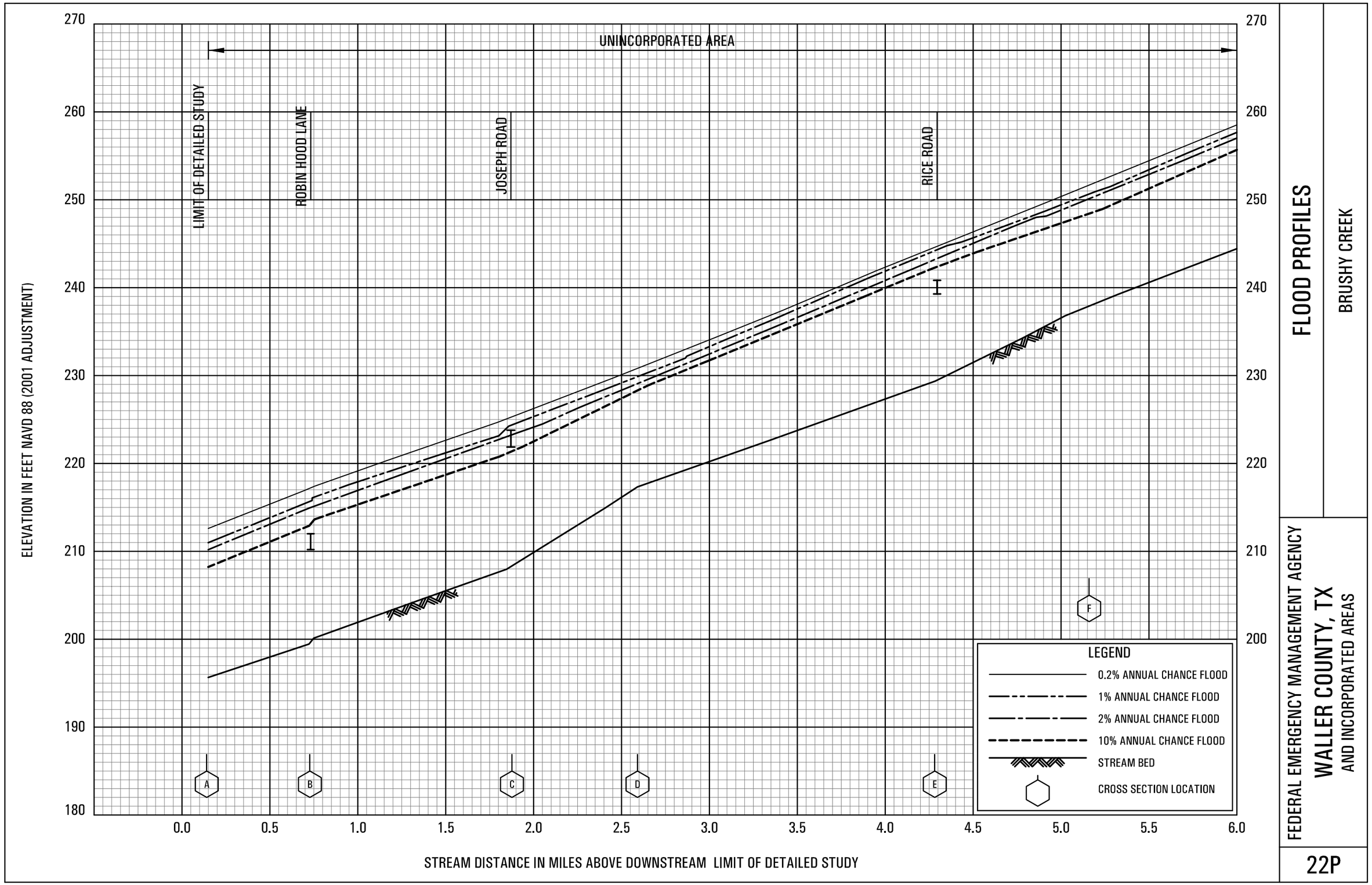
BROOKSHIRE CREEK DRAINAGE DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

21P



FLOOD PROFILES

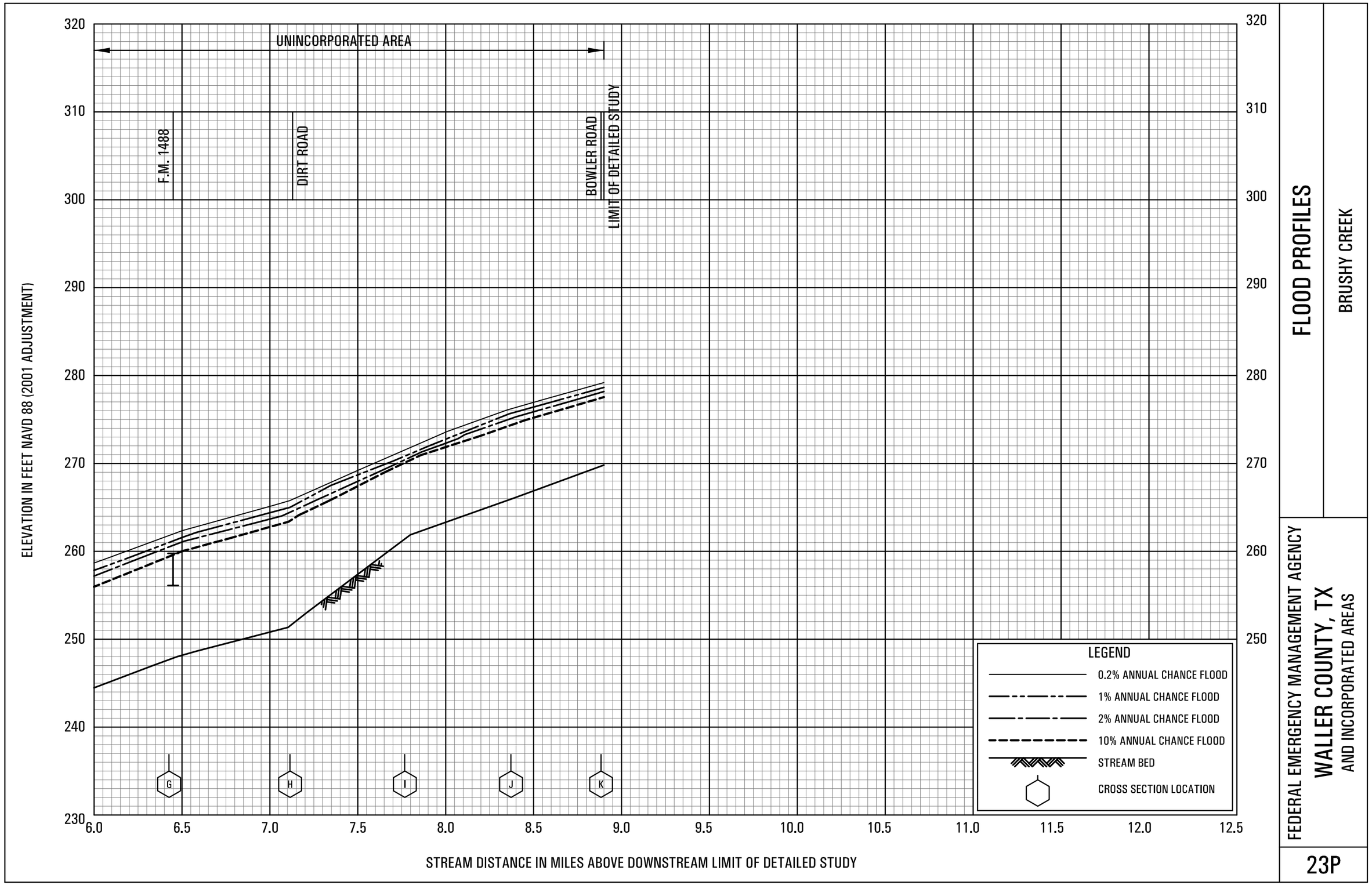
BRUSHY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

22P



FLOOD PROFILES

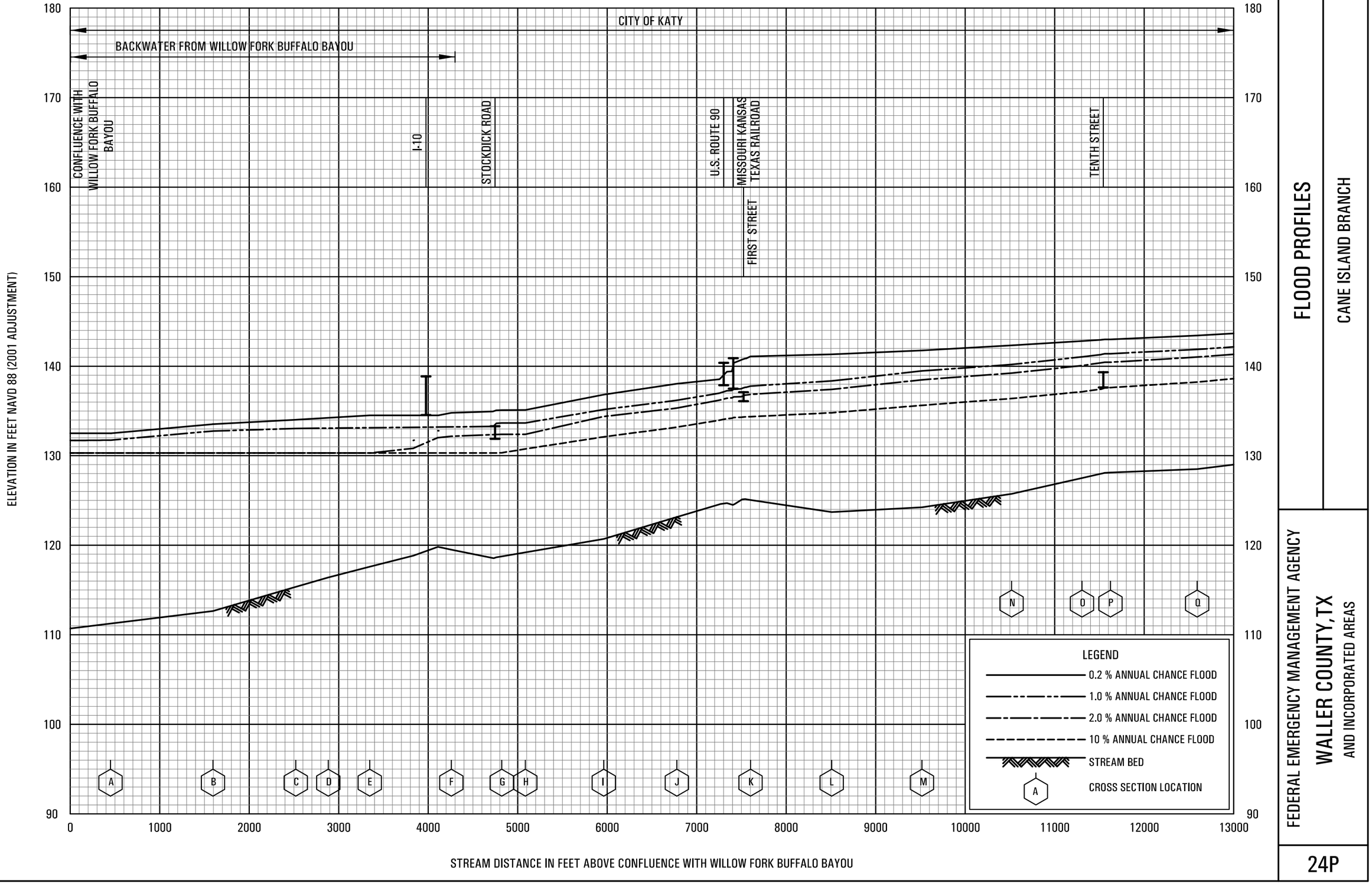
BRUSHY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

23P



FLOOD PROFILES

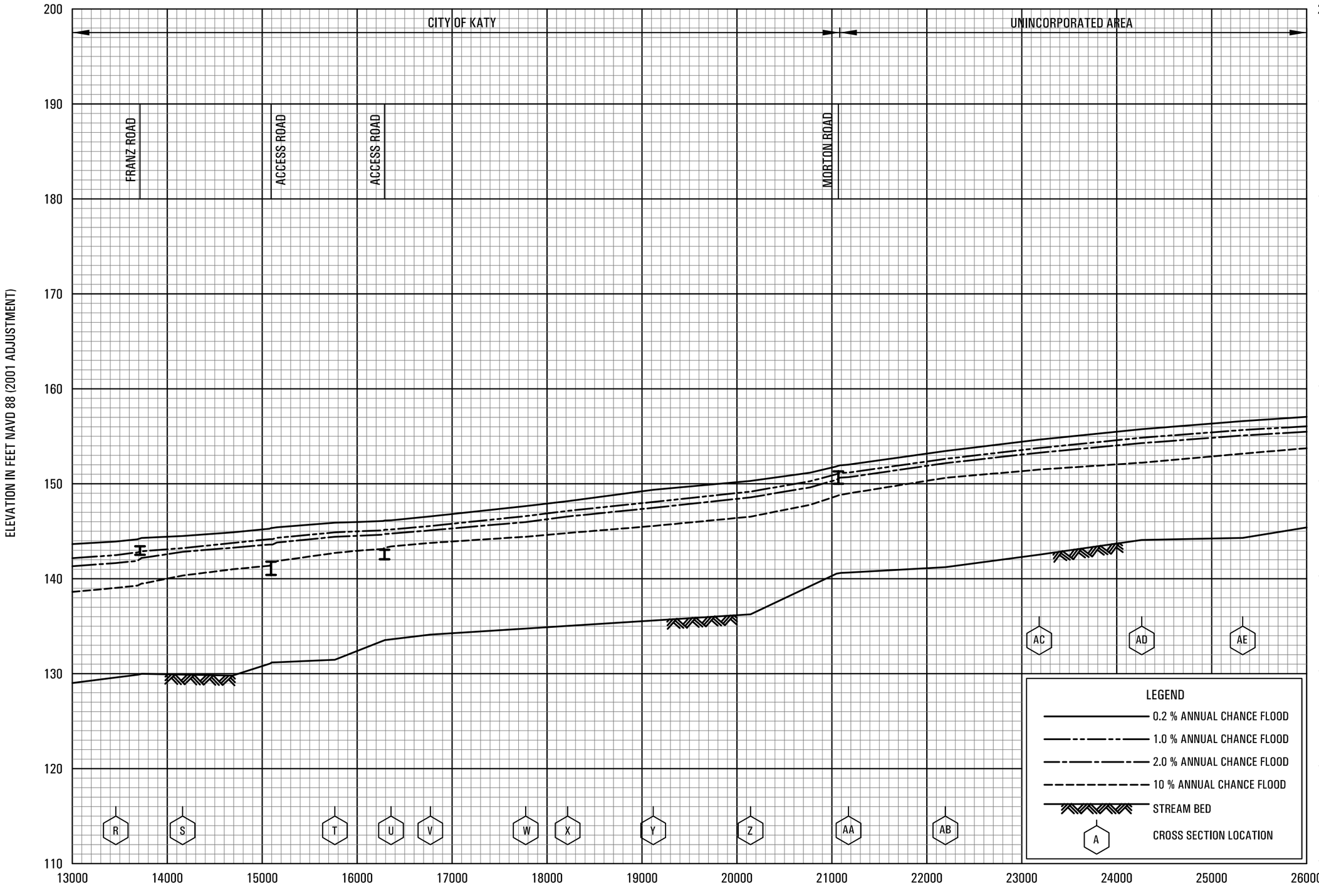
CANE ISLAND BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

24P



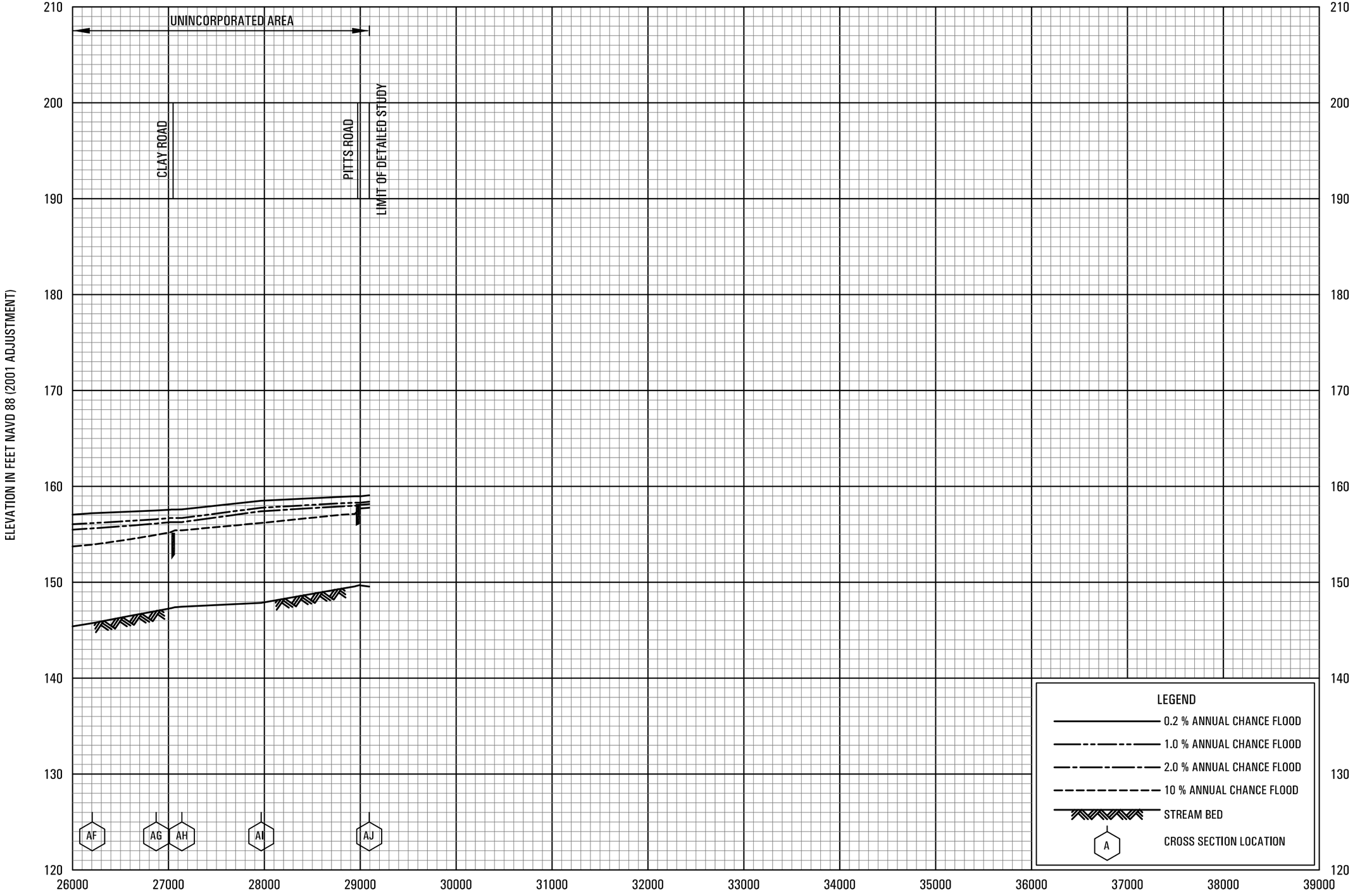
FLOOD PROFILES

CANE ISLAND BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



FLOOD PROFILES

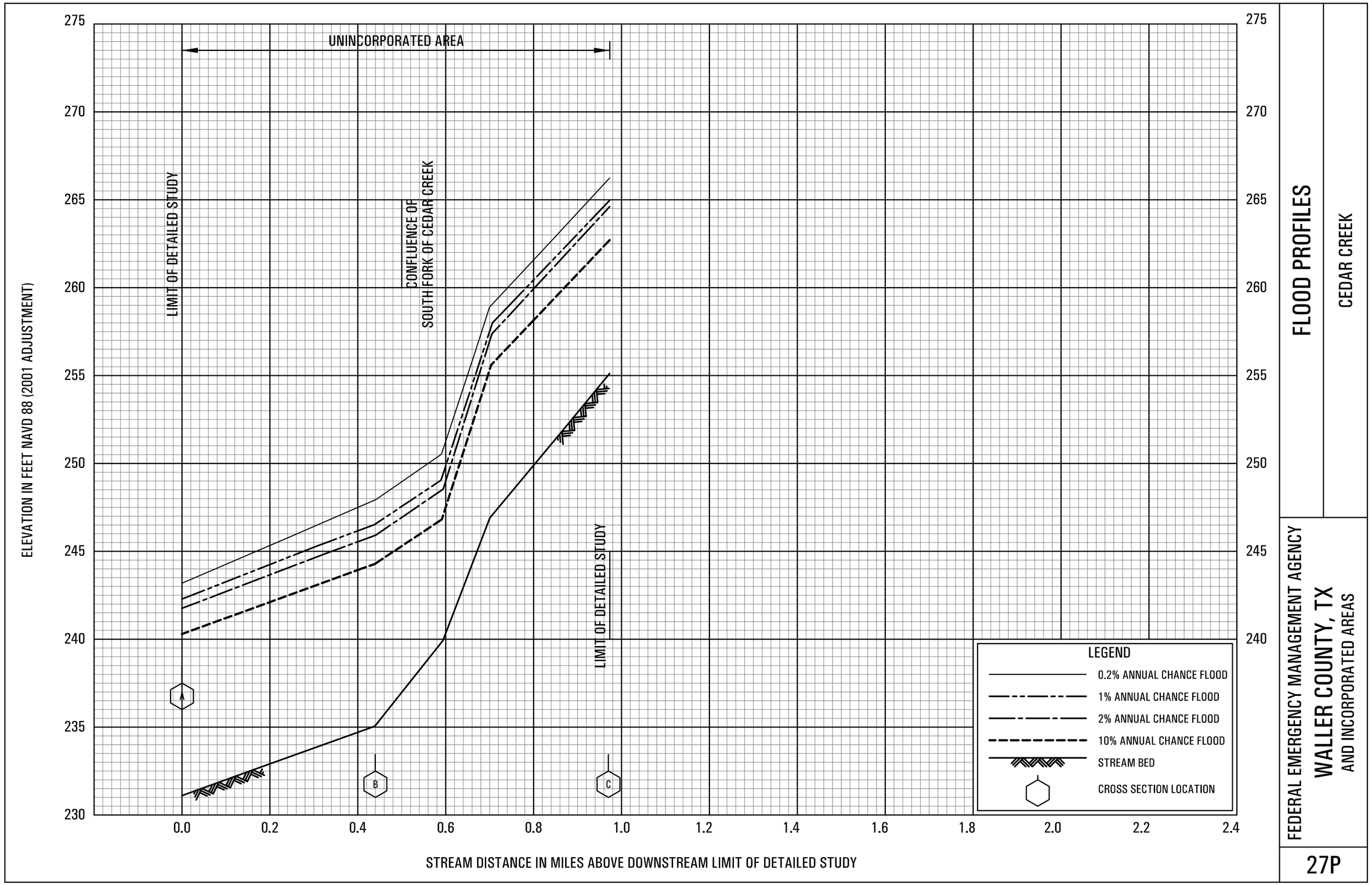
CANE ISLAND BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

26P



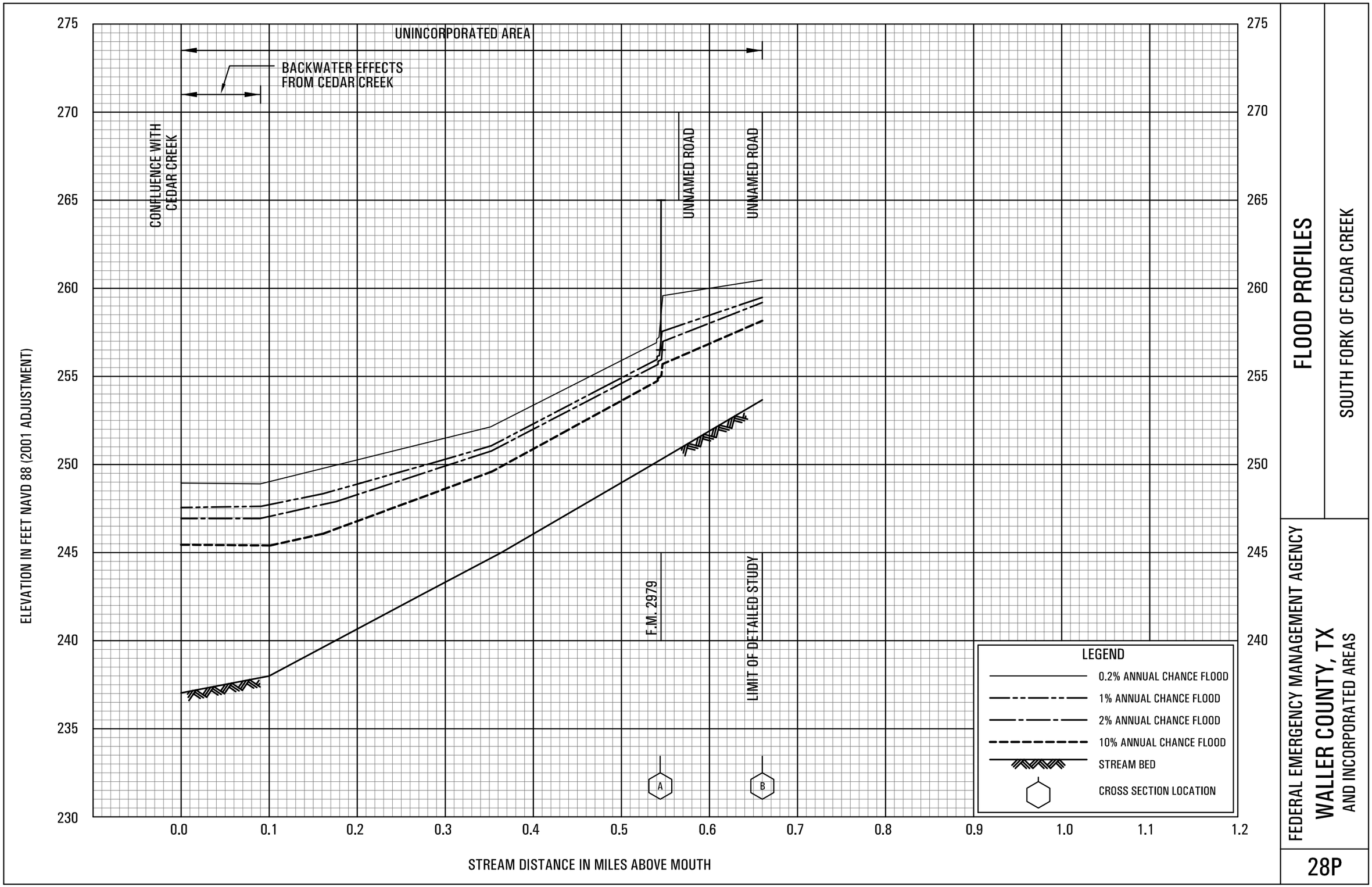
FLOOD PROFILES

CEDAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



FLOOD PROFILES

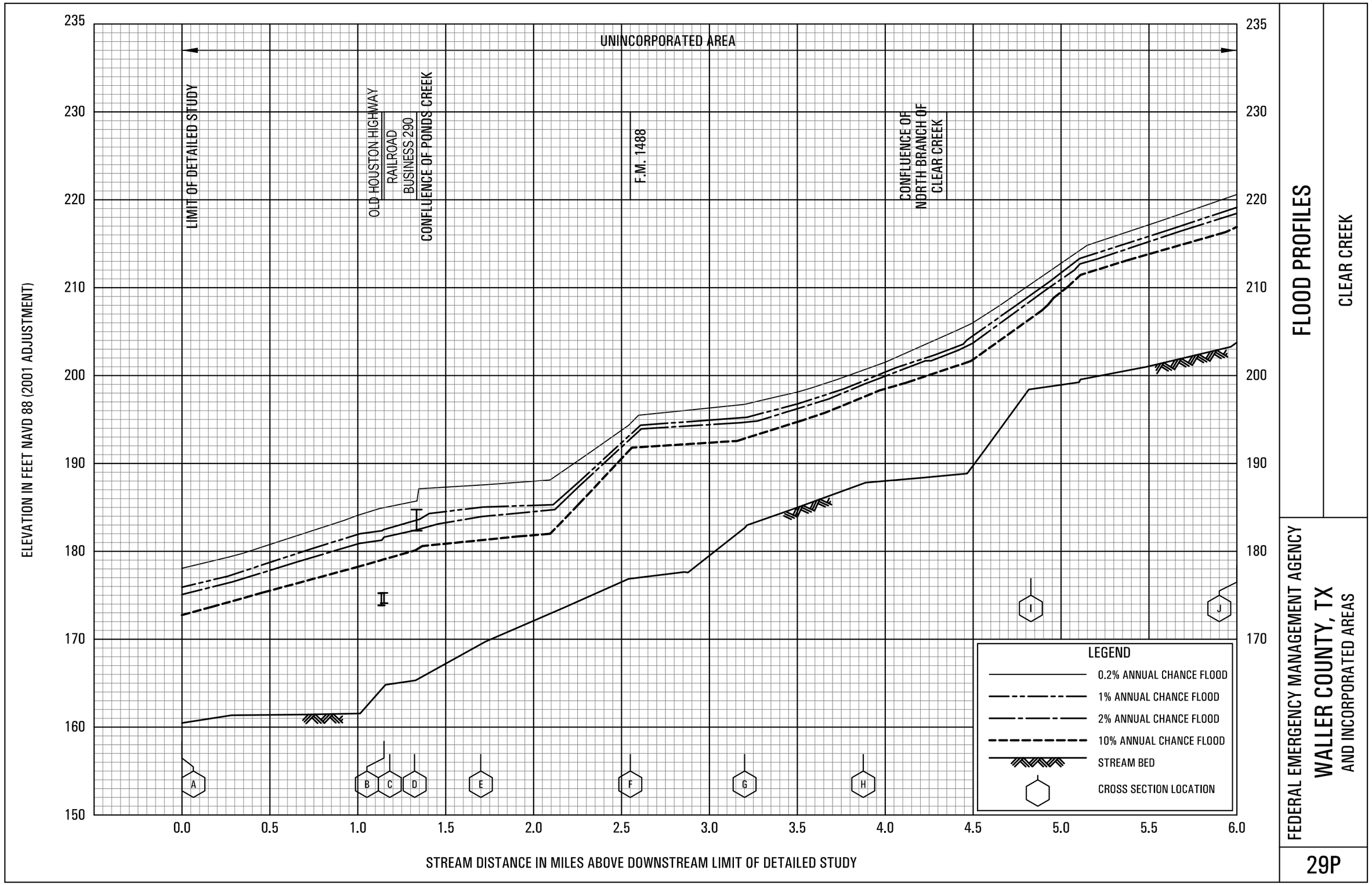
SOUTH FORK OF CEDAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

28P



FLOOD PROFILES

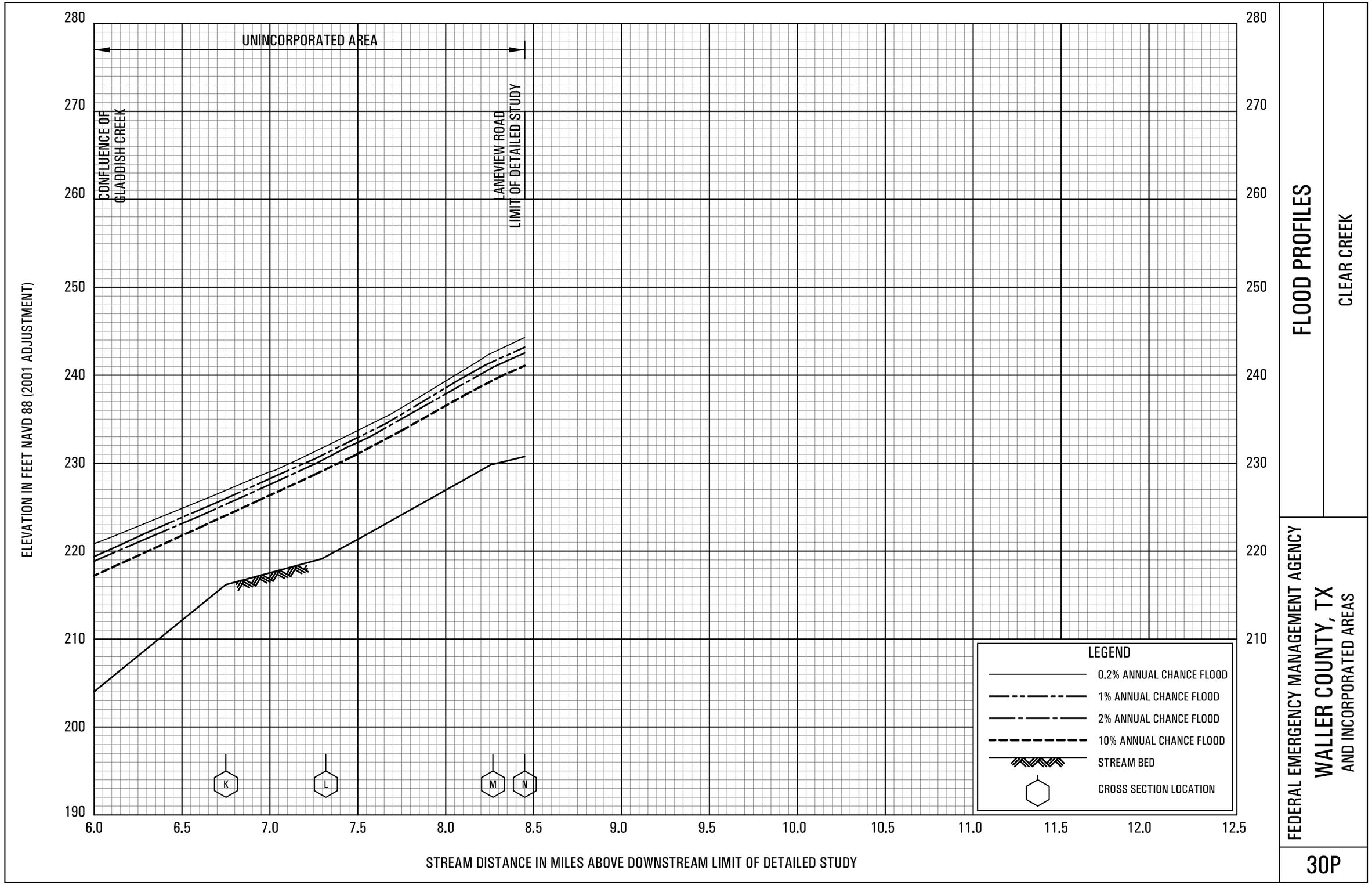
CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

29P



FLOOD PROFILES

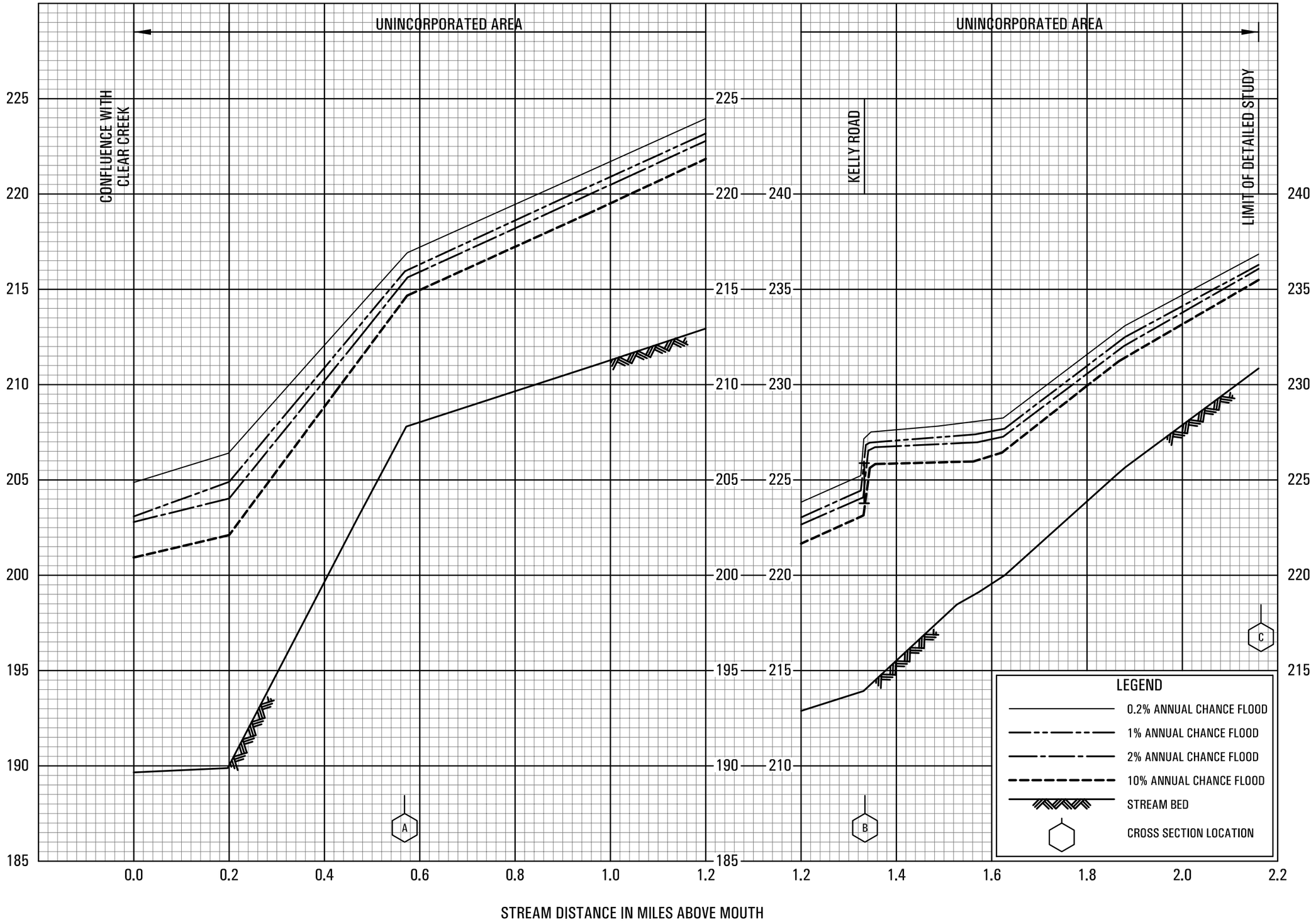
CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

30P



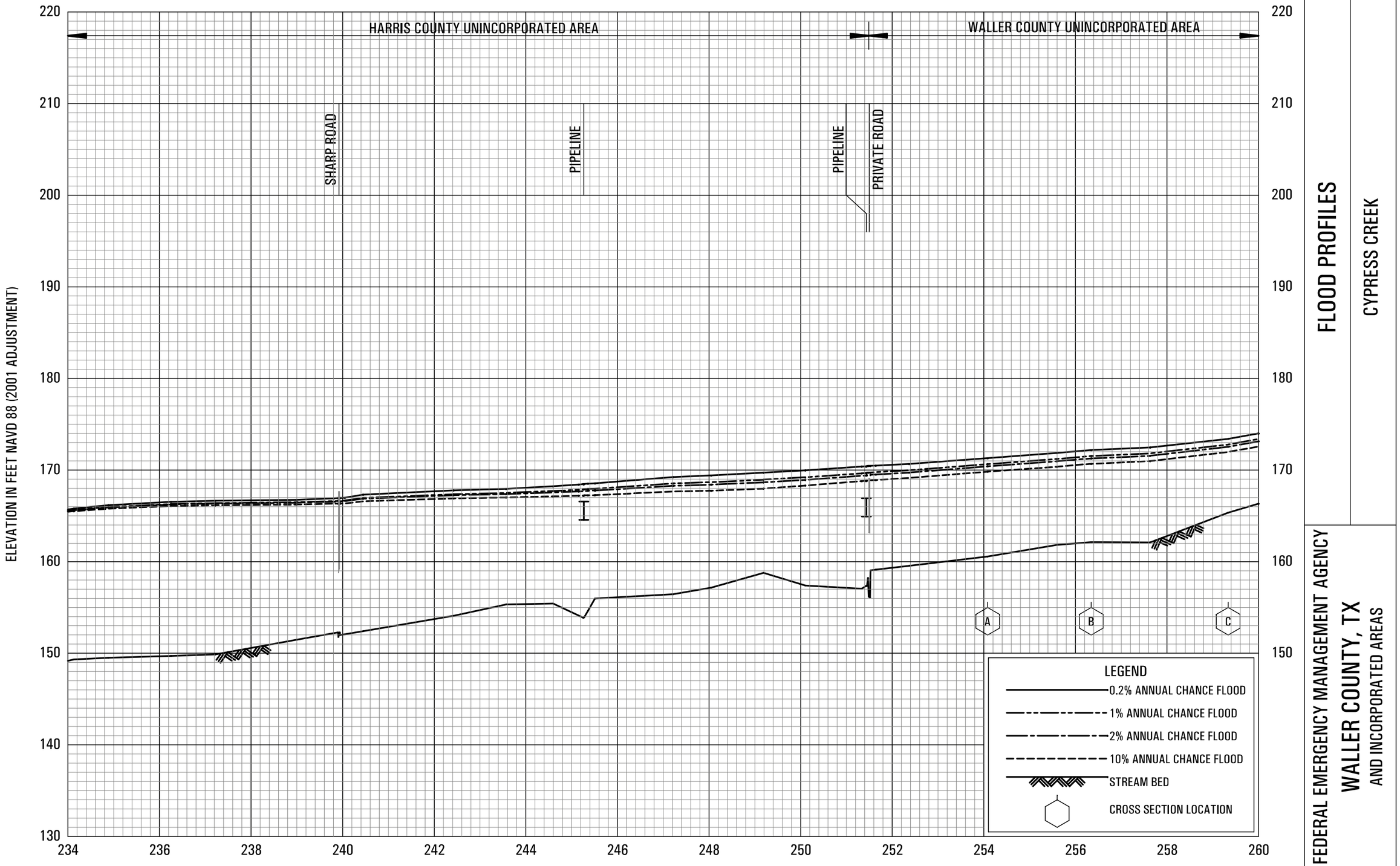
FLOOD PROFILES

NORTH BRANCH OF CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



FLOOD PROFILES

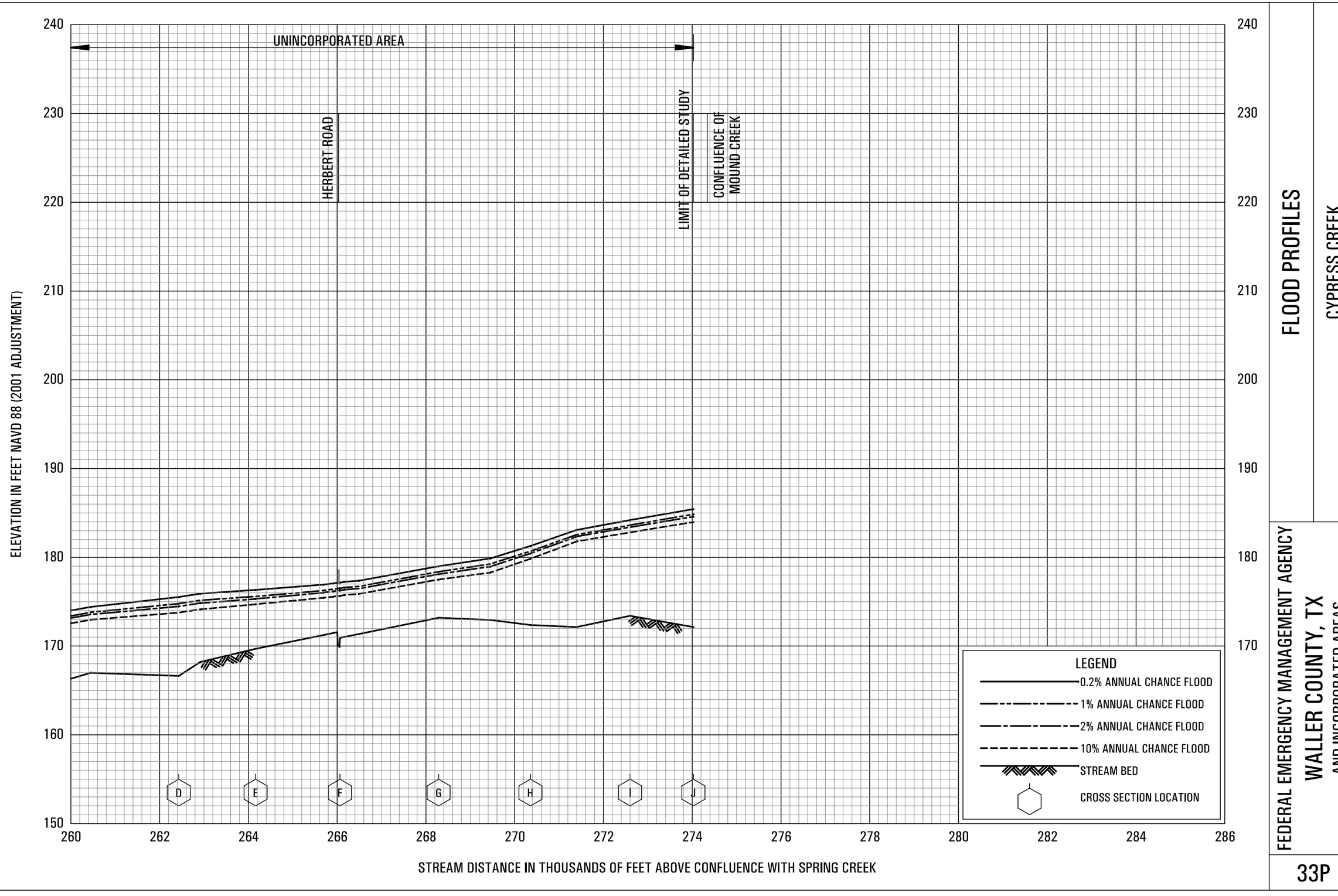
CYPRESS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

32P



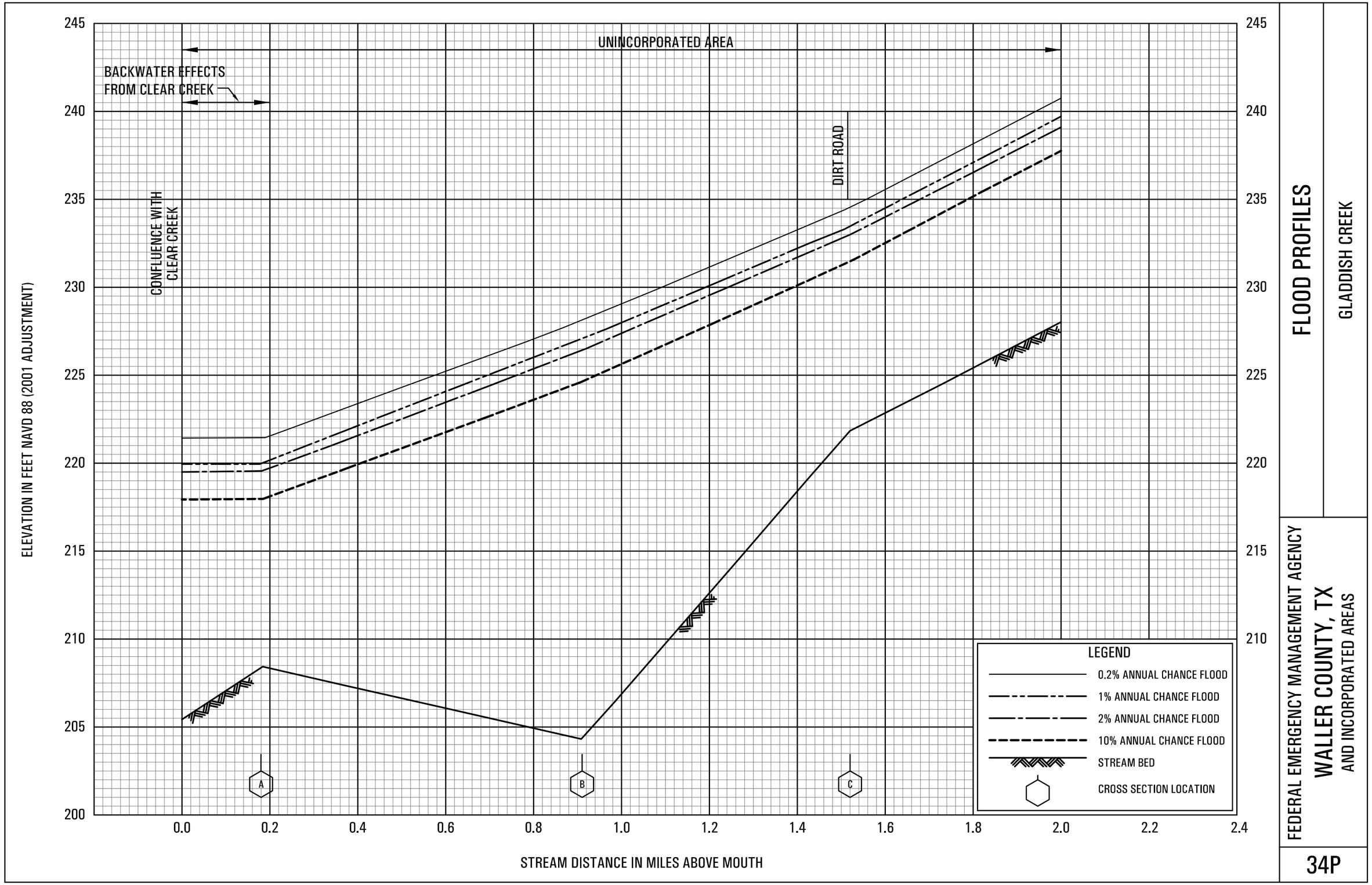
FLOOD PROFILES

CYPRESS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



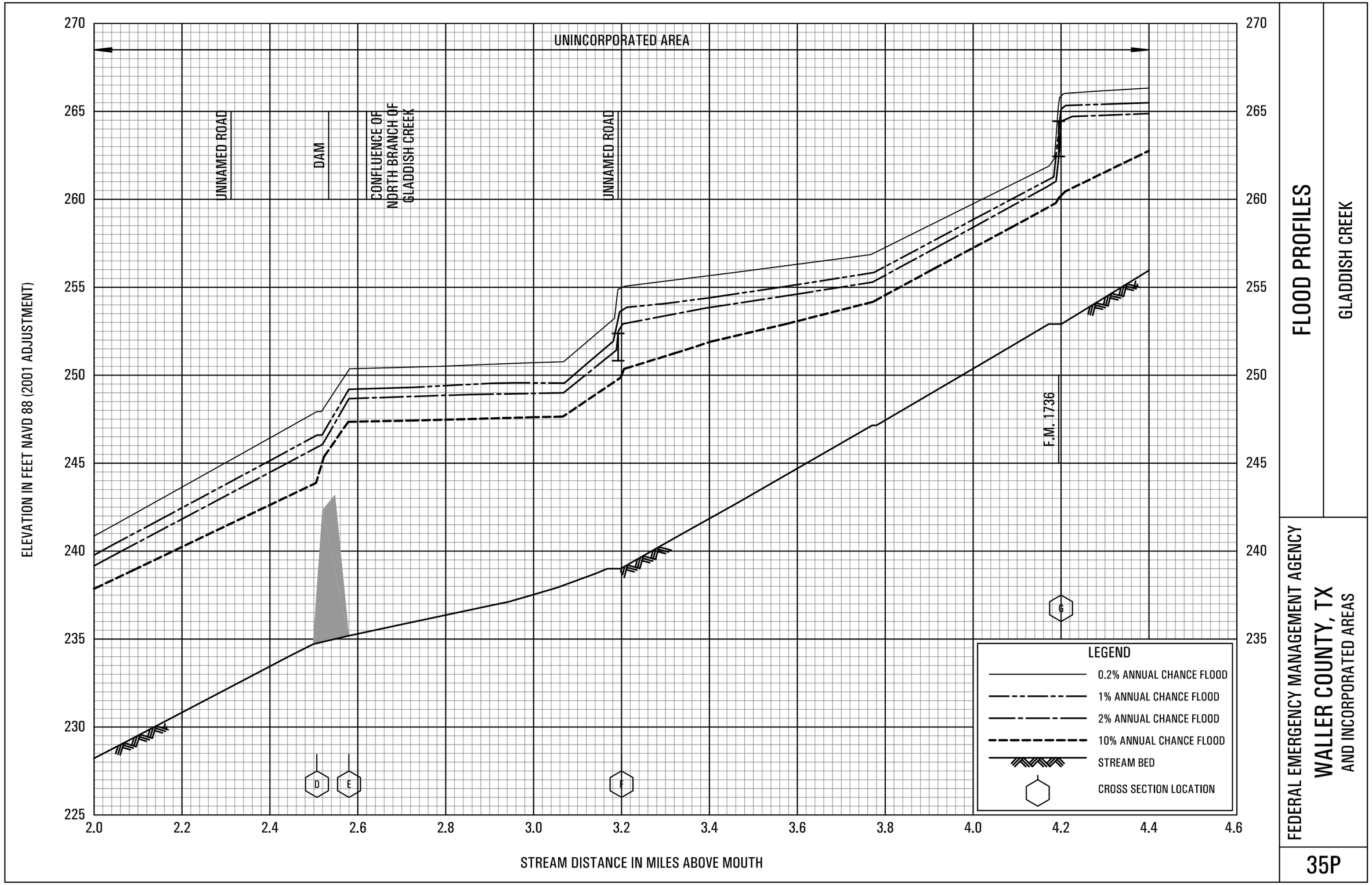
FLOOD PROFILES

GLADDISH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



FLOOD PROFILES

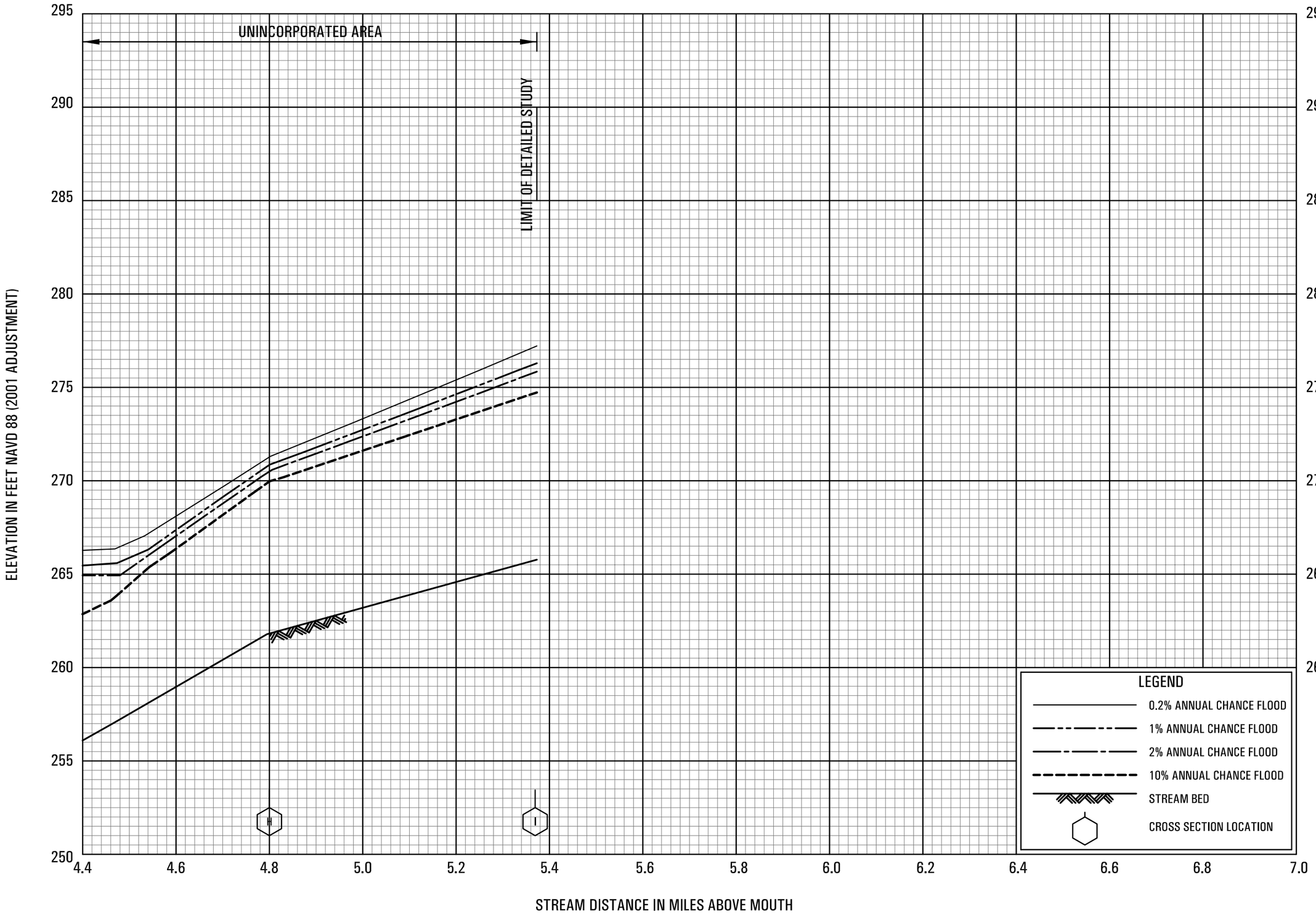
GLADDISH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

35P



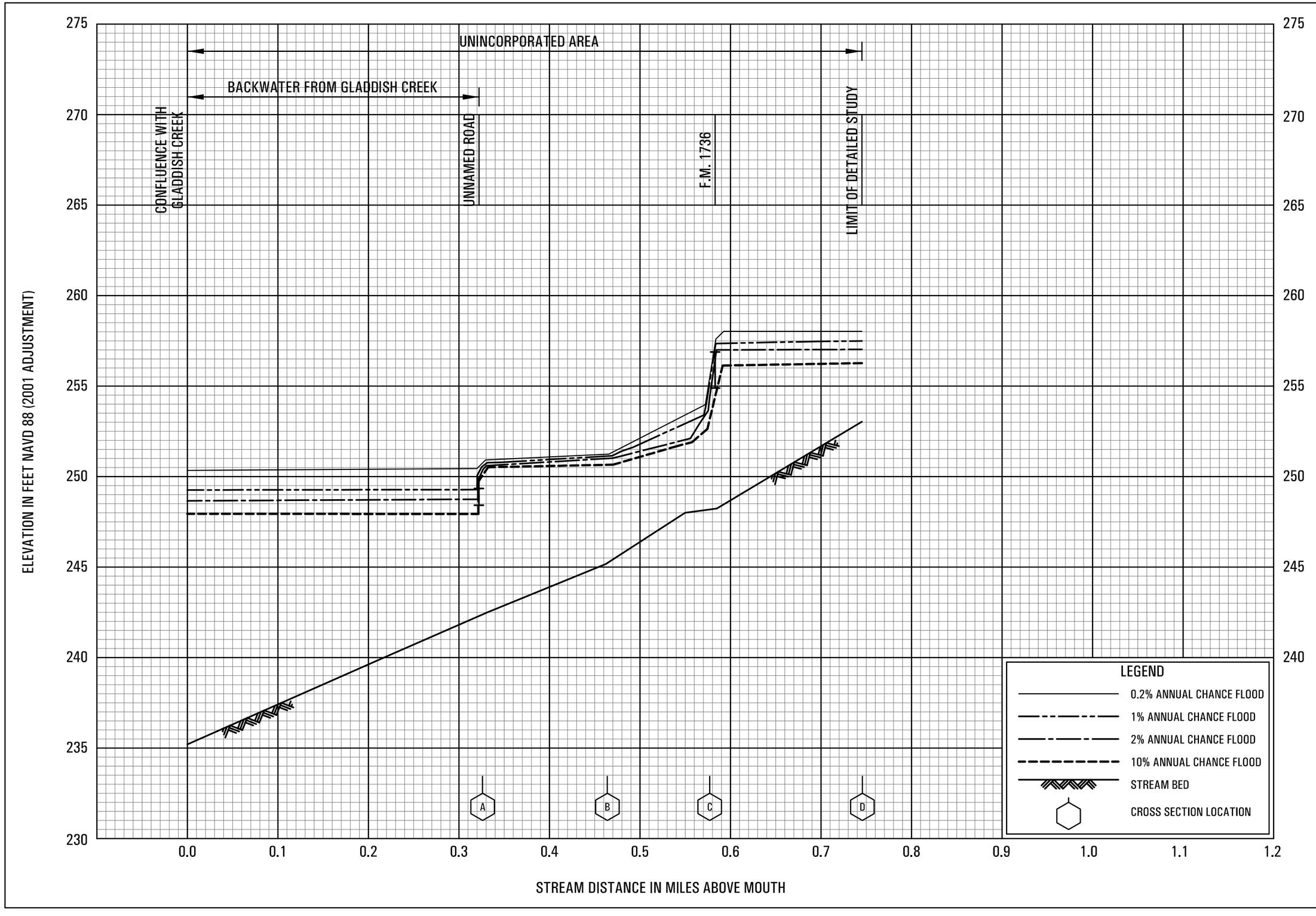
FLOOD PROFILES

GLADDISH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



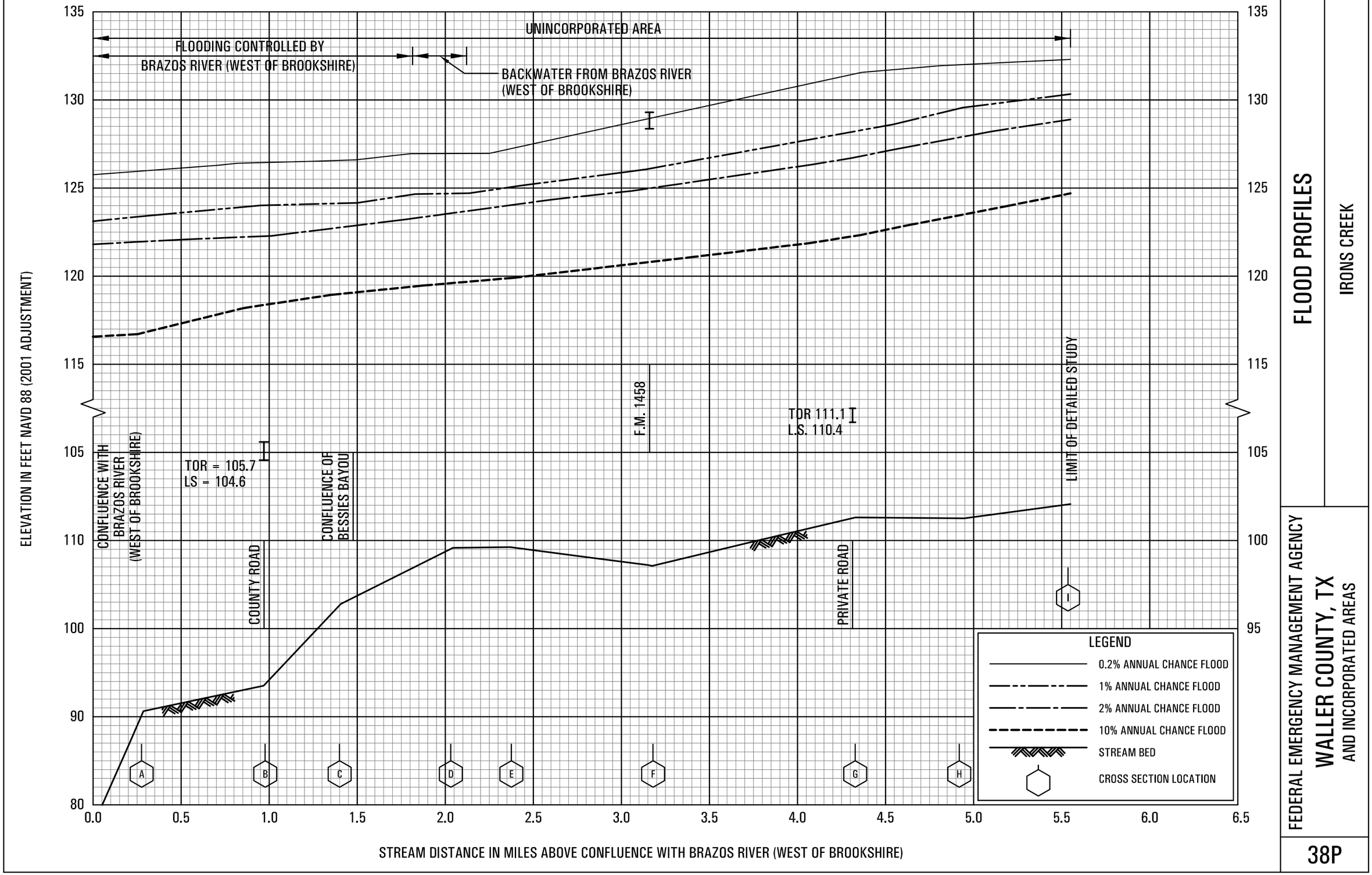
FLOOD PROFILES

NORTH BRANCH OF GLADDISH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX
AND INCORPORATED AREAS

37P



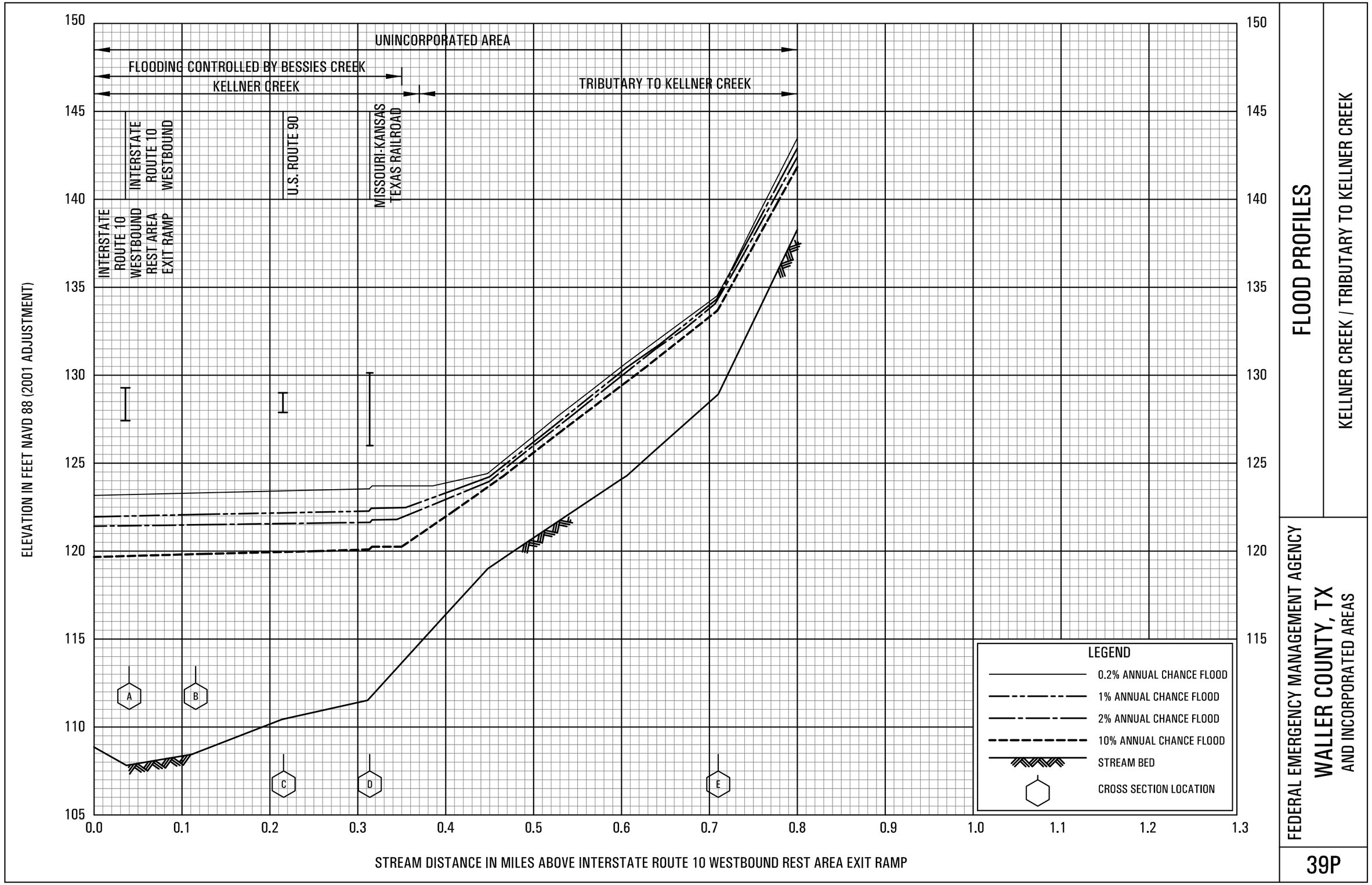
FLOOD PROFILES

IRONS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



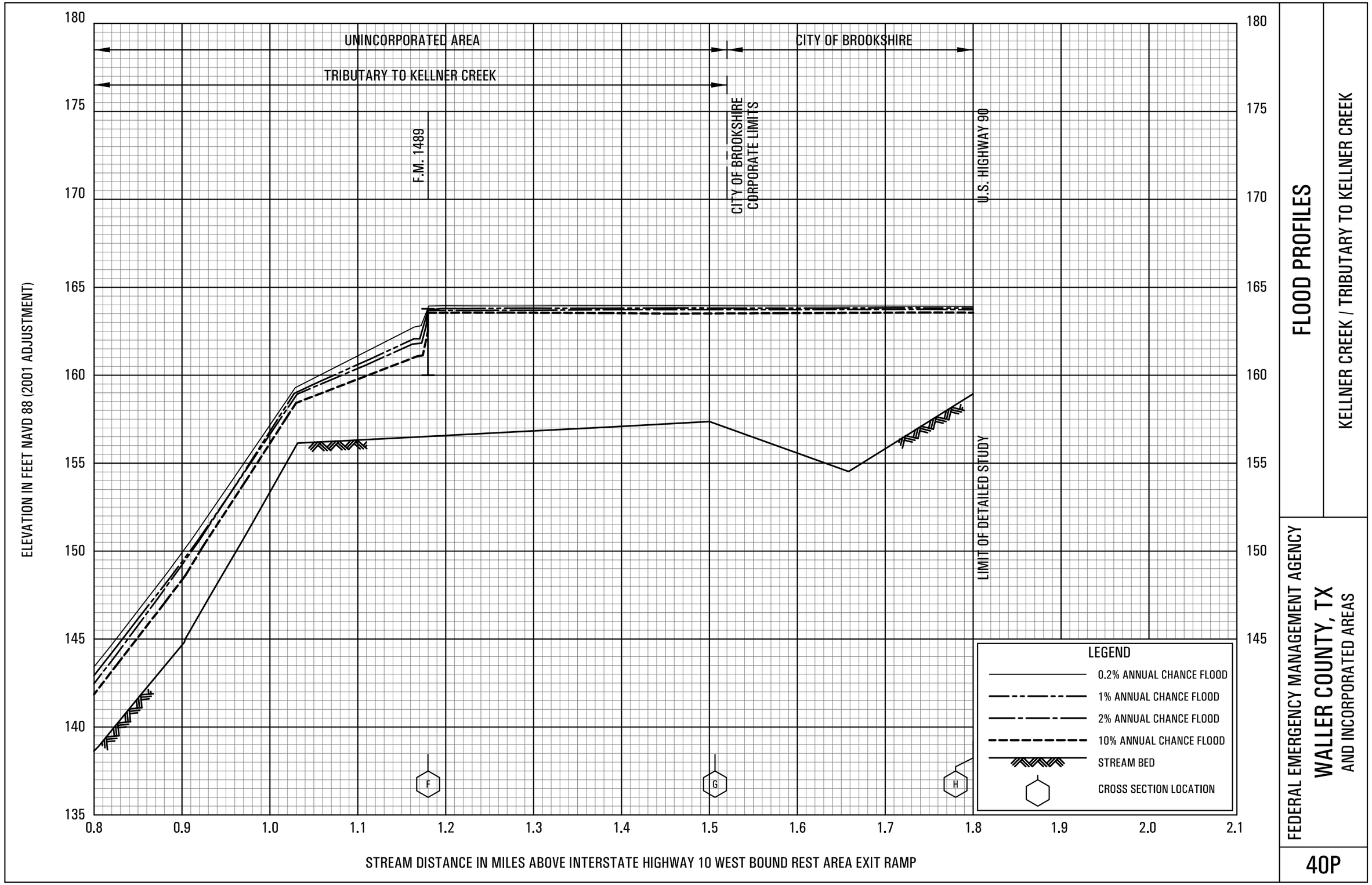
FLOOD PROFILES

KELLNER CREEK / TRIBUTARY TO KELLNER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



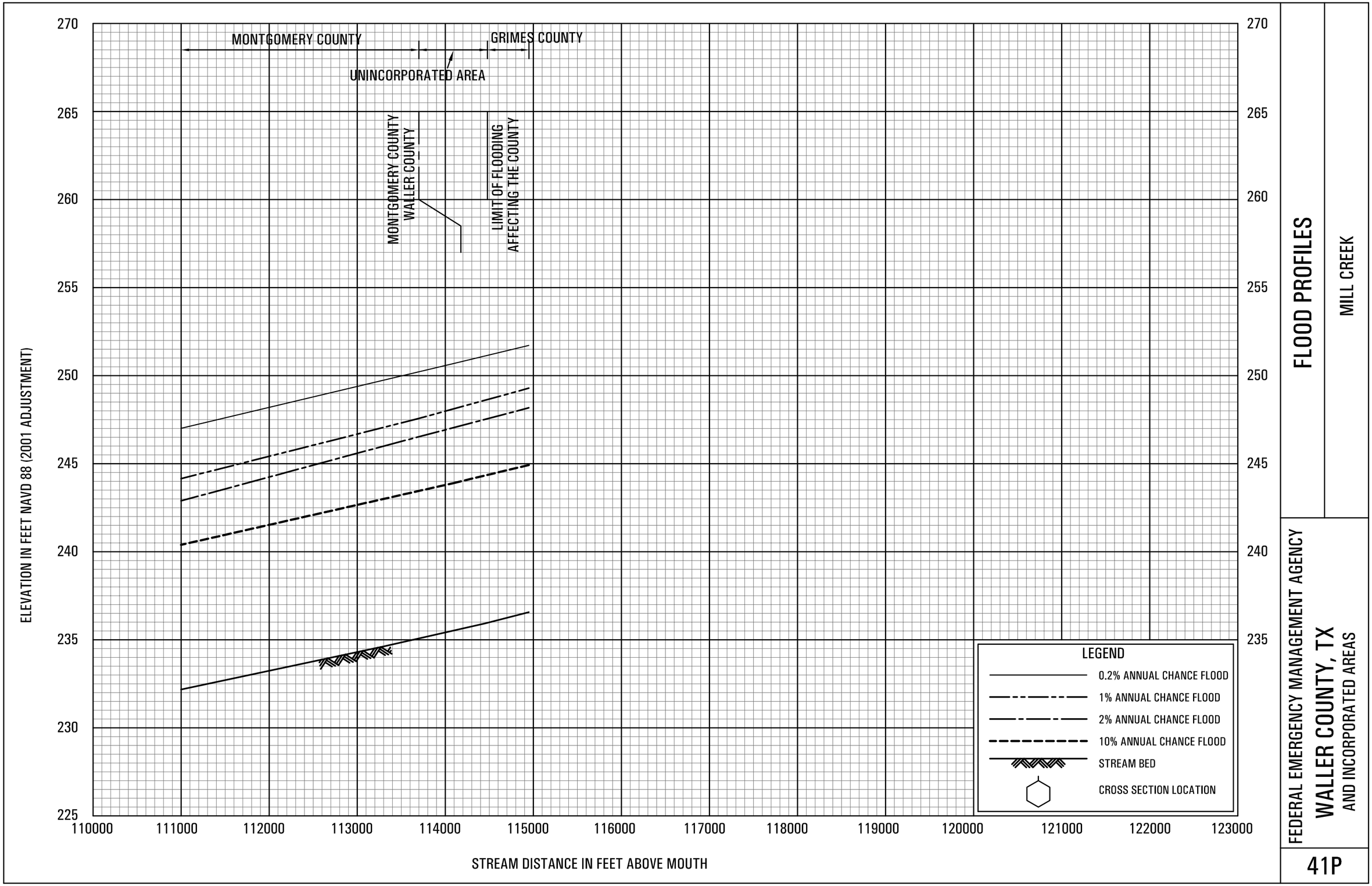
FLOOD PROFILES

KELLNER CREEK / TRIBUTARY TO KELLNER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



FLOOD PROFILES

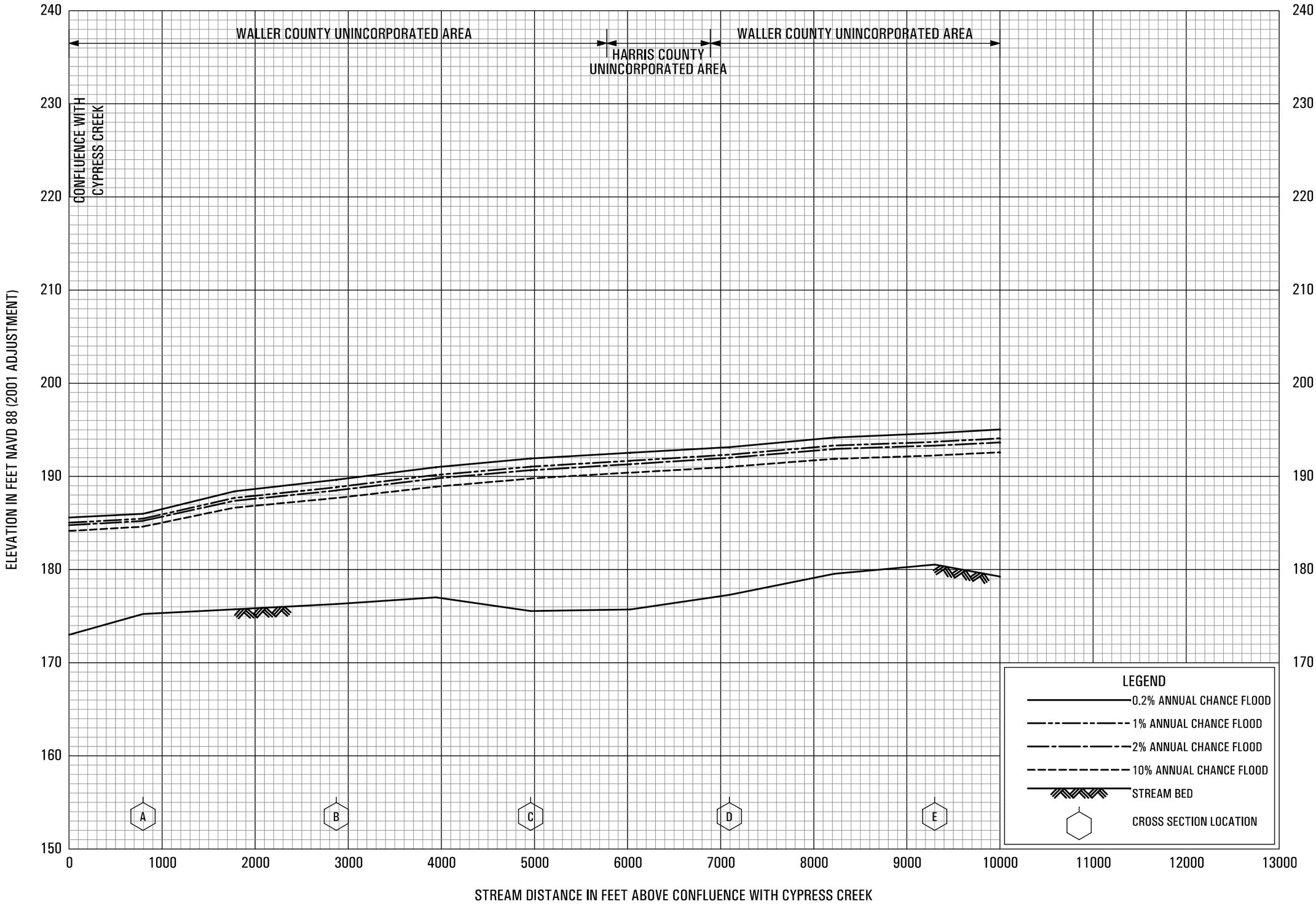
MILL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

41P



FLOOD PROFILES

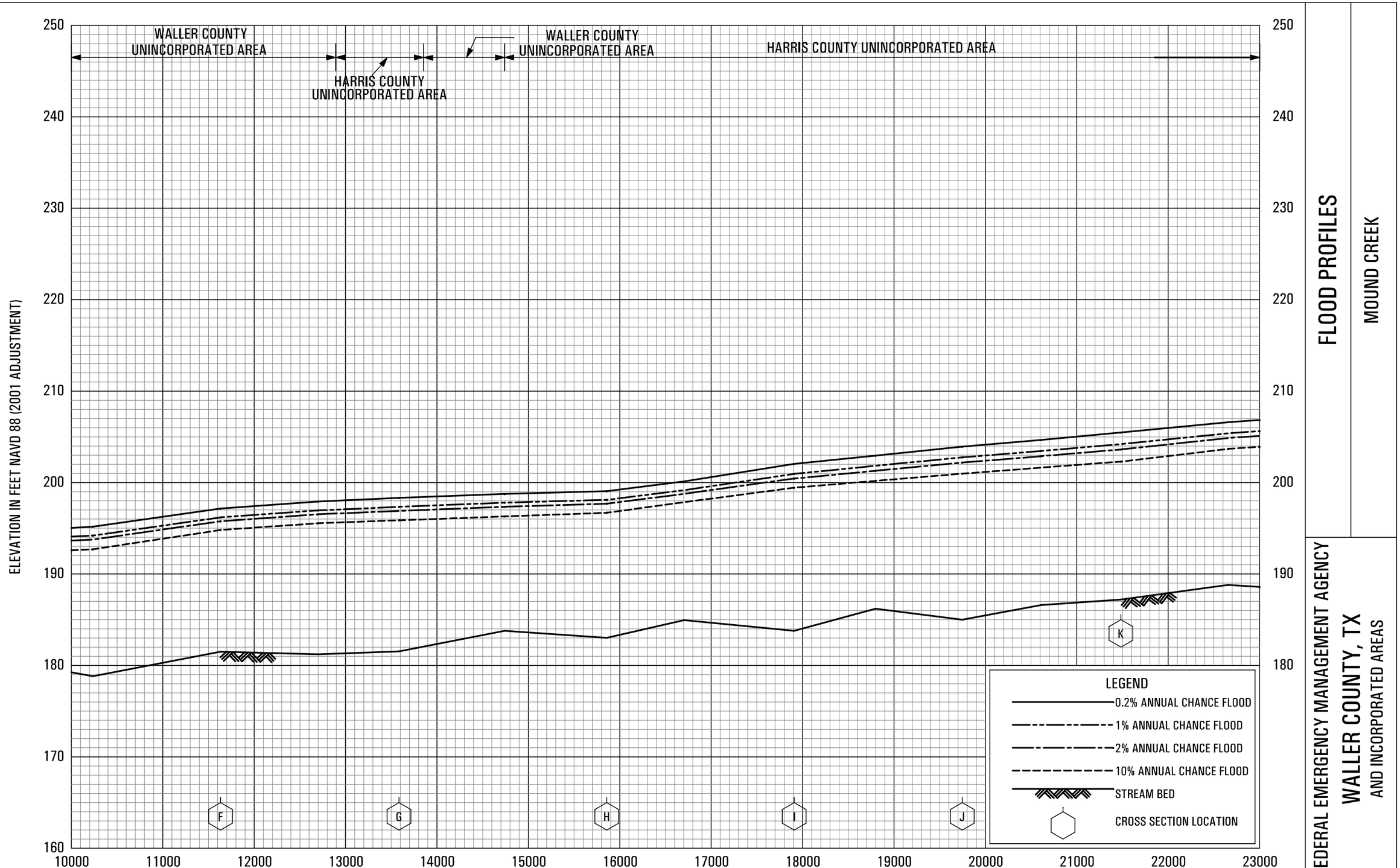
MOUND CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

42P



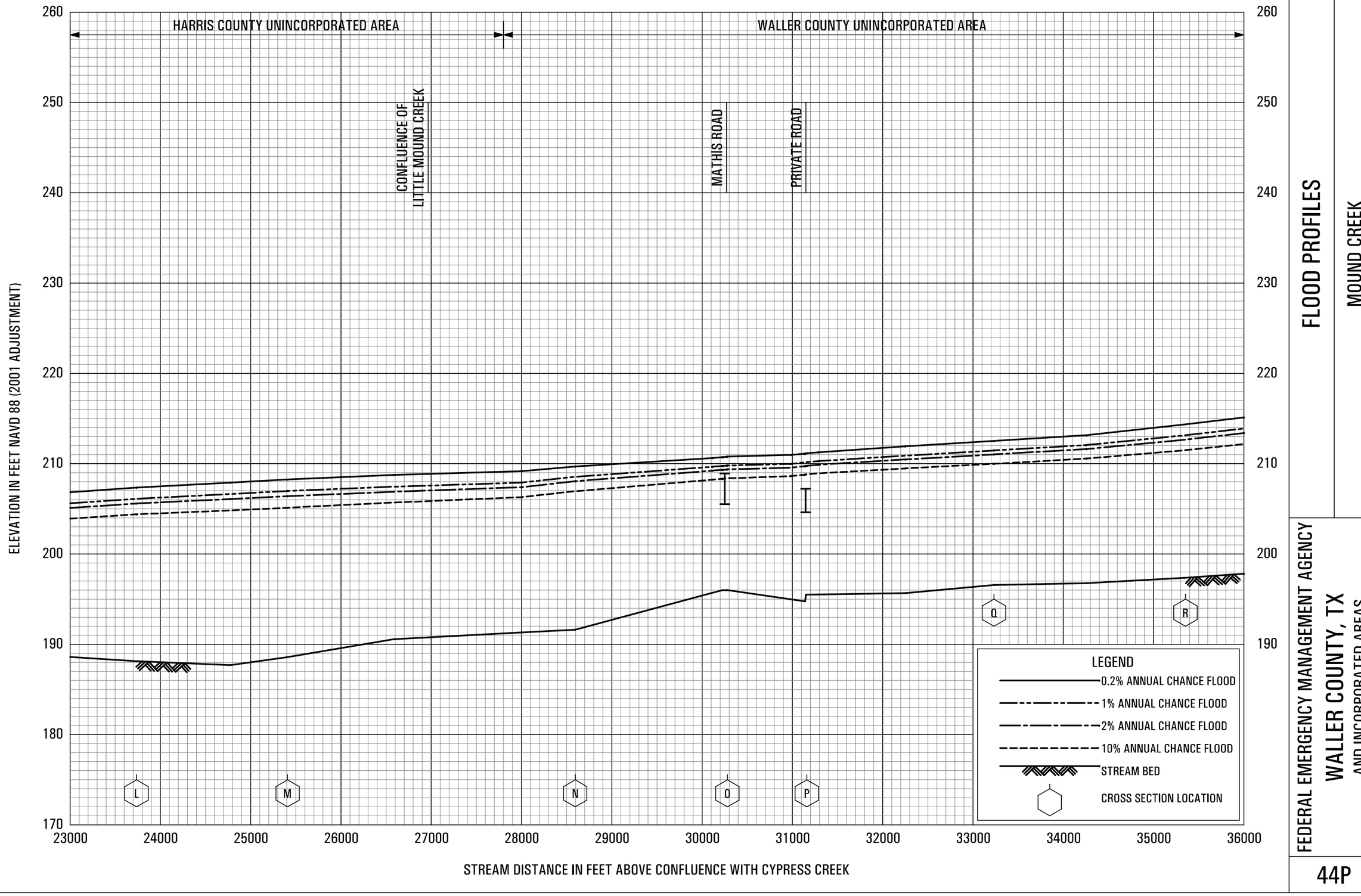
FLOOD PROFILES

MOUND CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



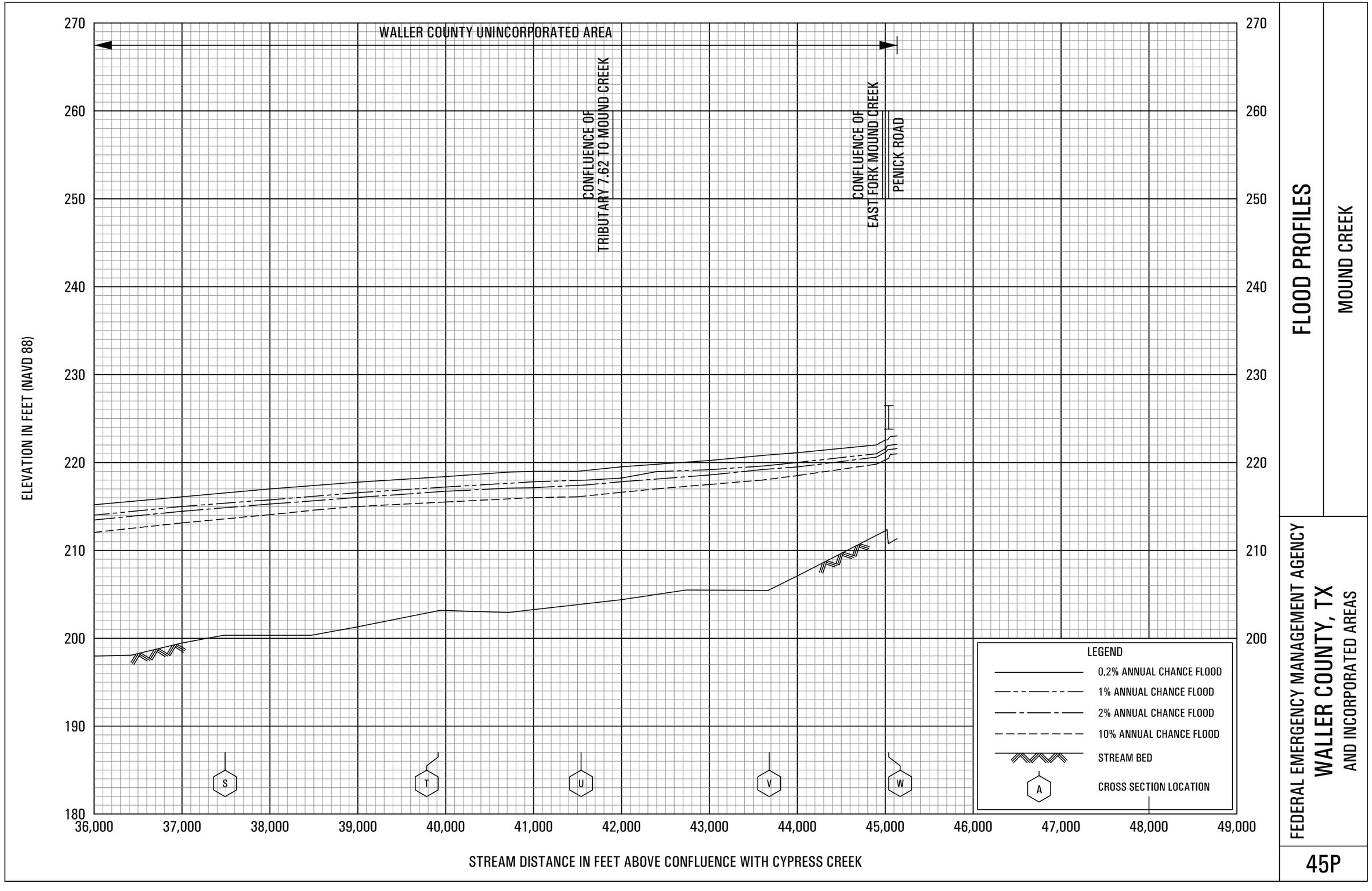
FLOOD PROFILES

MOUND CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



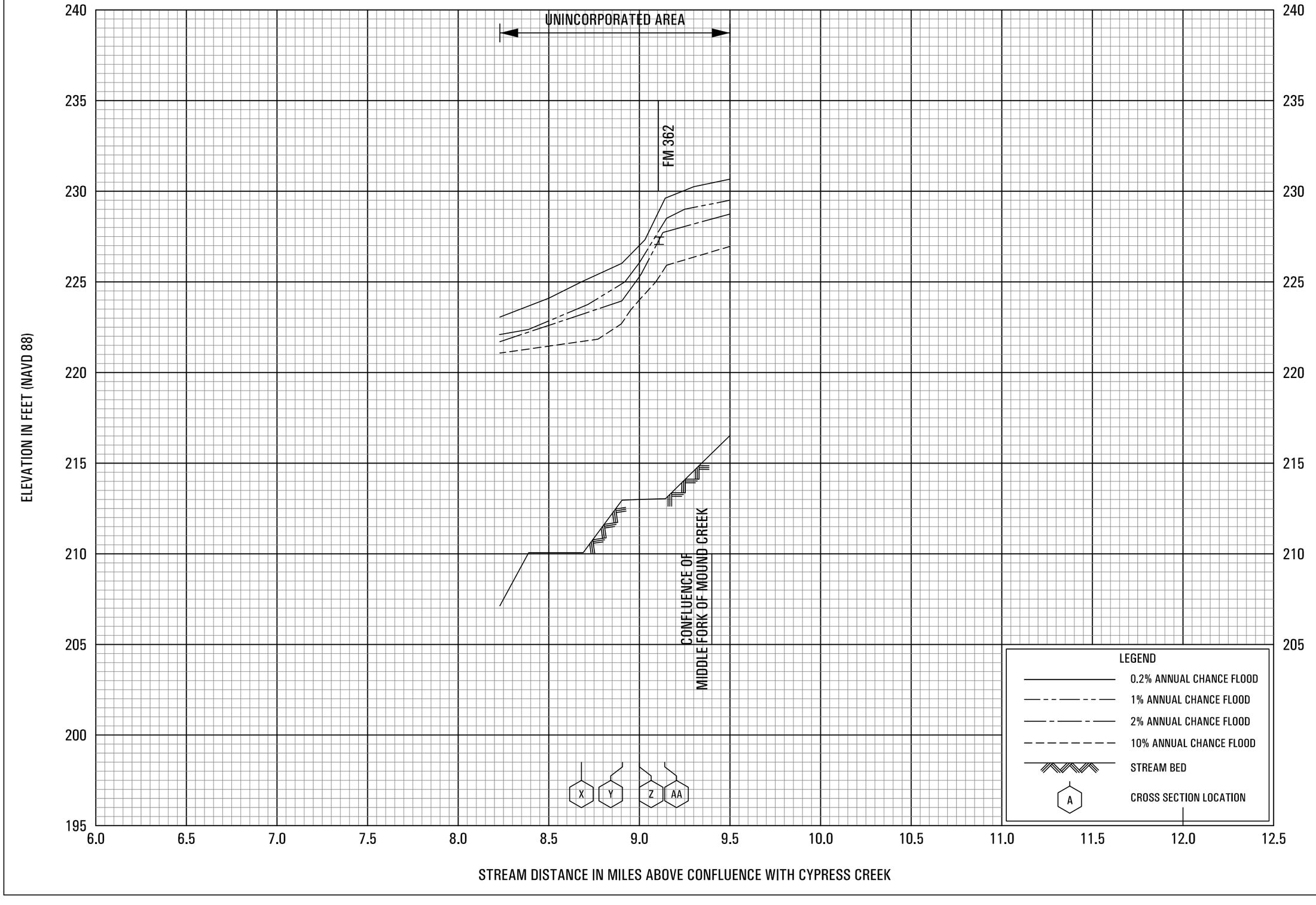
FLOOD PROFILES

MOUND CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



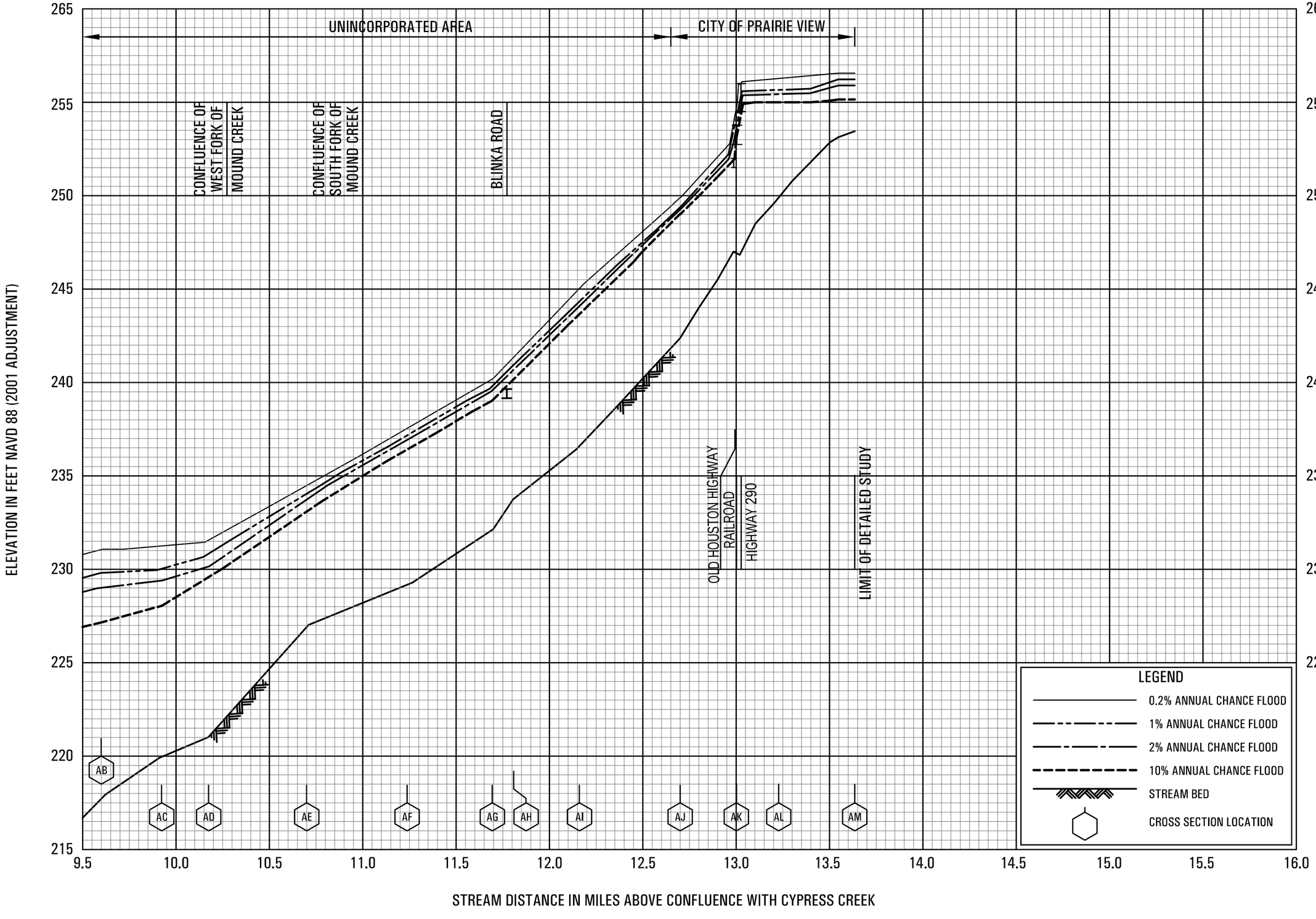
FLOOD PROFILES

MOUND CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



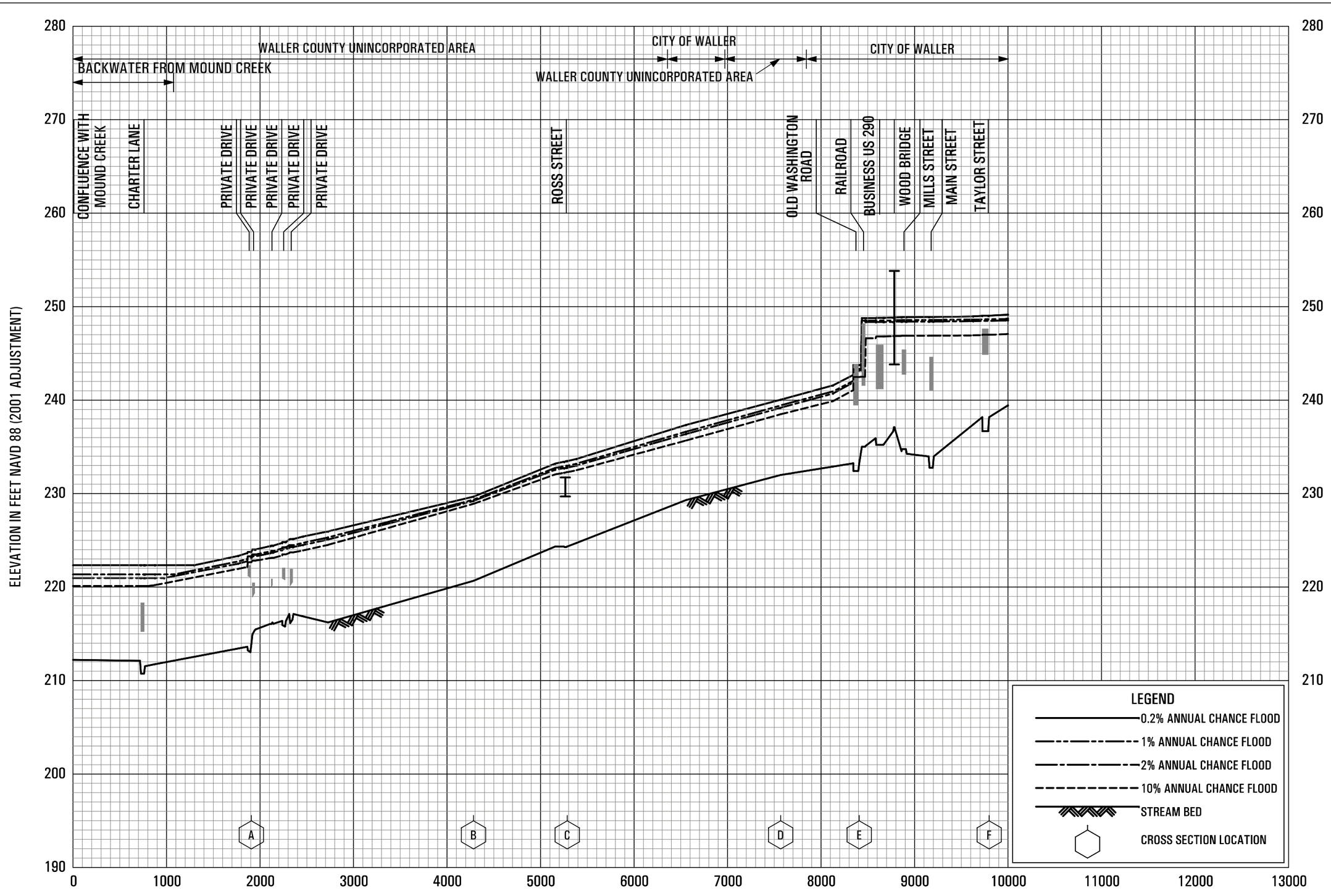
FLOOD PROFILES

MOUND CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



FLOOD PROFILES

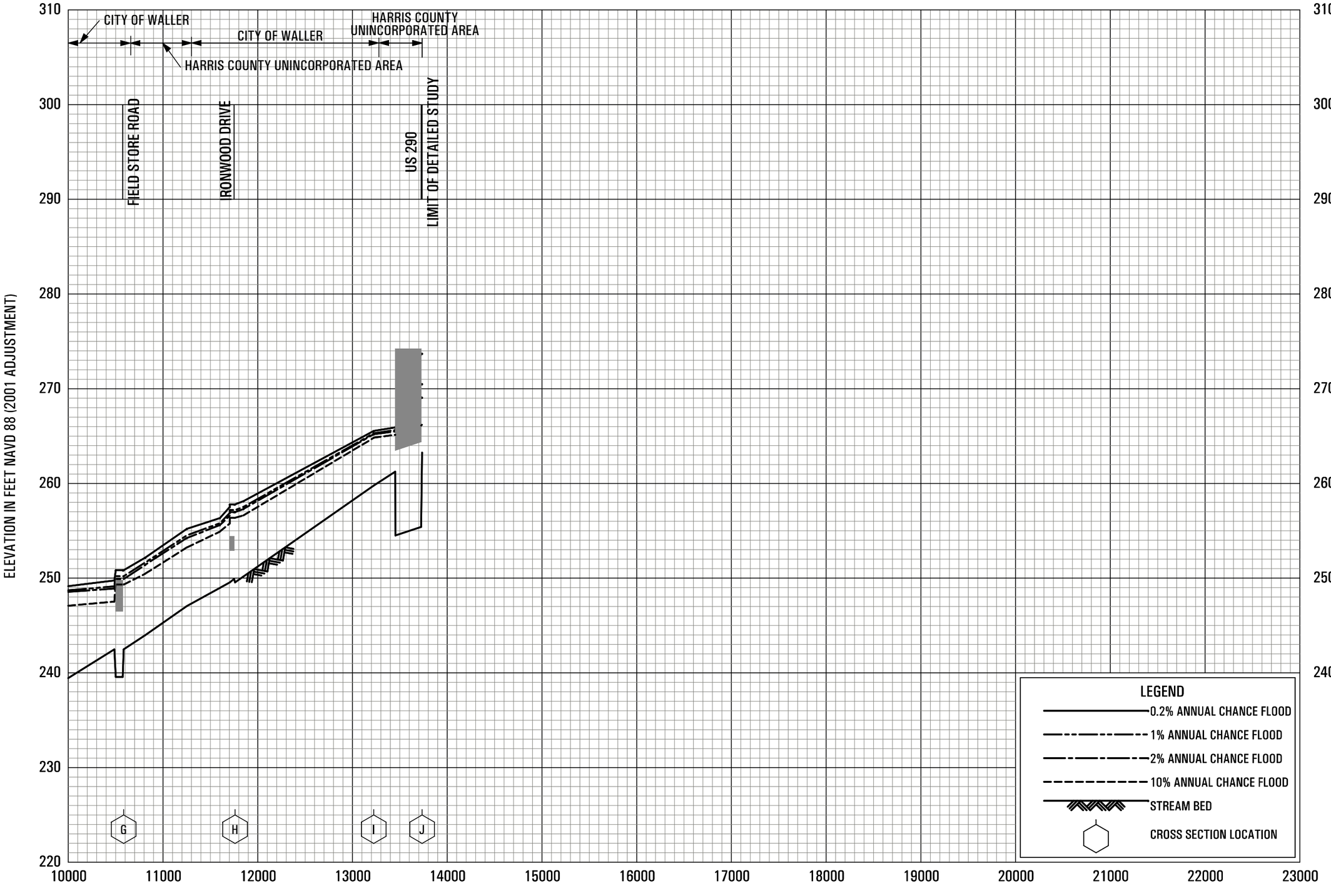
EAST FORK OF MOUND CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

48P



FLOOD PROFILES

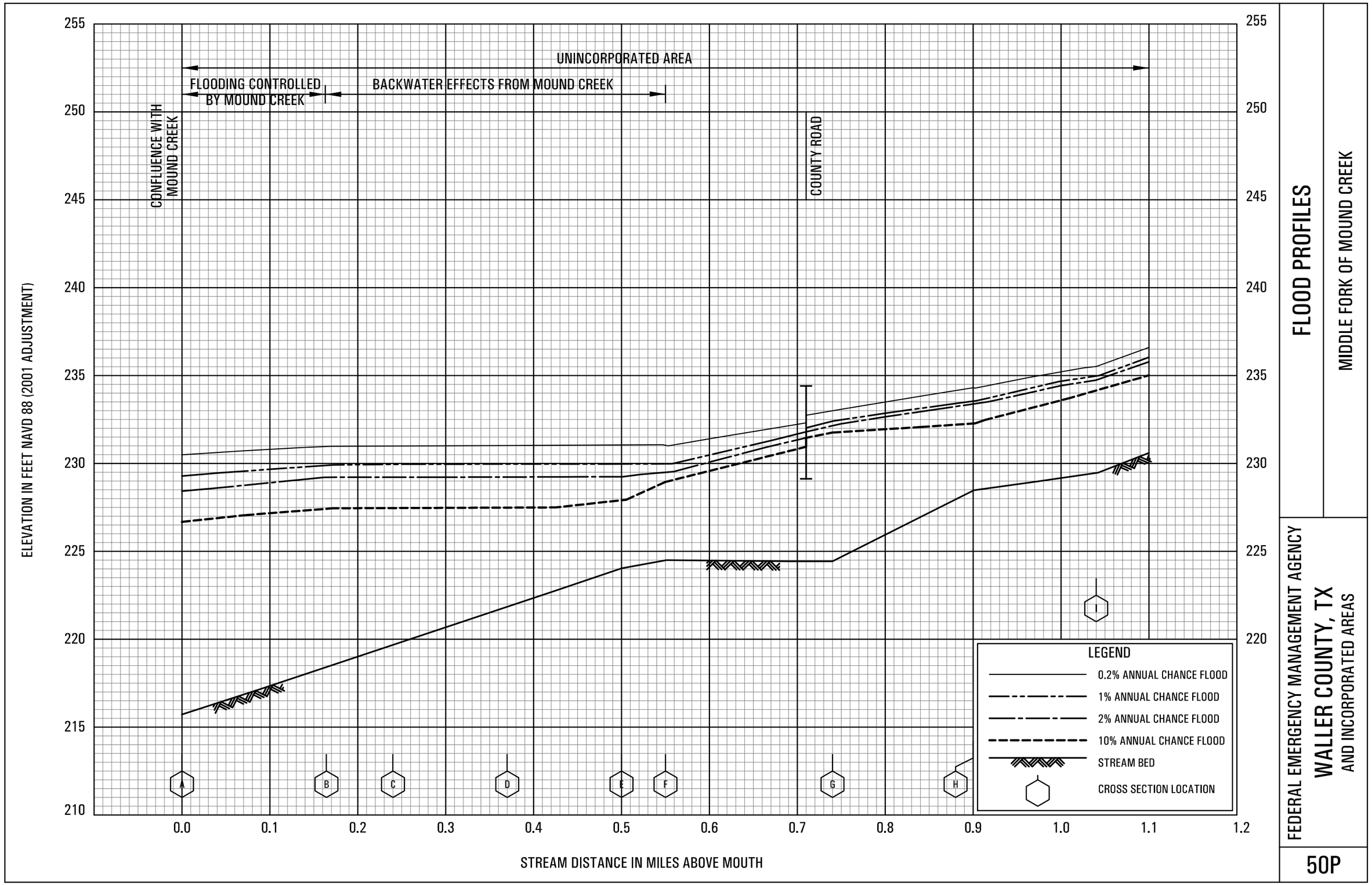
EAST FORK OF MOUND CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

49P



FLOOD PROFILES

MIDDLE FORK OF MOUND CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX
AND INCORPORATED AREAS

50P

CITY OF WALLER

WALLER COUNTY UNINCORPORATED AREA

WALLER COUNTY UNINCORPORATED AREA

F.M. 362

BUSINESS US 290

BOIS D'ARC STREET

SLEDGE STREET

WALLER STREET

LIMIT OF DETAILED STUDY

RAILROAD

THE 2% ANNUAL CHANCE FLOOD PROFILE ARE TOO CLOSE TO THE 1% ANNUAL CHANCE PROFILE TO BE SHOWN SEPERATELY

ELEVATION IN FEET (NAVD 88)

270
265
260
255
250
245
240
235
230
225

1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3 2.4

STREAM DISTANCE IN MILES ABOVE MOUTH

J K L M N O P

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- A — CROSS SECTION LOCATION

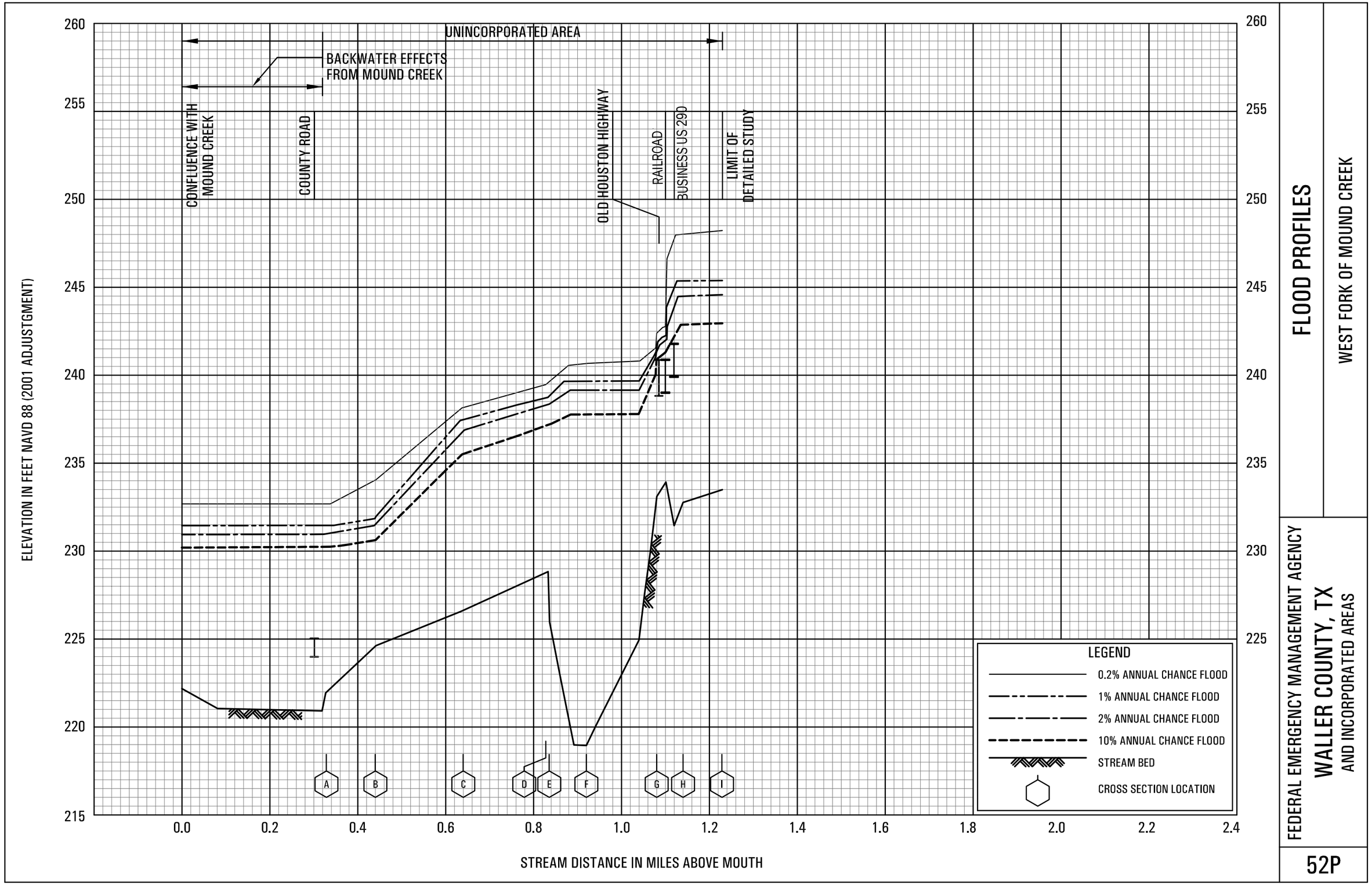
FLOOD PROFILES

MIDDLE FORK OF MOUND CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



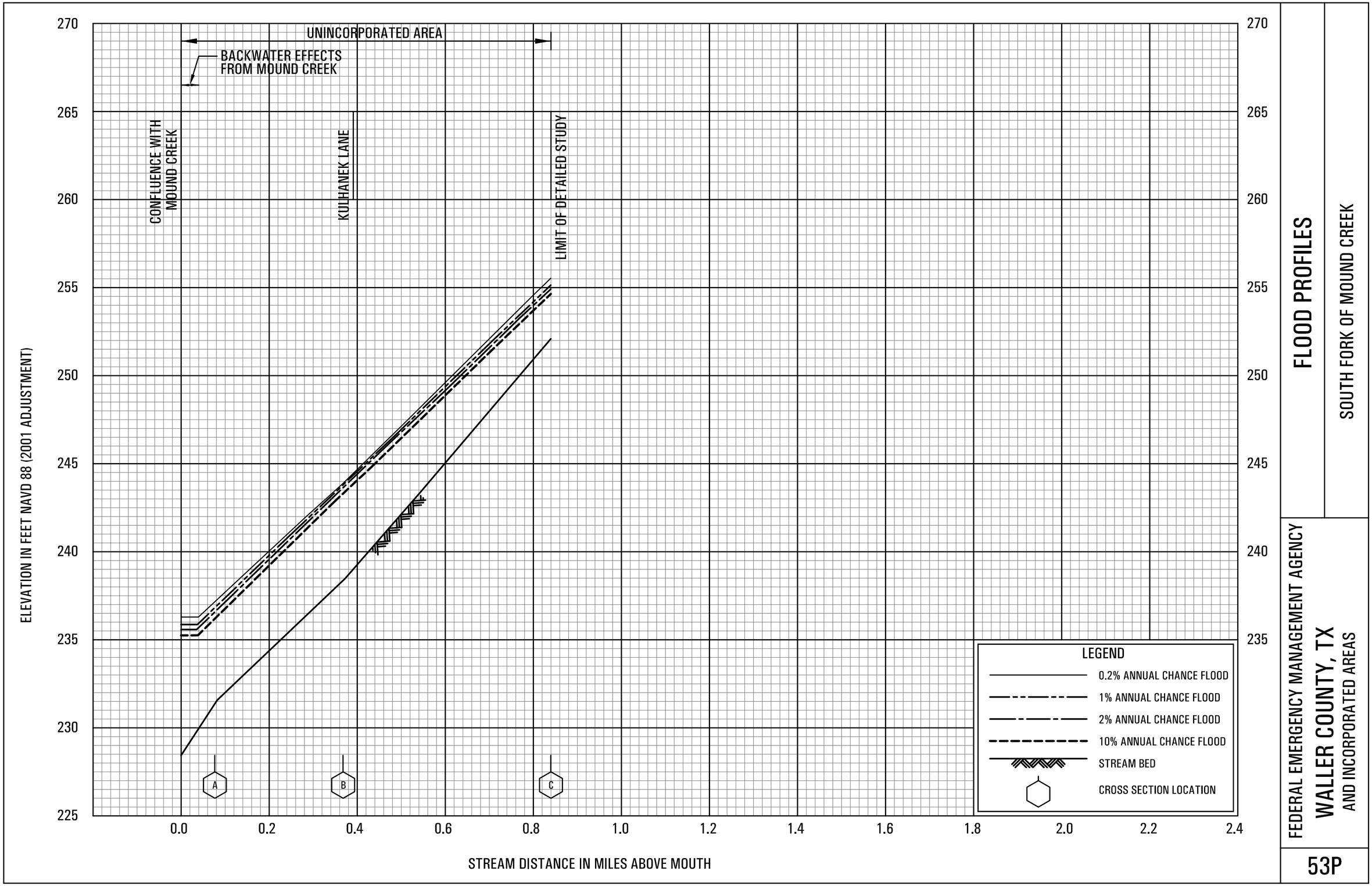
FLOOD PROFILES

WEST FORK OF MOUND CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



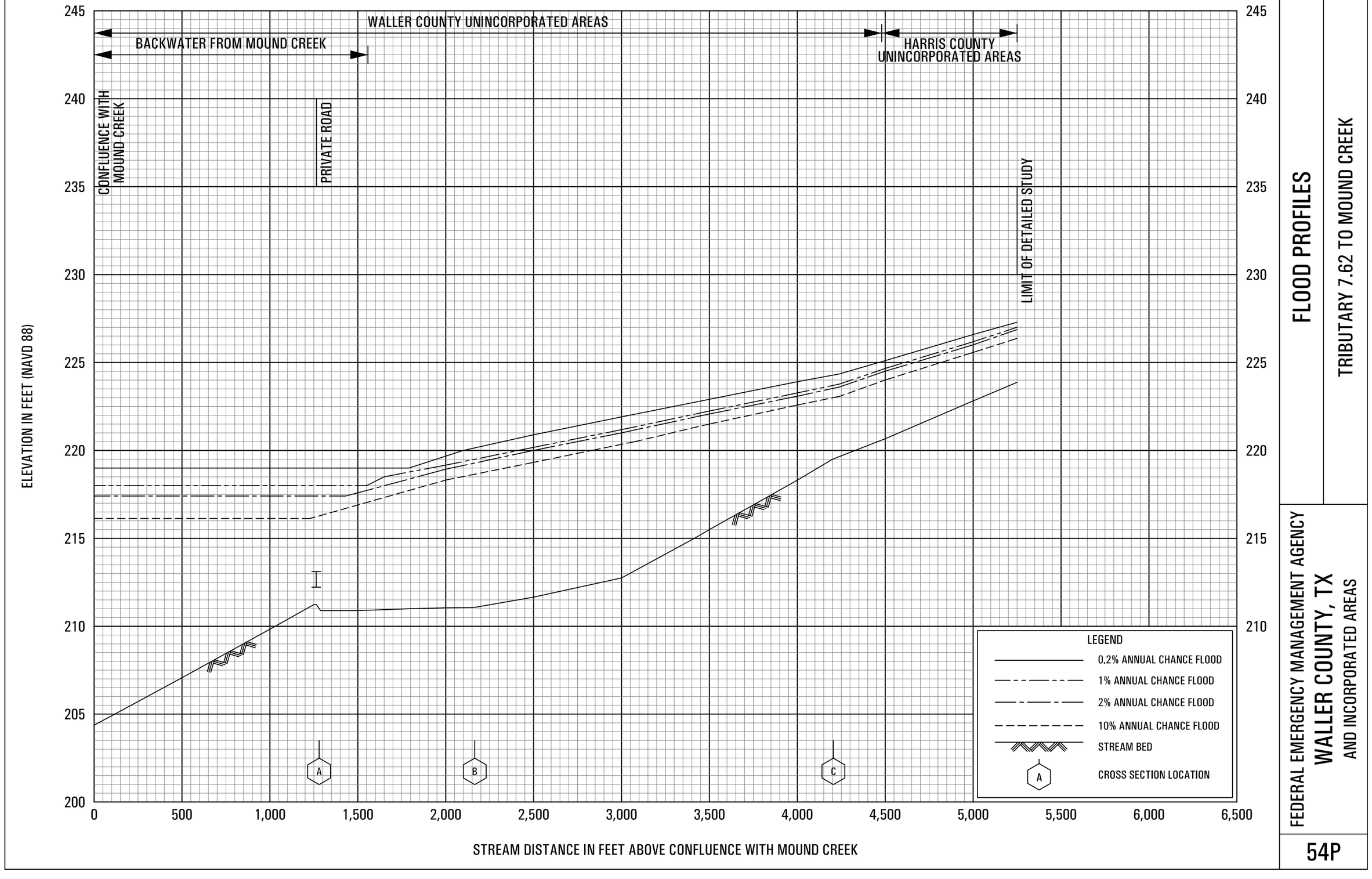
FLOOD PROFILES

SOUTH FORK OF MOUND CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



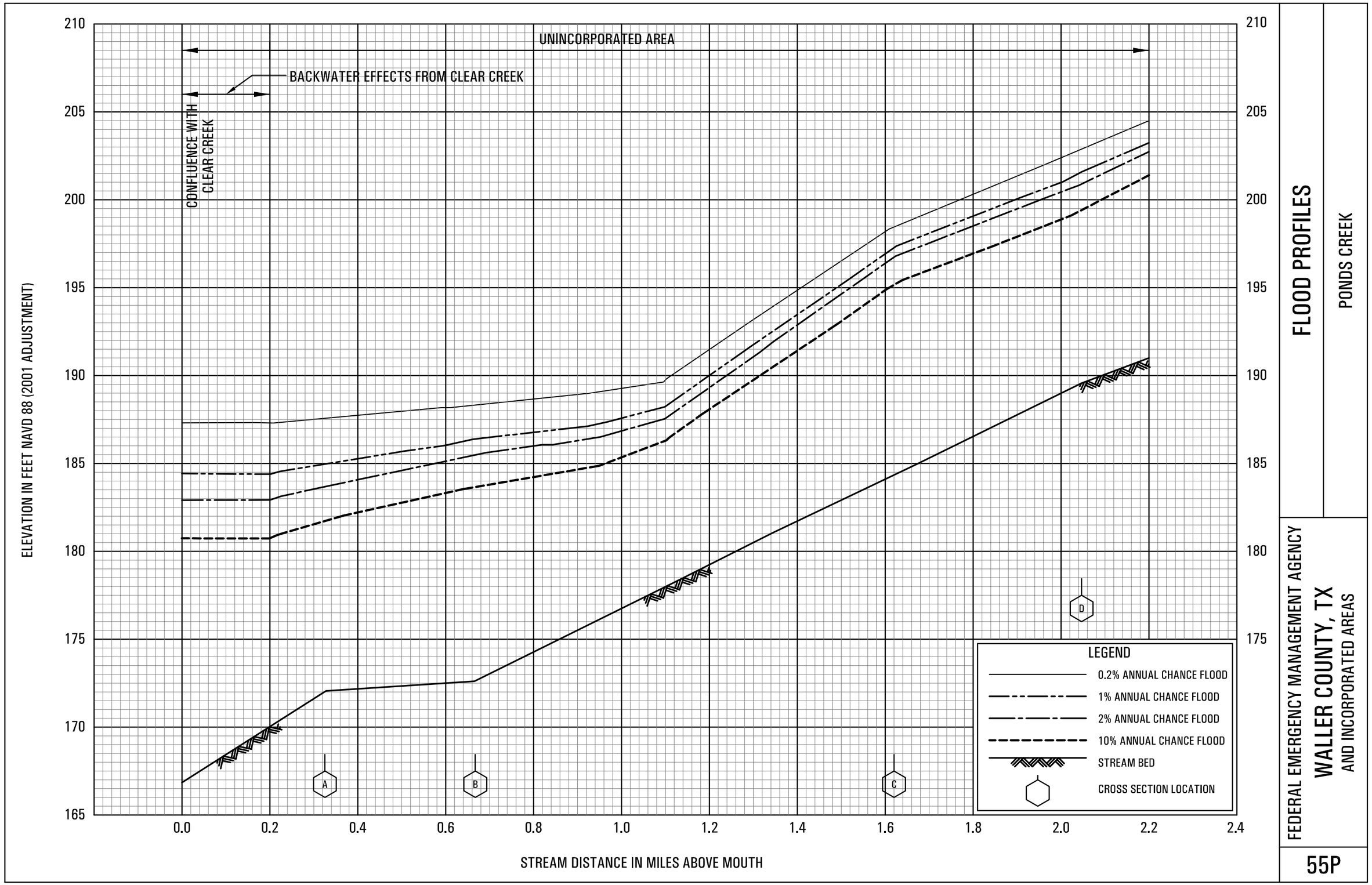
FLOOD PROFILES

TRIBUTARY 7.62 TO MOUND CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



FLOOD PROFILES

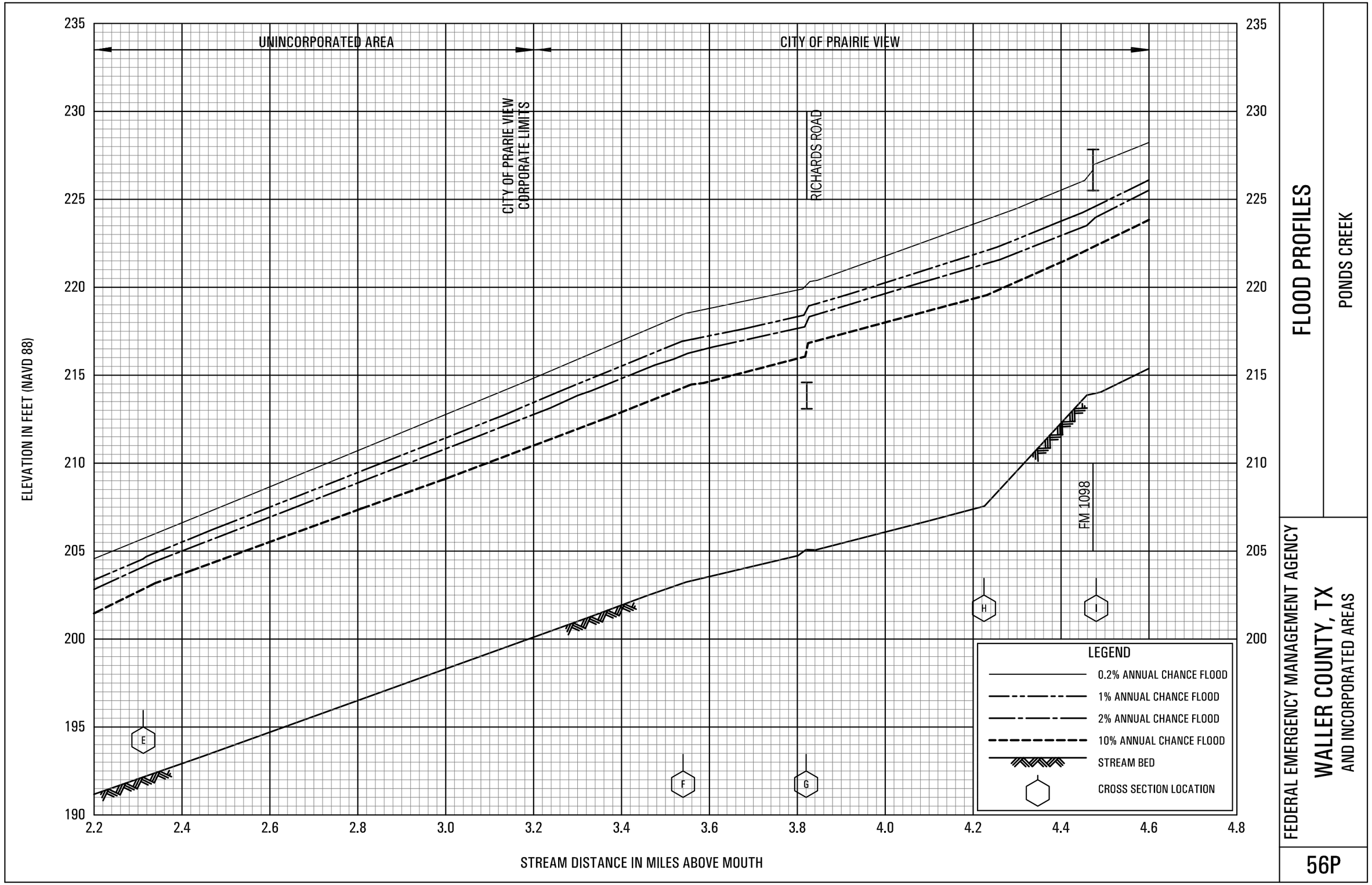
PONDS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

55P

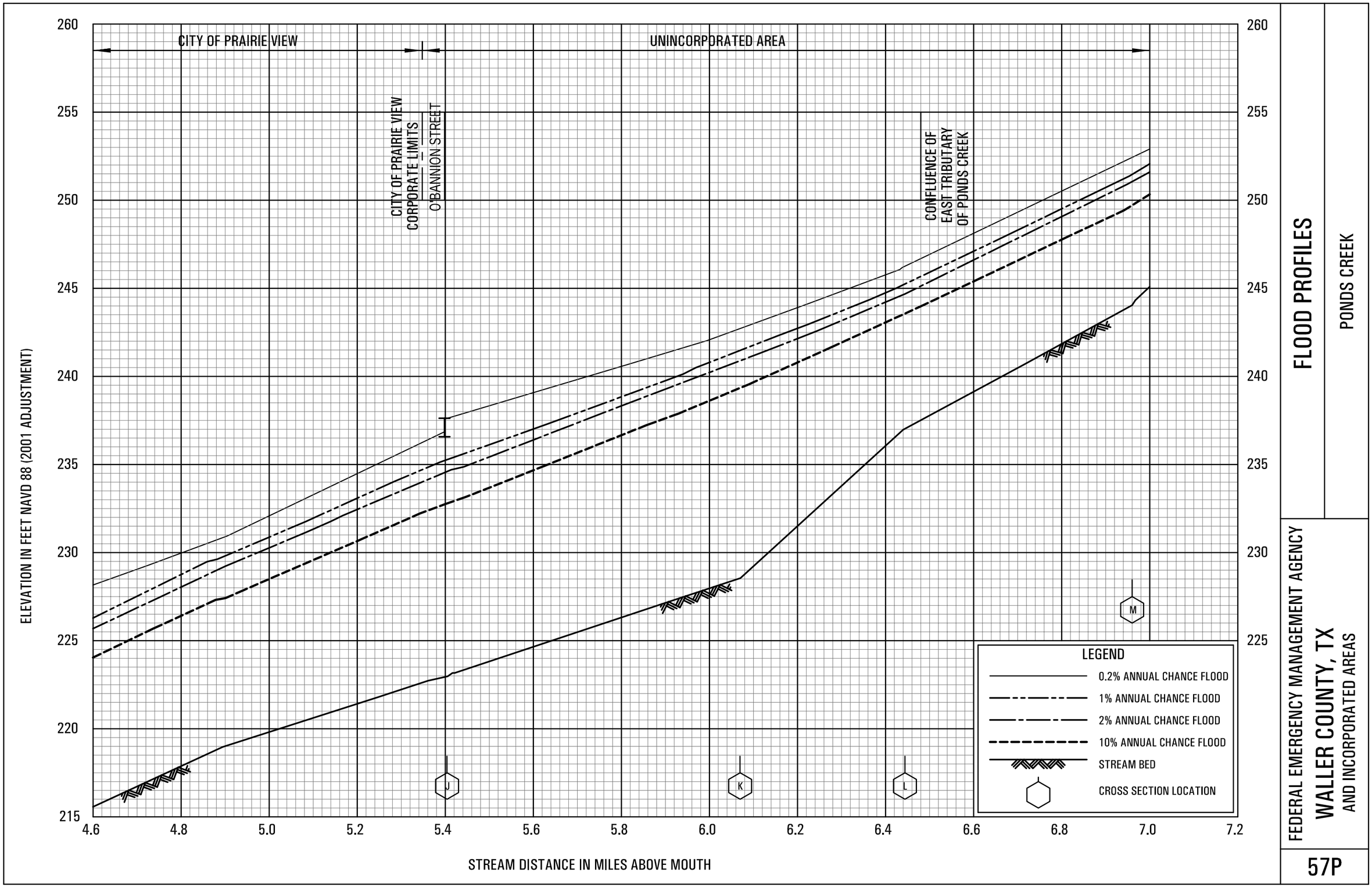


FLOOD PROFILES

PONDS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX
AND INCORPORATED AREAS



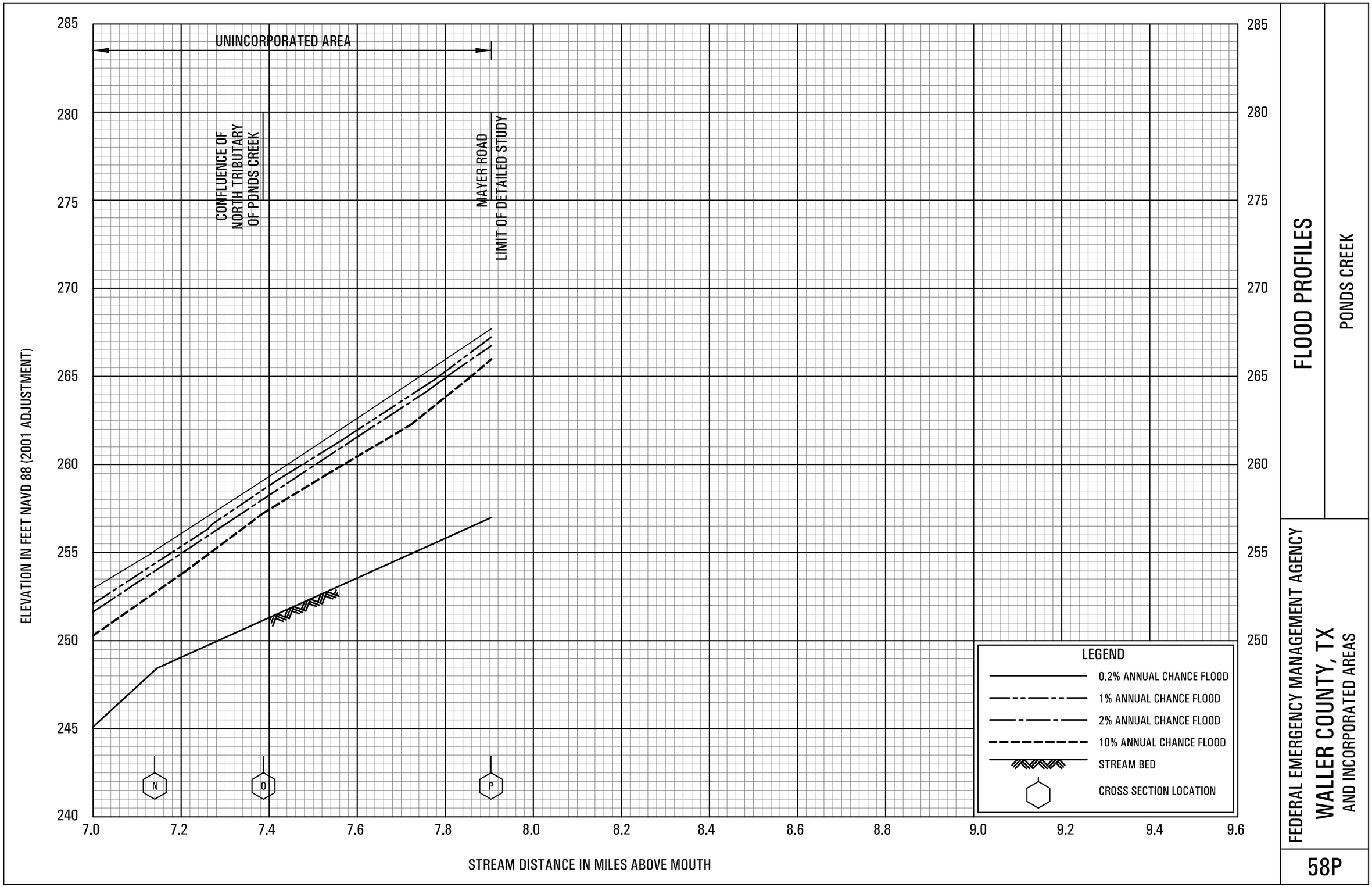
FLOOD PROFILES

PONDS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



FLOOD PROFILES

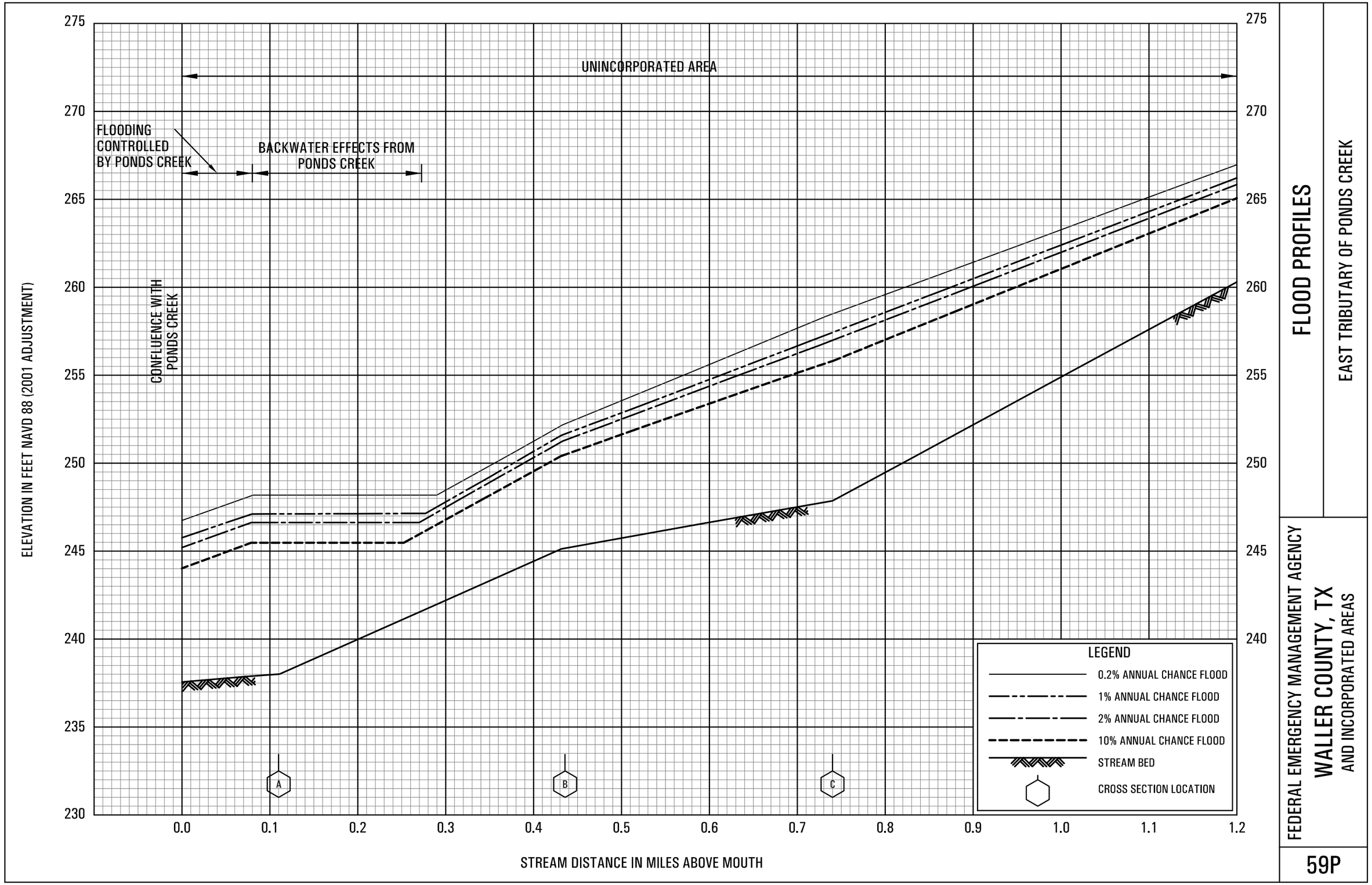
PONDS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

58P

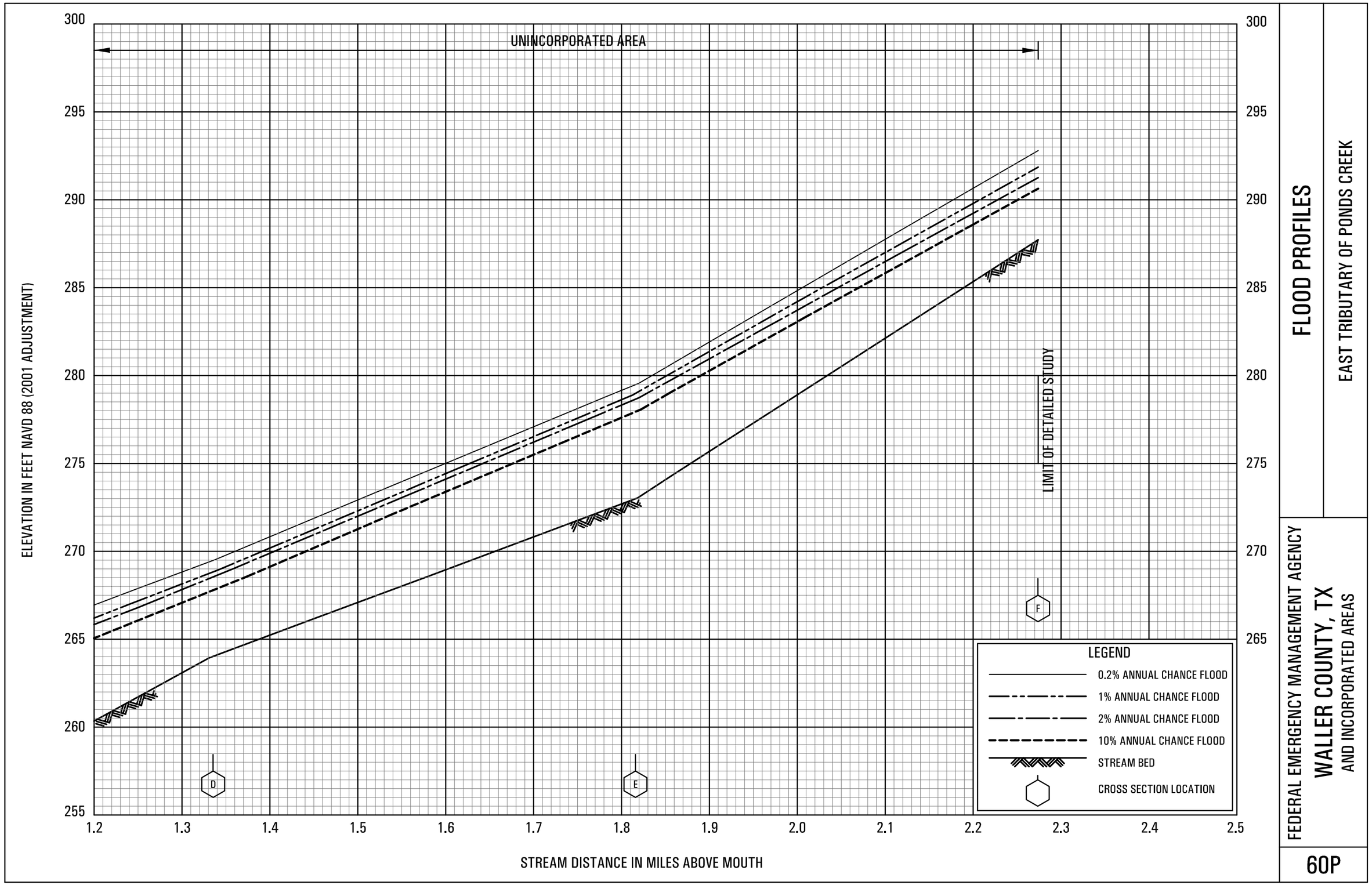


FLOOD PROFILES

EAST TRIBUTARY OF PONDS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX
AND INCORPORATED AREAS



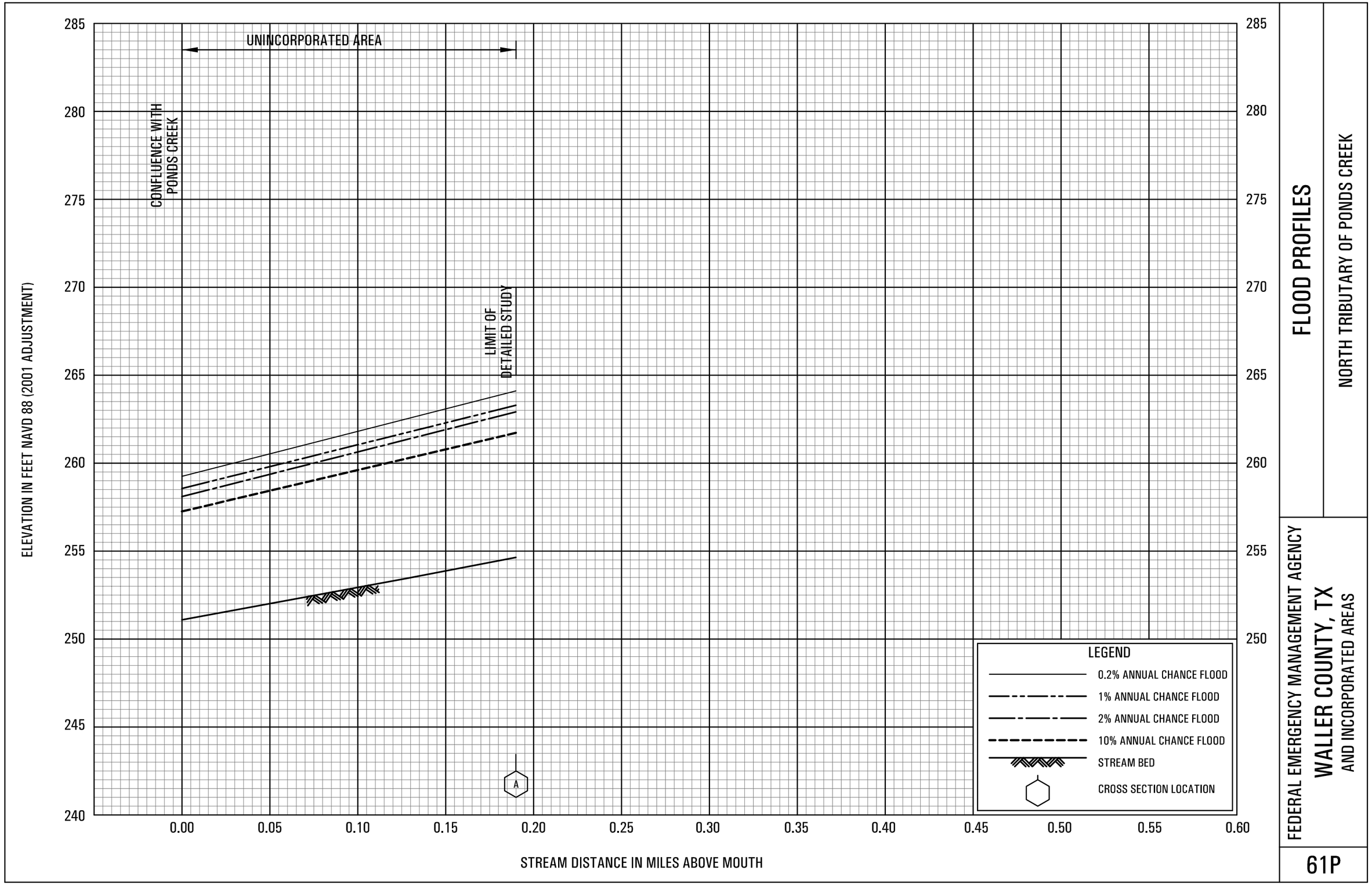
FLOOD PROFILES

EAST TRIBUTARY OF PONDS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



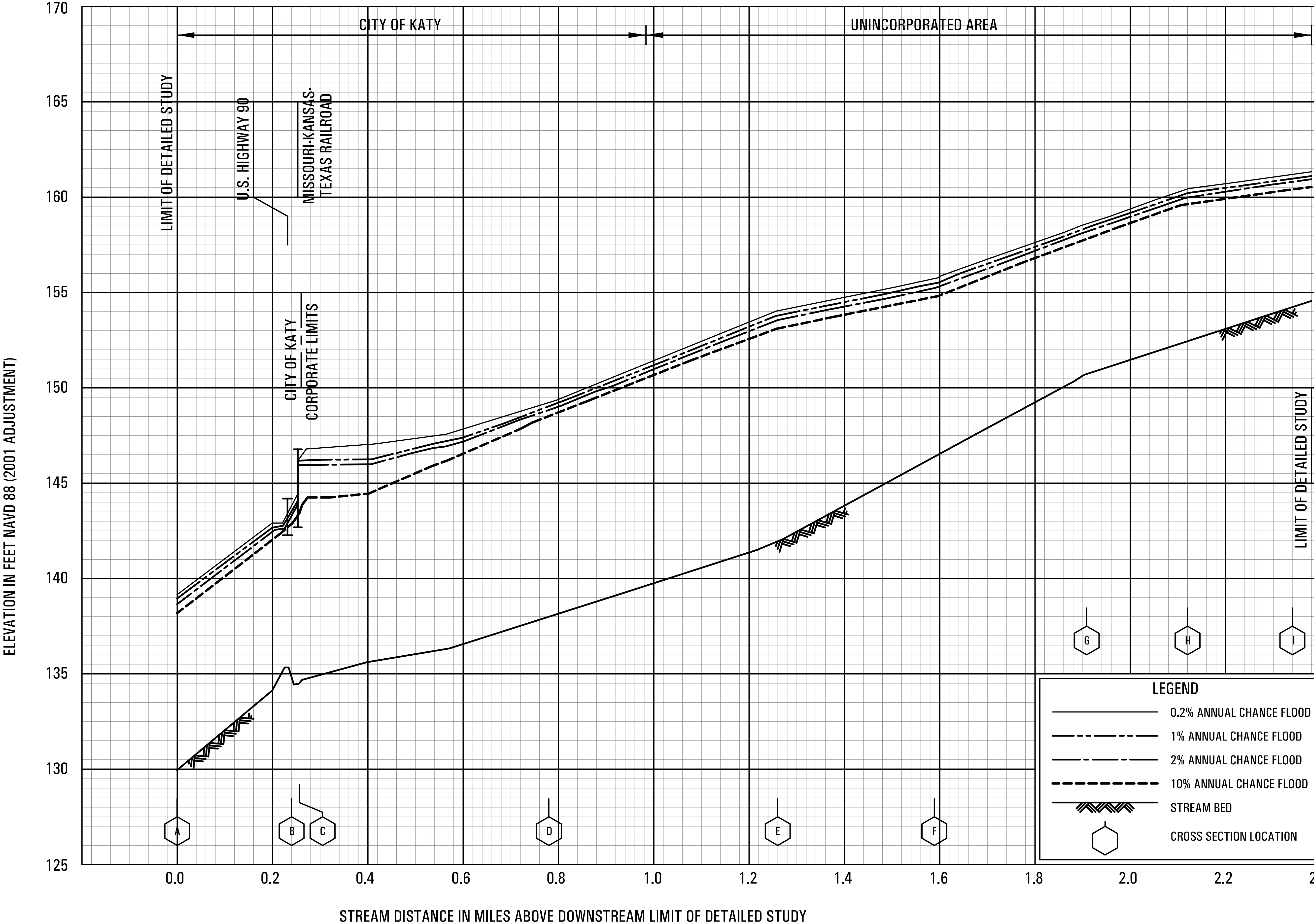
FLOOD PROFILES

NORTH TRIBUTARY OF PONDS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



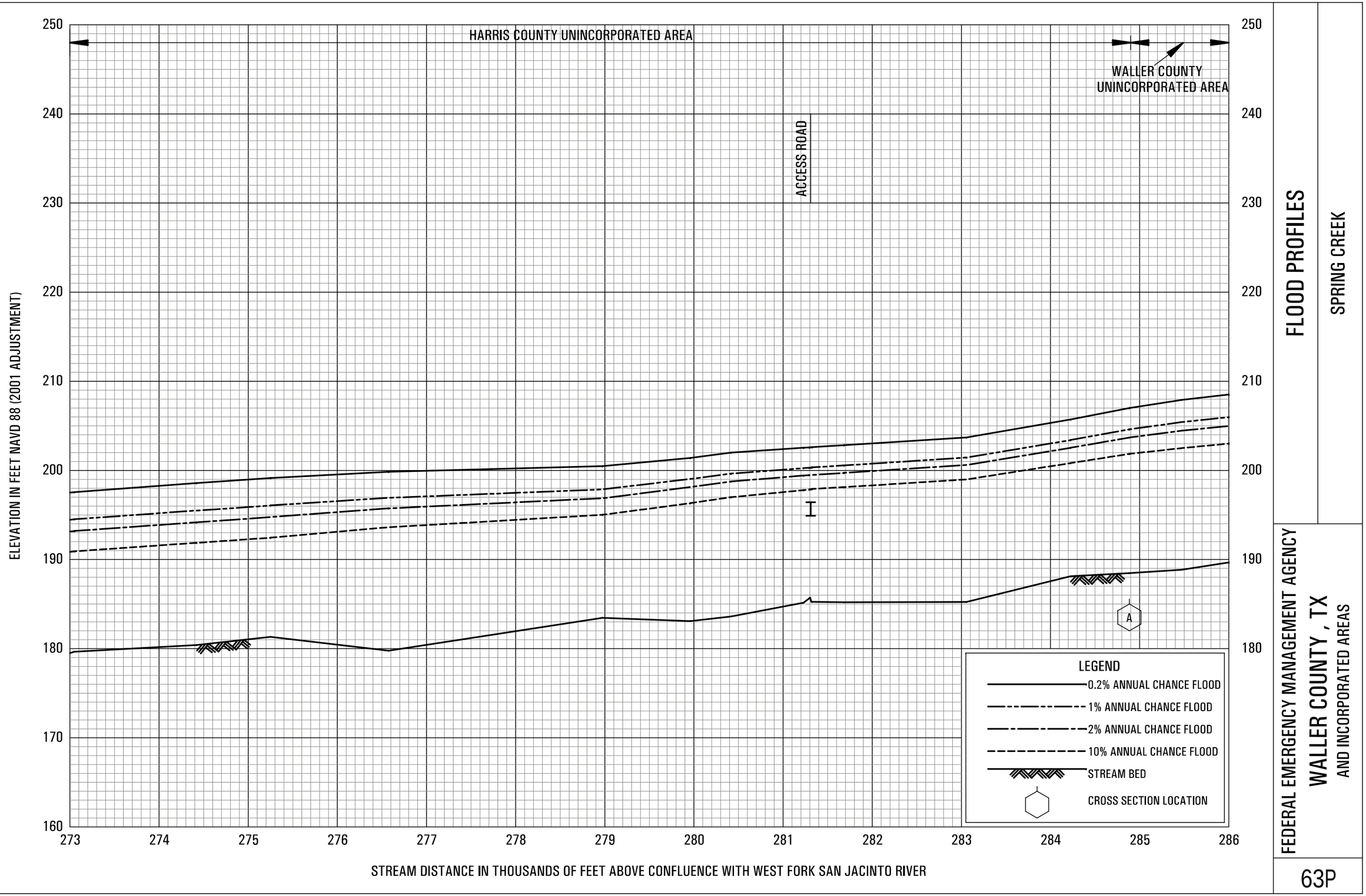
FLOOD PROFILES

SNAKE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



FLOOD PROFILES

SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

63P

WALLER COUNTY UNINCORPORATED AREA

NICHOLAS MURRELL RD.

ELEVATION IN FEET NAVD 88 (2001 ADJUSTMENT)

260
250
240
230
220
210
200
190
180
170

286 287 288 289 290 291 292 293 294 295 296 297 298 299

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH WEST FORK SAN JACINTO RIVER

B C D E F G

LEGEND

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

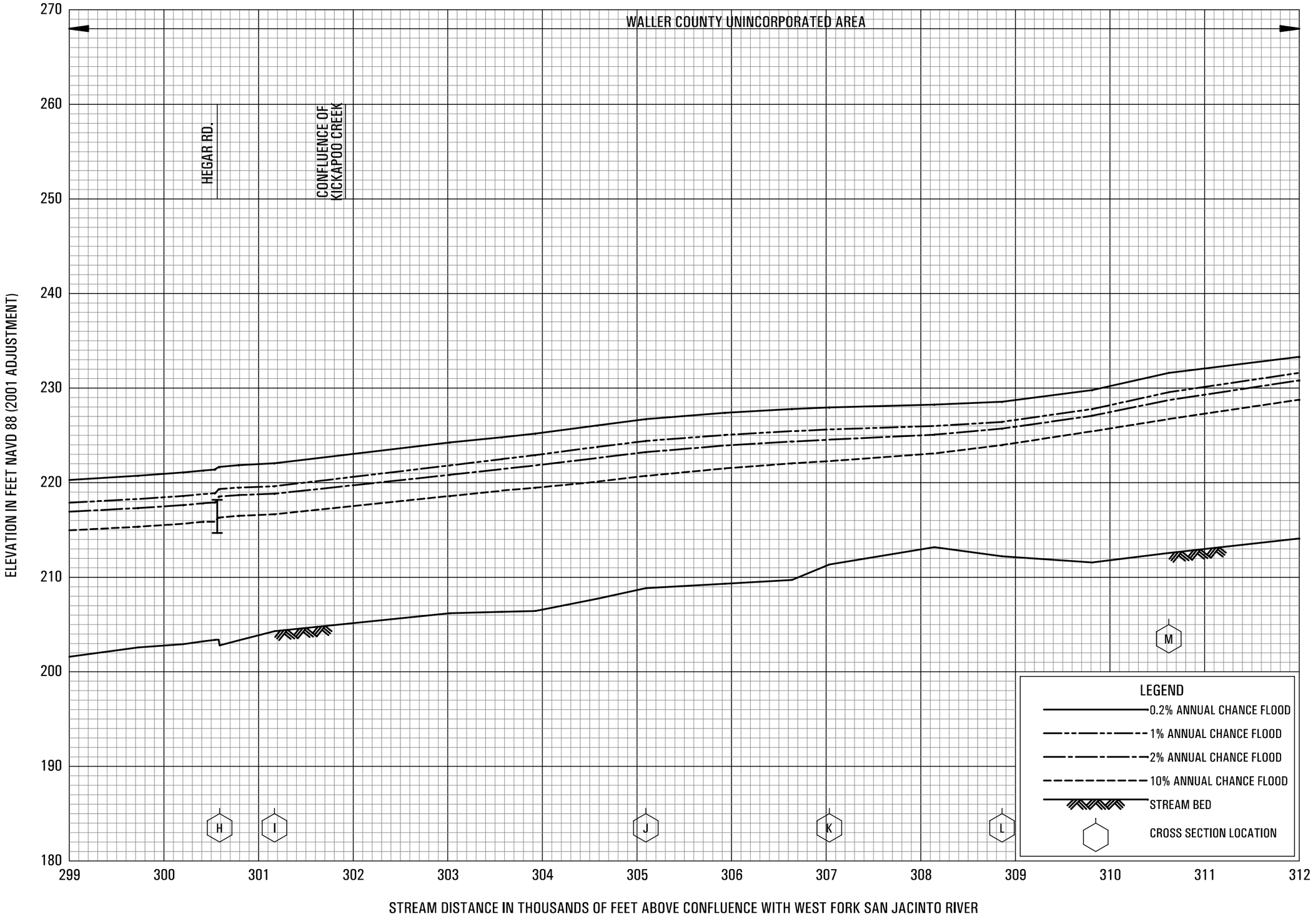
FLOOD PROFILES

SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



FLOOD PROFILES

SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

WALLER COUNTY UNINCORPORATED AREA

MARGERSTADT HARVESTER

KICKAPOO RD.

ELEVATION IN FEET NAVD 88 (2001 ADJUSTMENT)

280
270
260
250
240
230
220
210
200
190

312 313 314 315 316 317 318 319 320 321 322 323 324 325

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH WEST FORK SAN JACINTO RIVER

N O P Q R S T

LEGEND

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

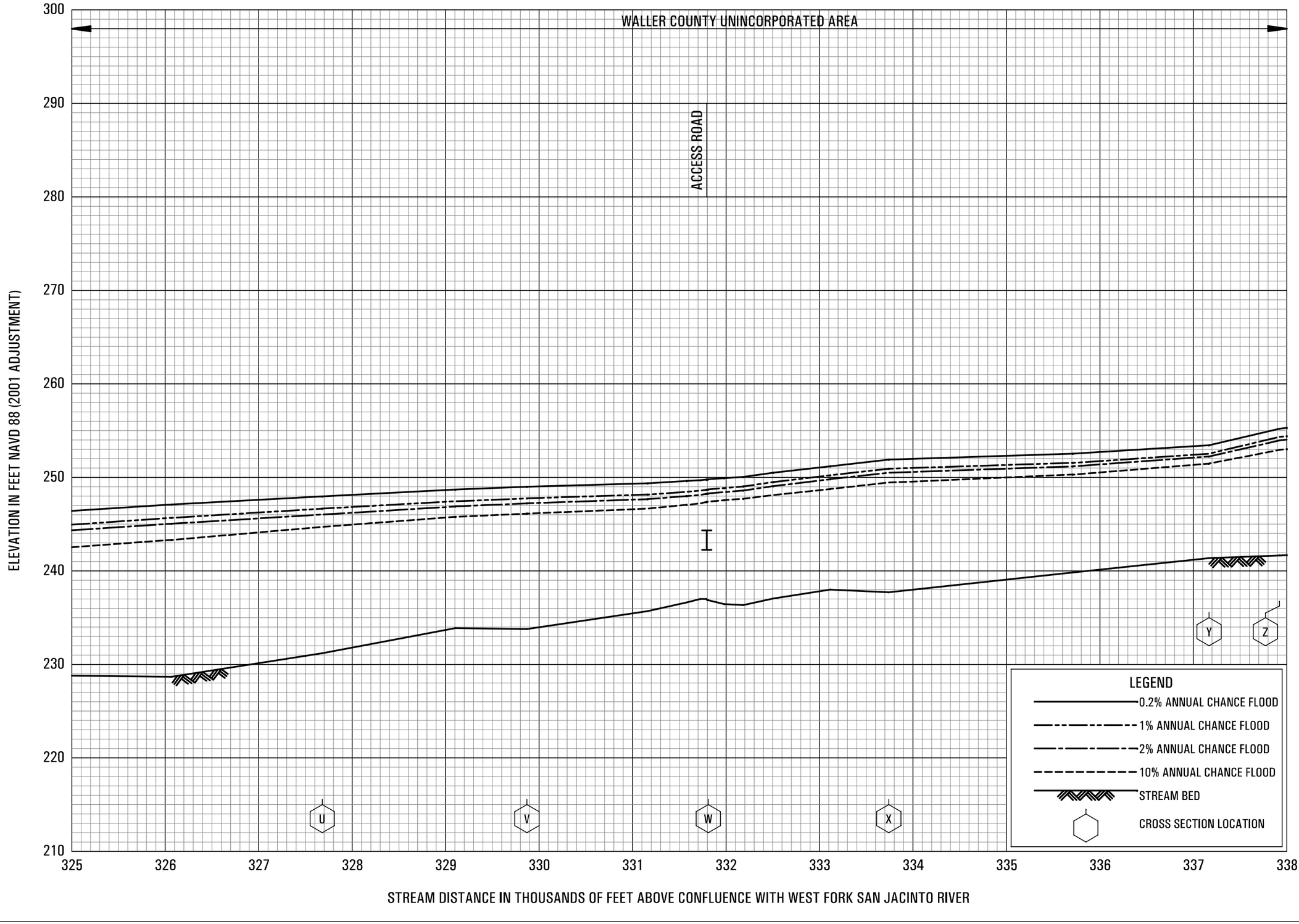
FLOOD PROFILES

SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



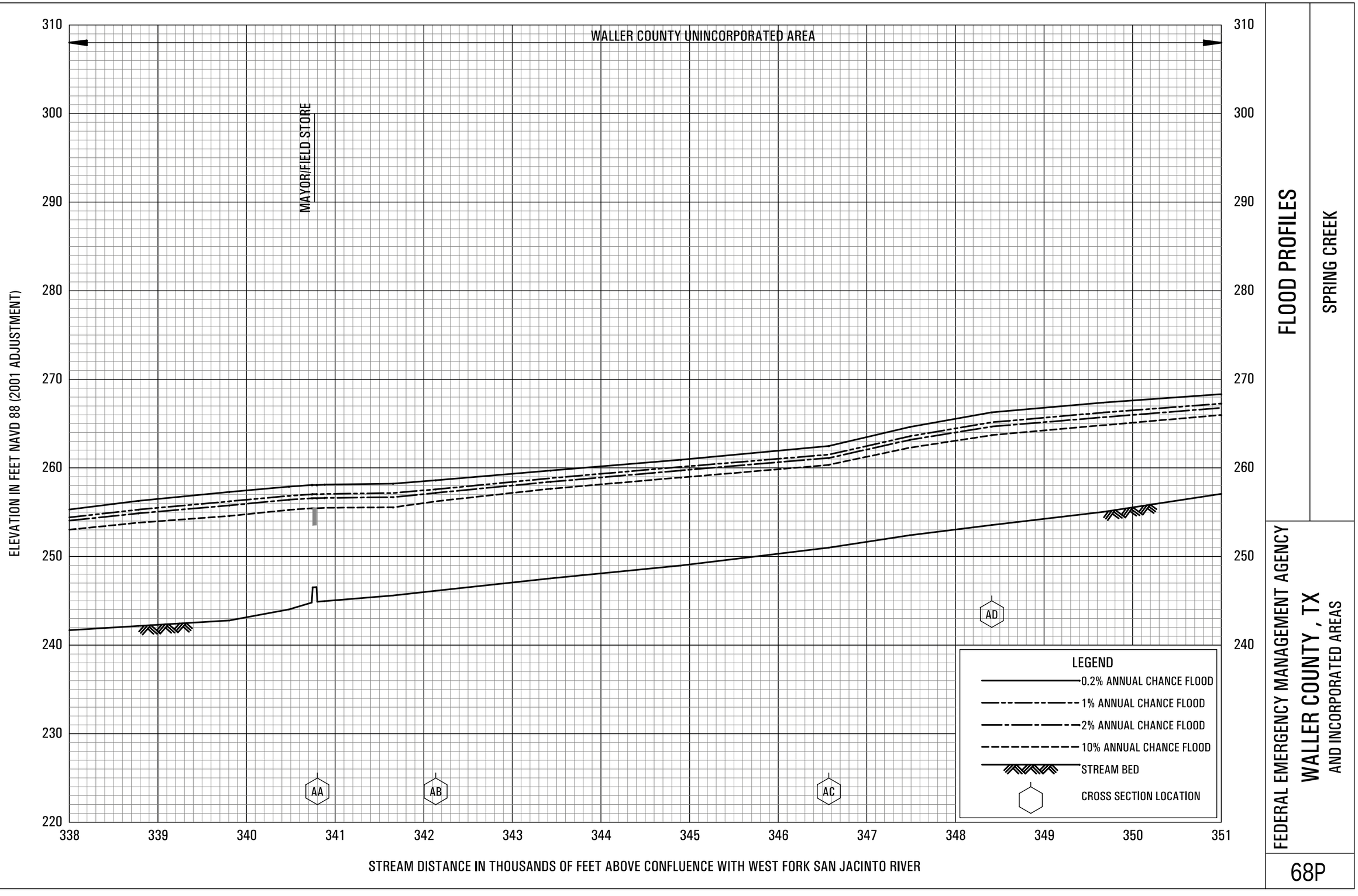
FLOOD PROFILES

SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



FLOOD PROFILES

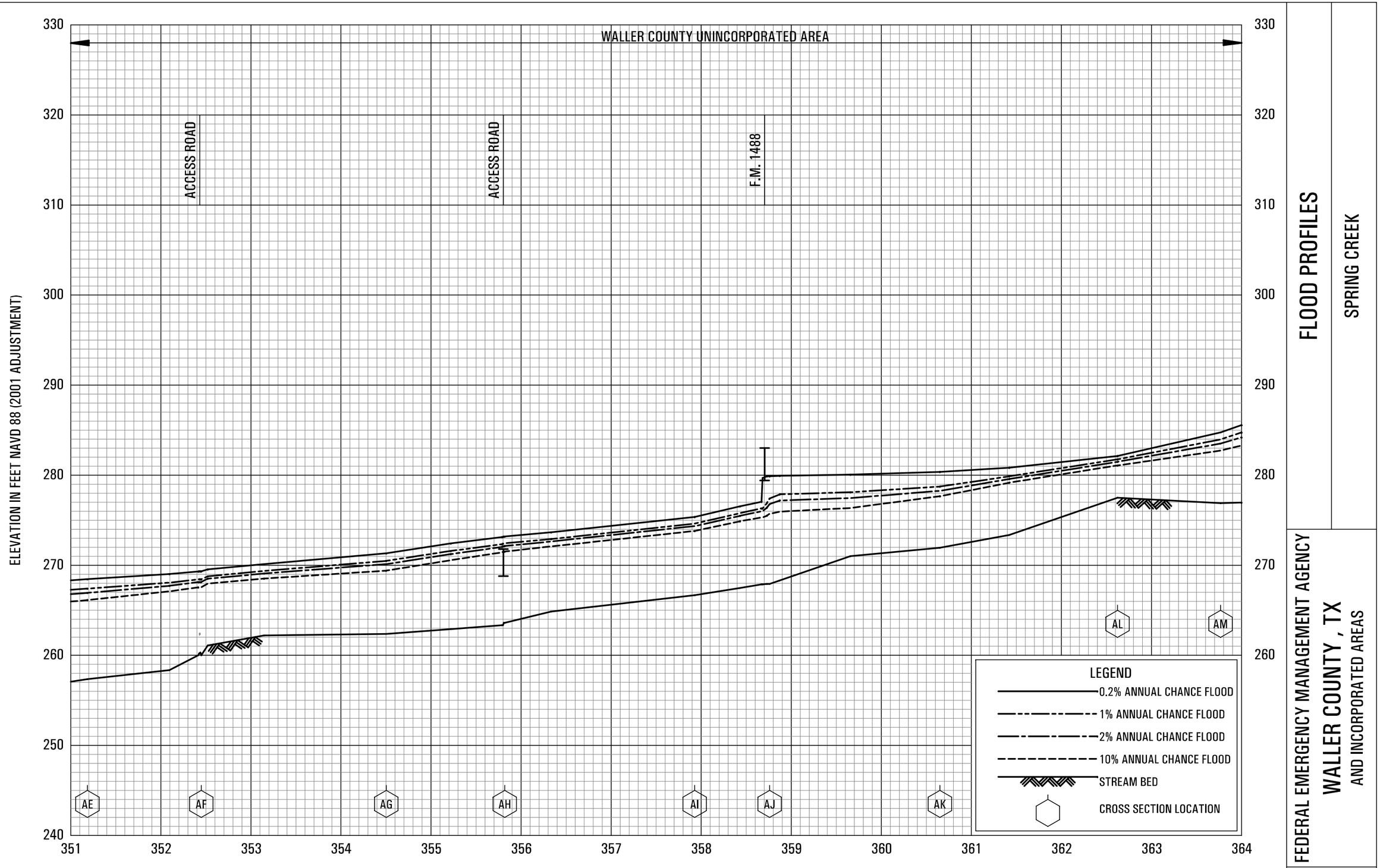
SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

68P



FLOOD PROFILES

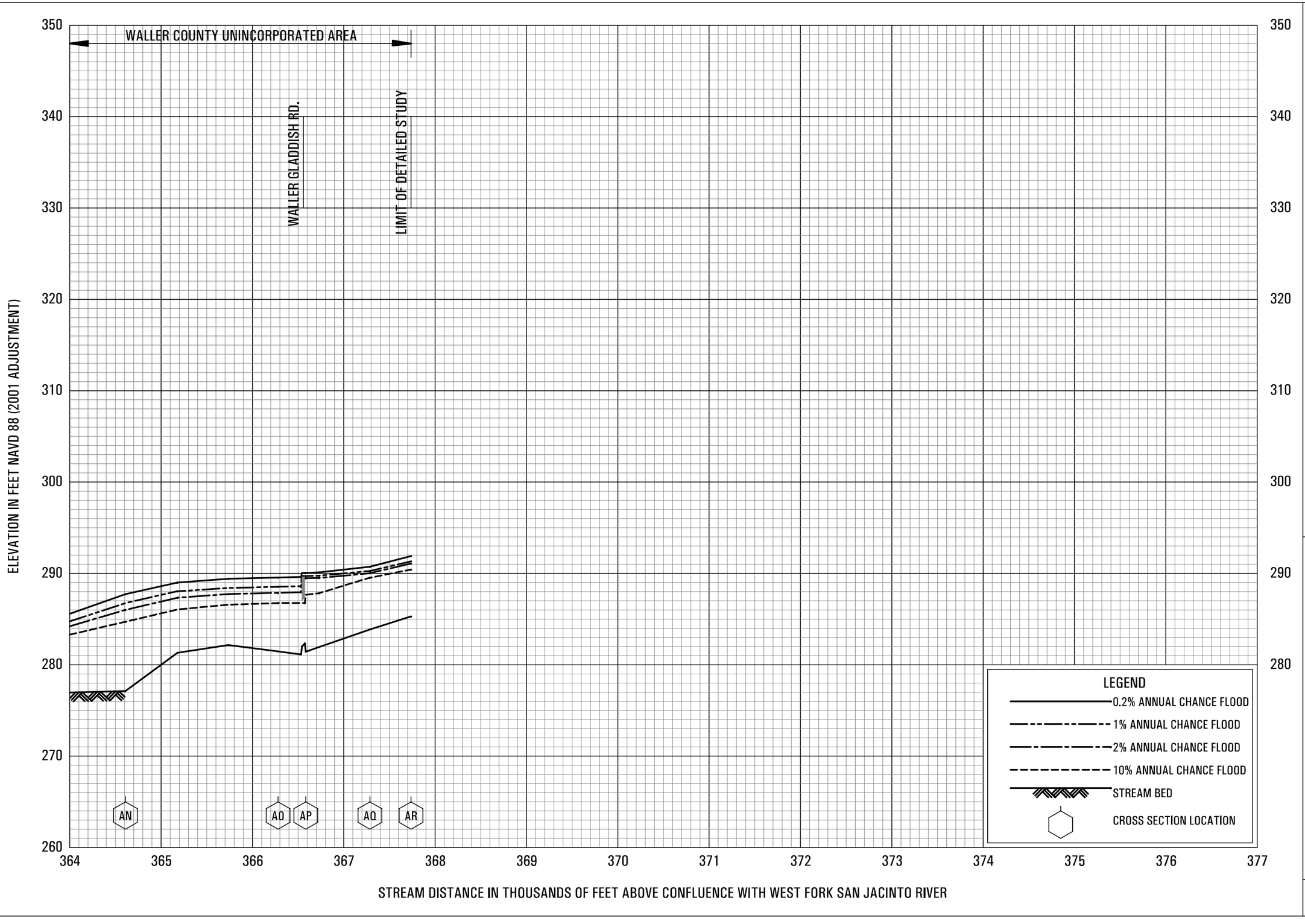
SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

69P



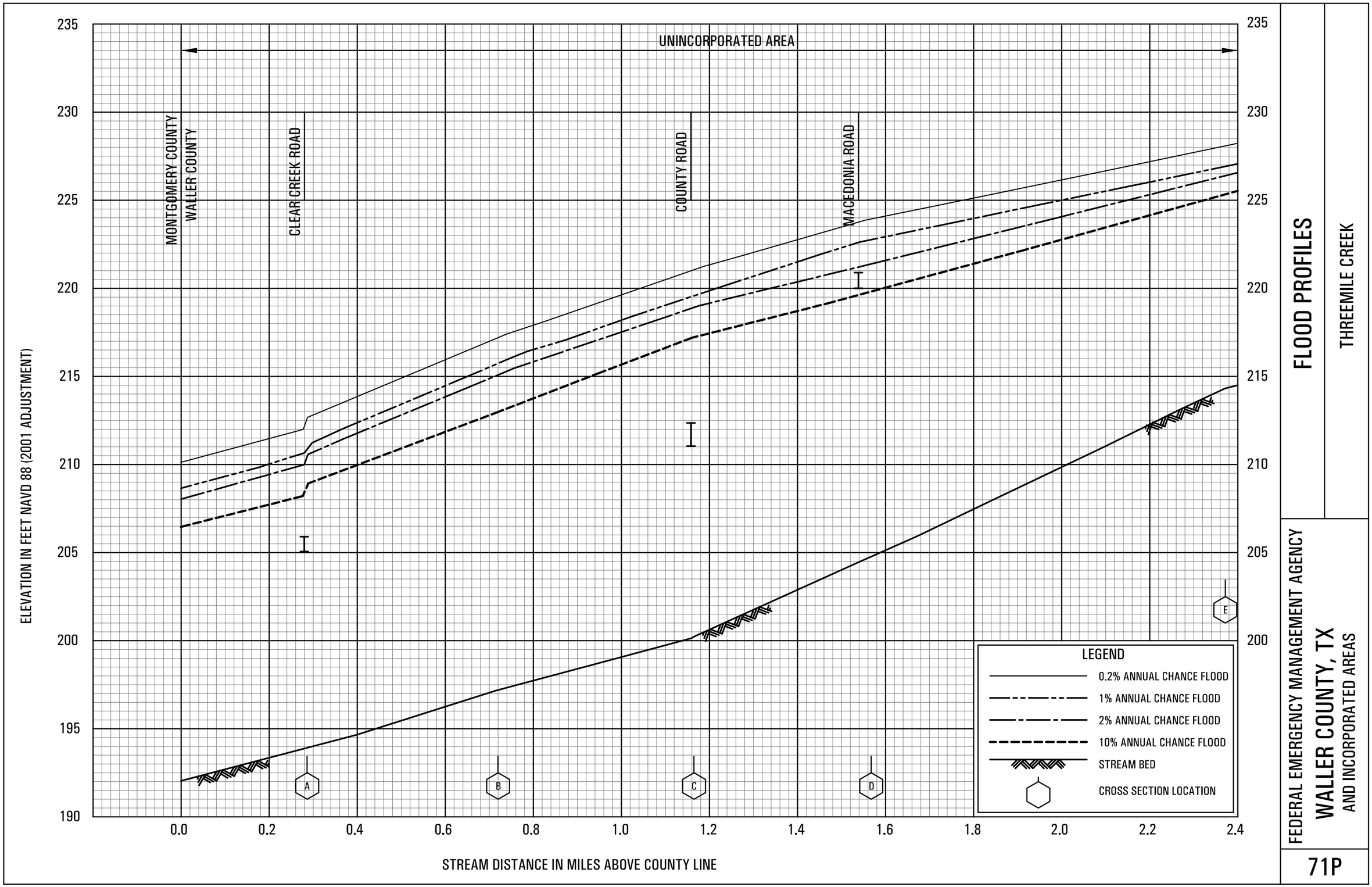
FLOOD PROFILES

SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



FLOOD PROFILES

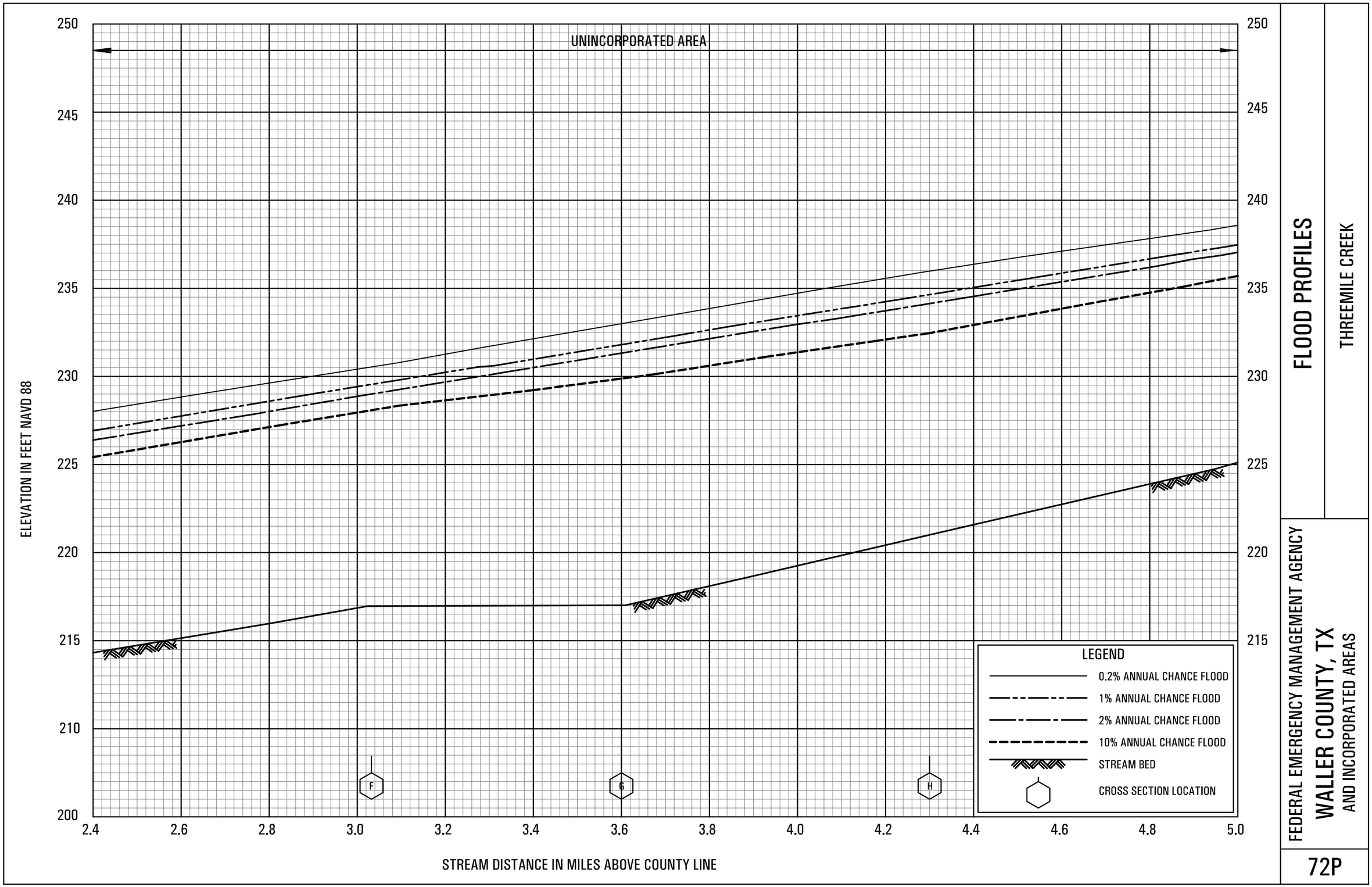
THREEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

71P



FLOOD PROFILES

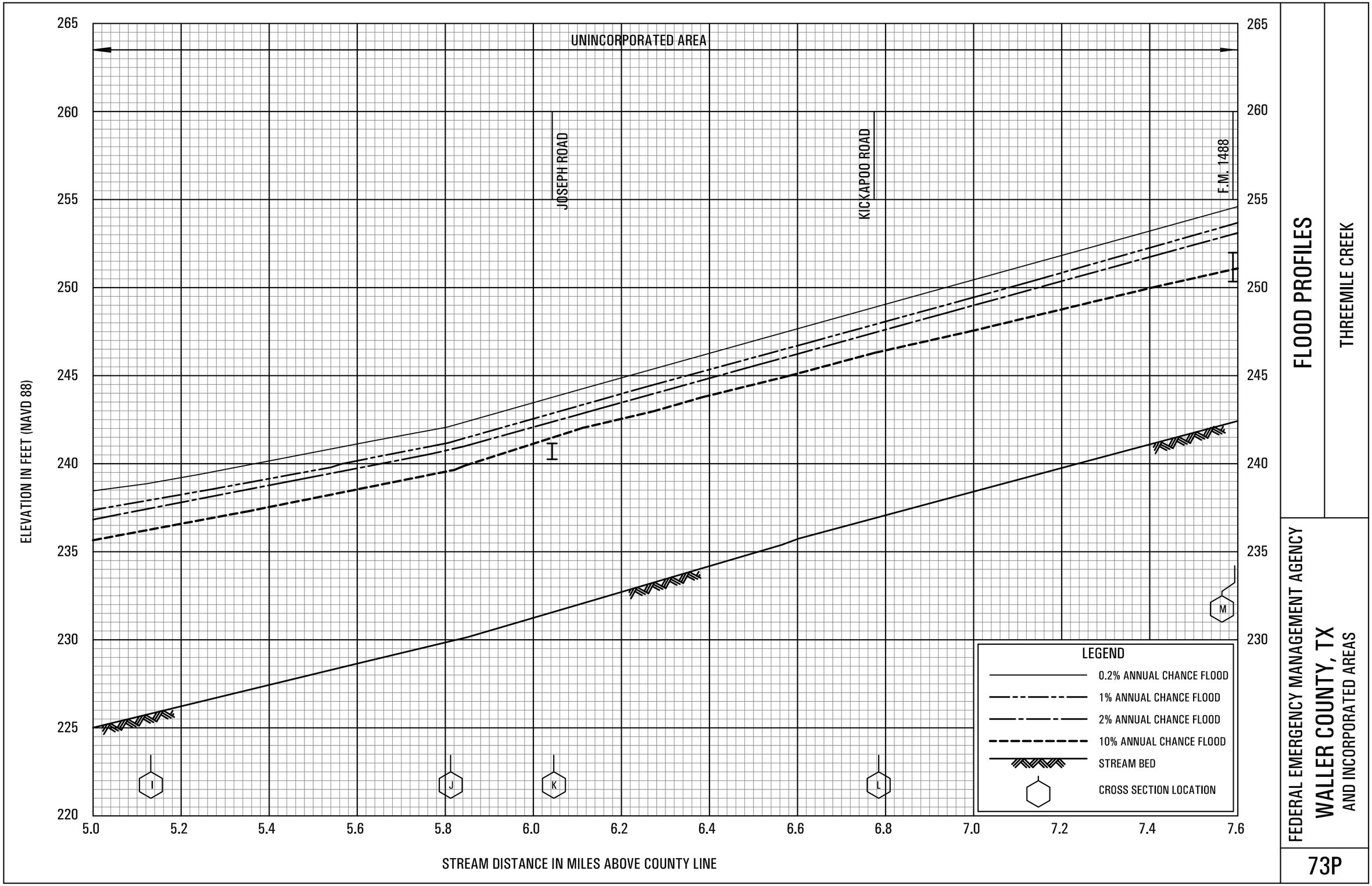
THREEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

72P



FLOOD PROFILES

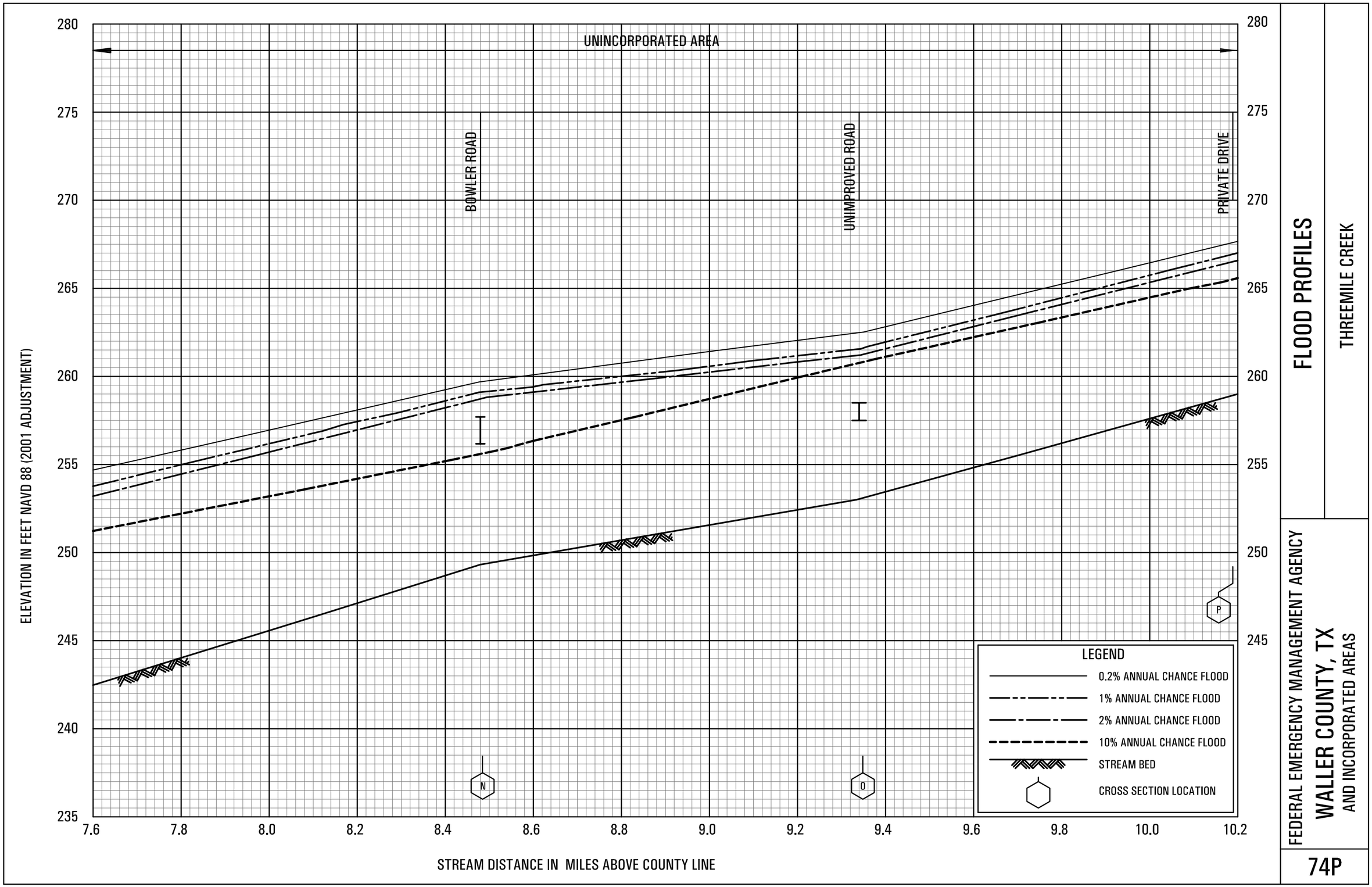
THREEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

73P



FLOOD PROFILES

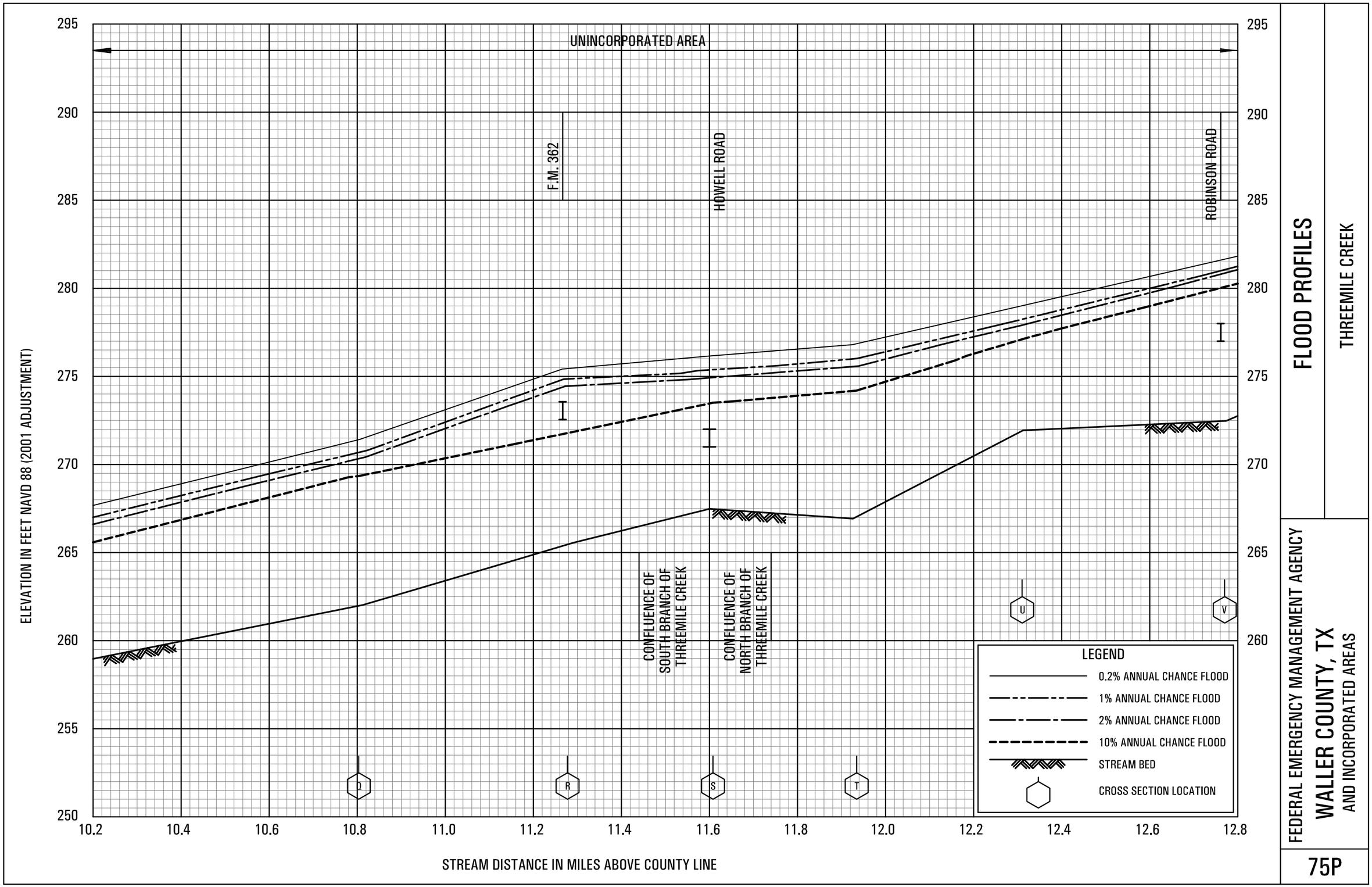
THREEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

74P



FLOOD PROFILES

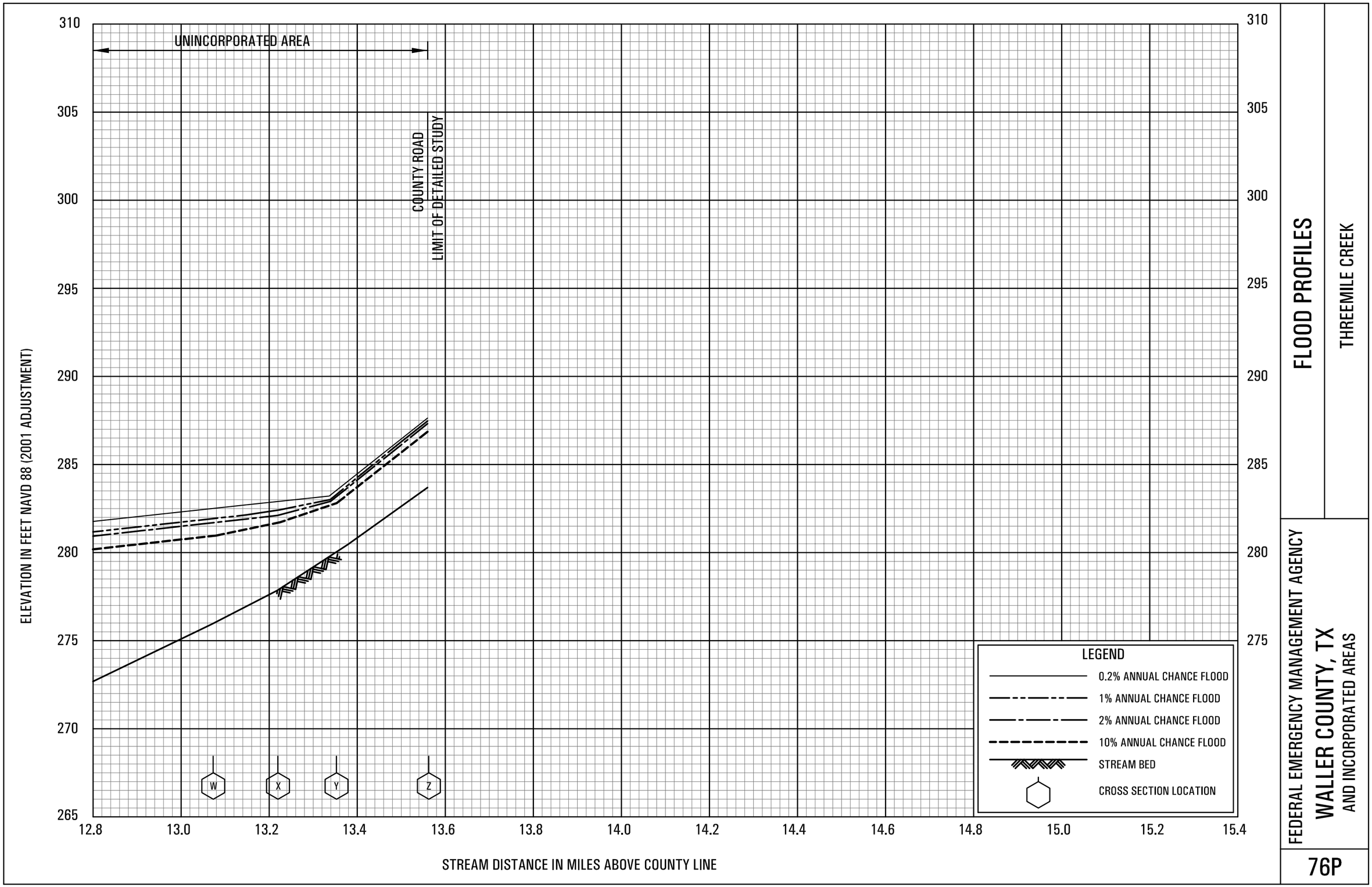
THREEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

75P



FLOOD PROFILES

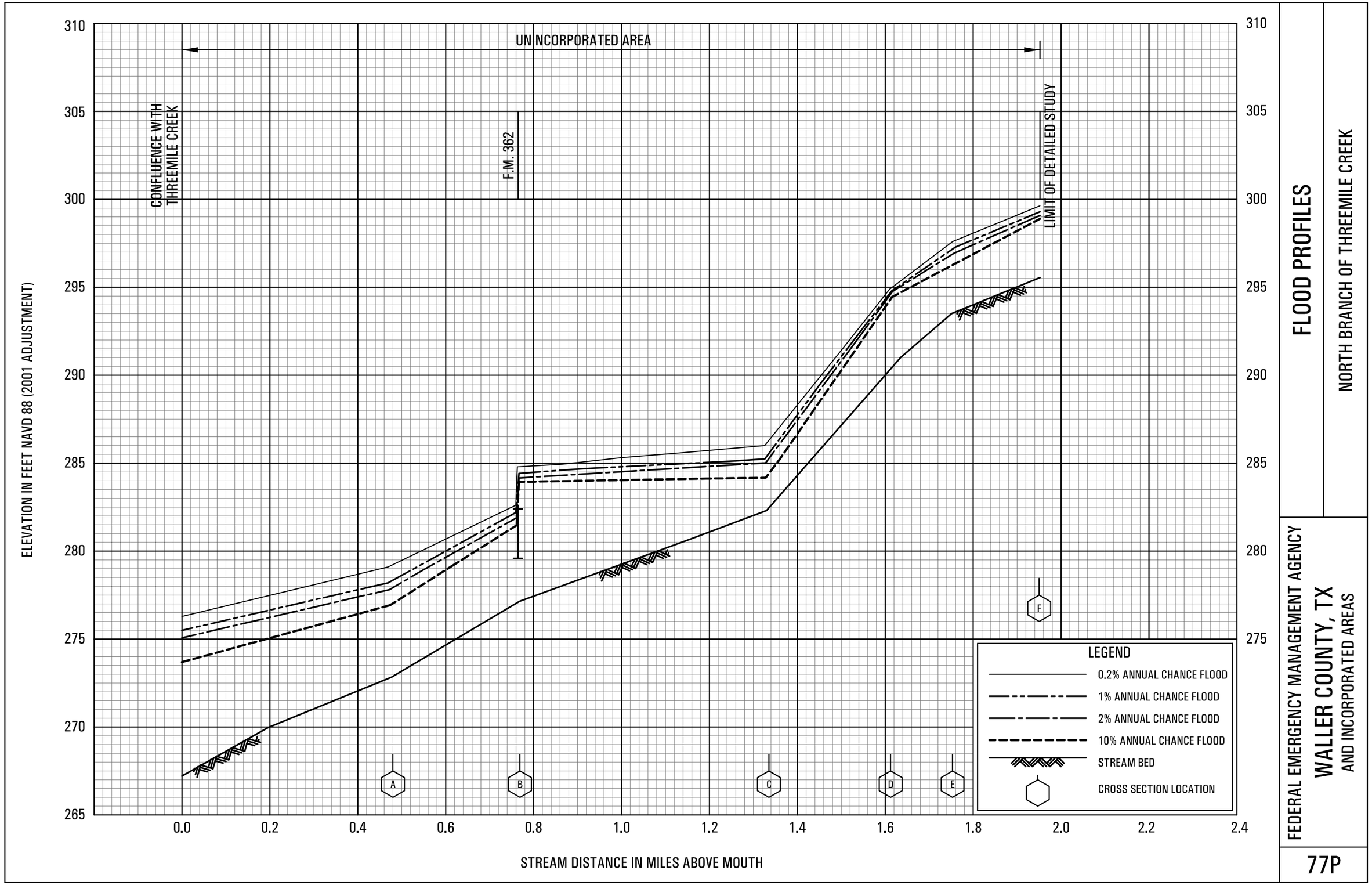
THREEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

76P



FLOOD PROFILES

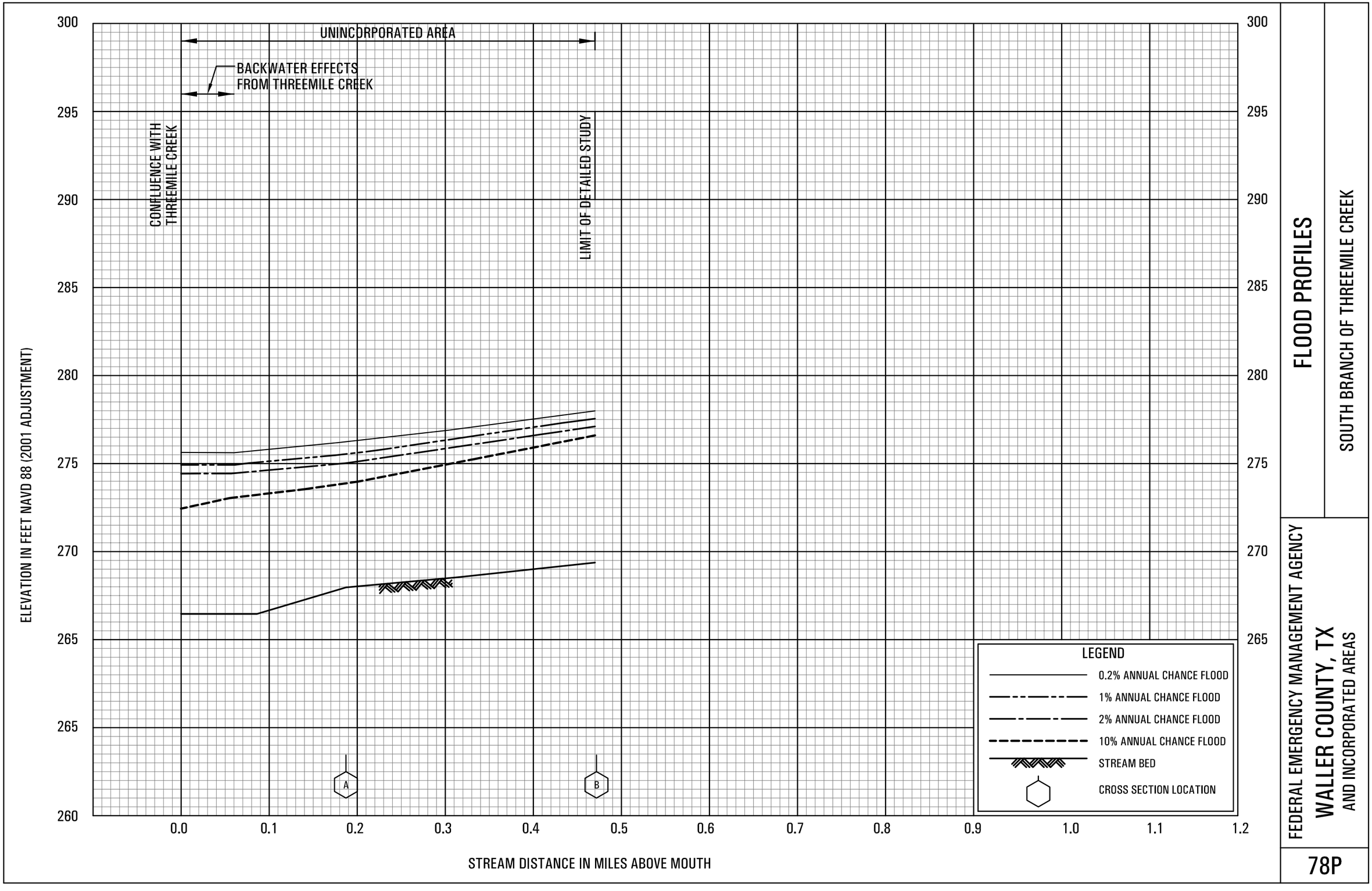
NORTH BRANCH OF THREEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

77P



FLOOD PROFILES

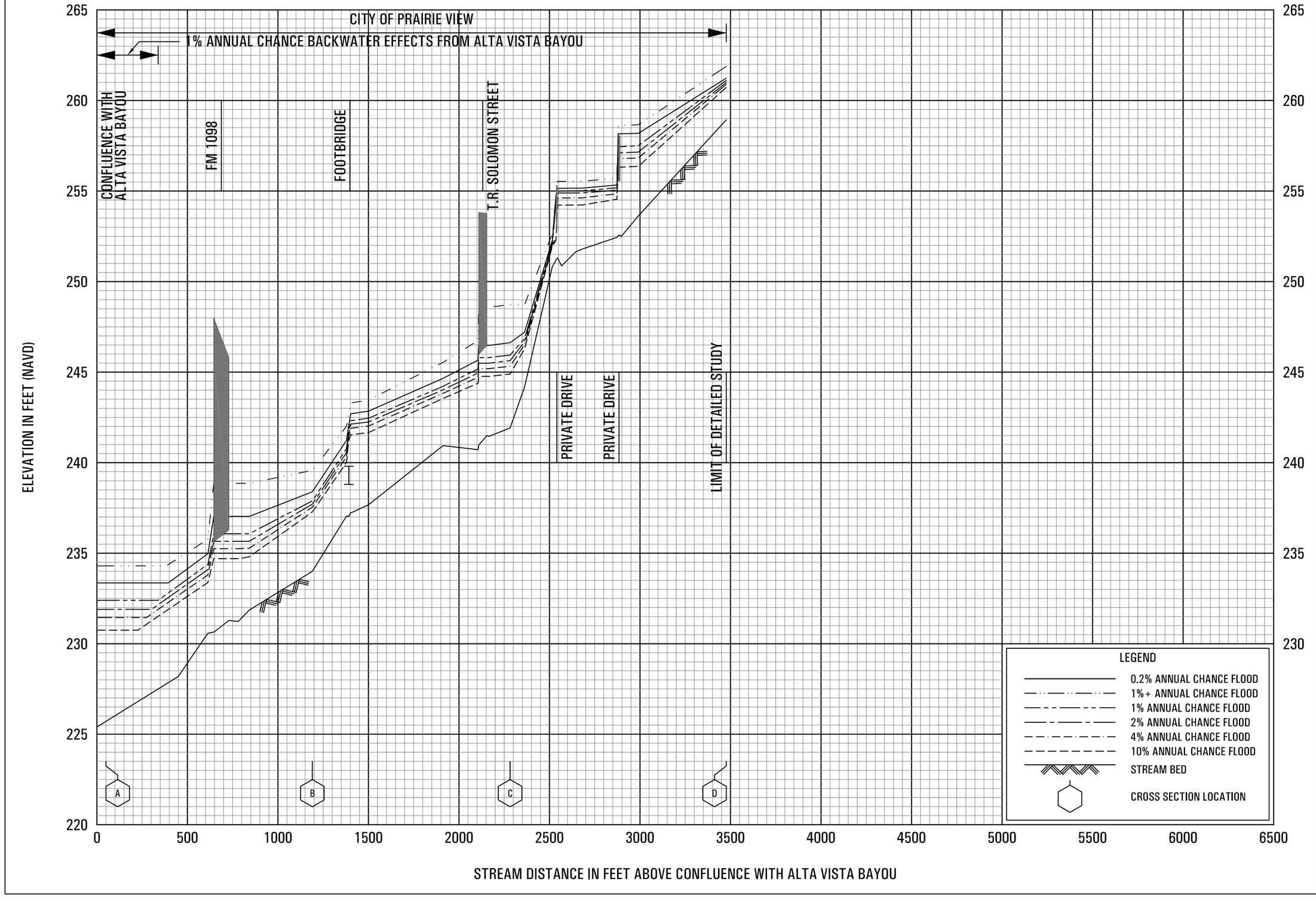
SOUTH BRANCH OF THREEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

78P



FLOOD PROFILES

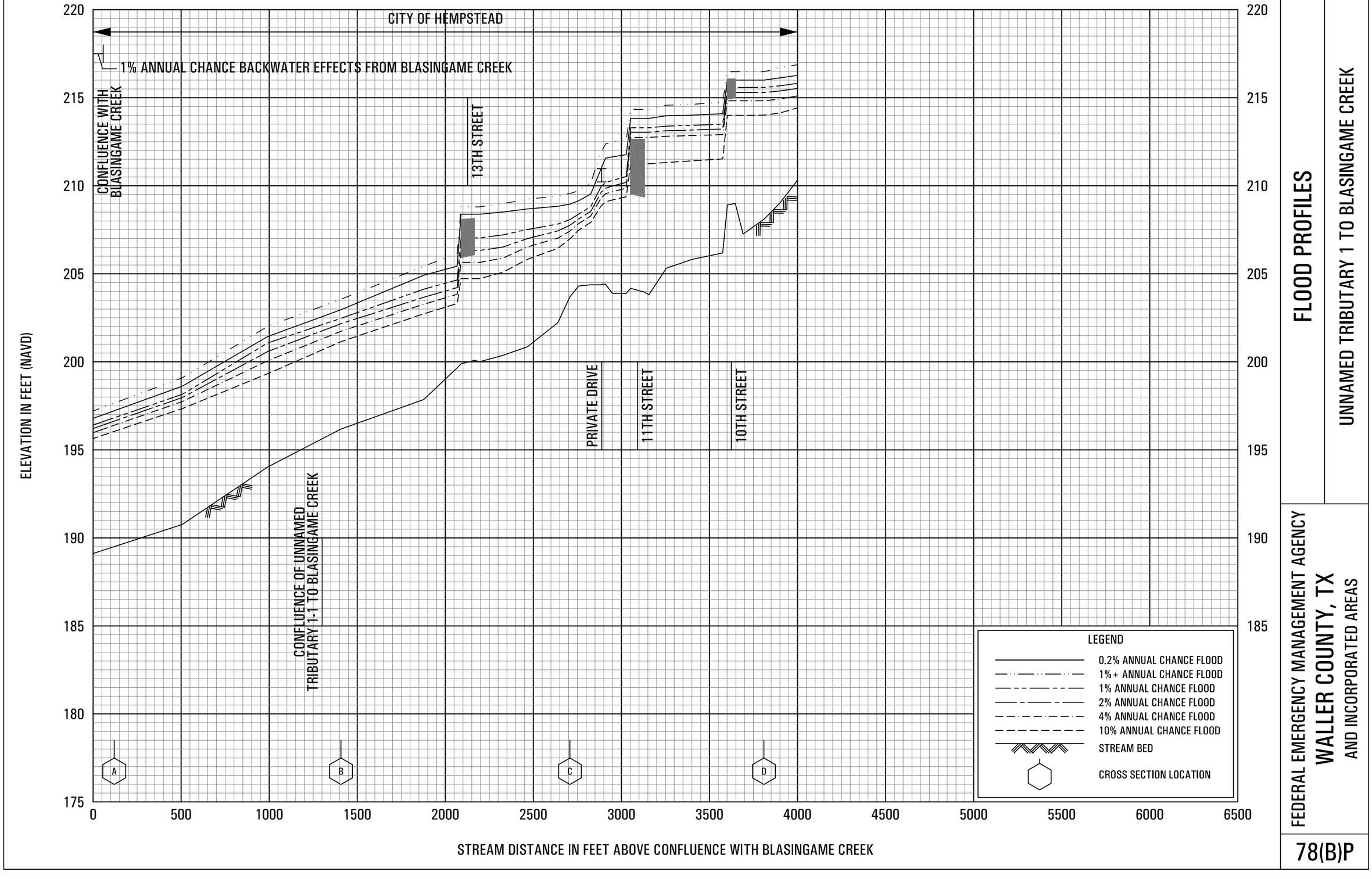
UNIVERSITY BAYOU

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

78(A)P



FLOOD PROFILES

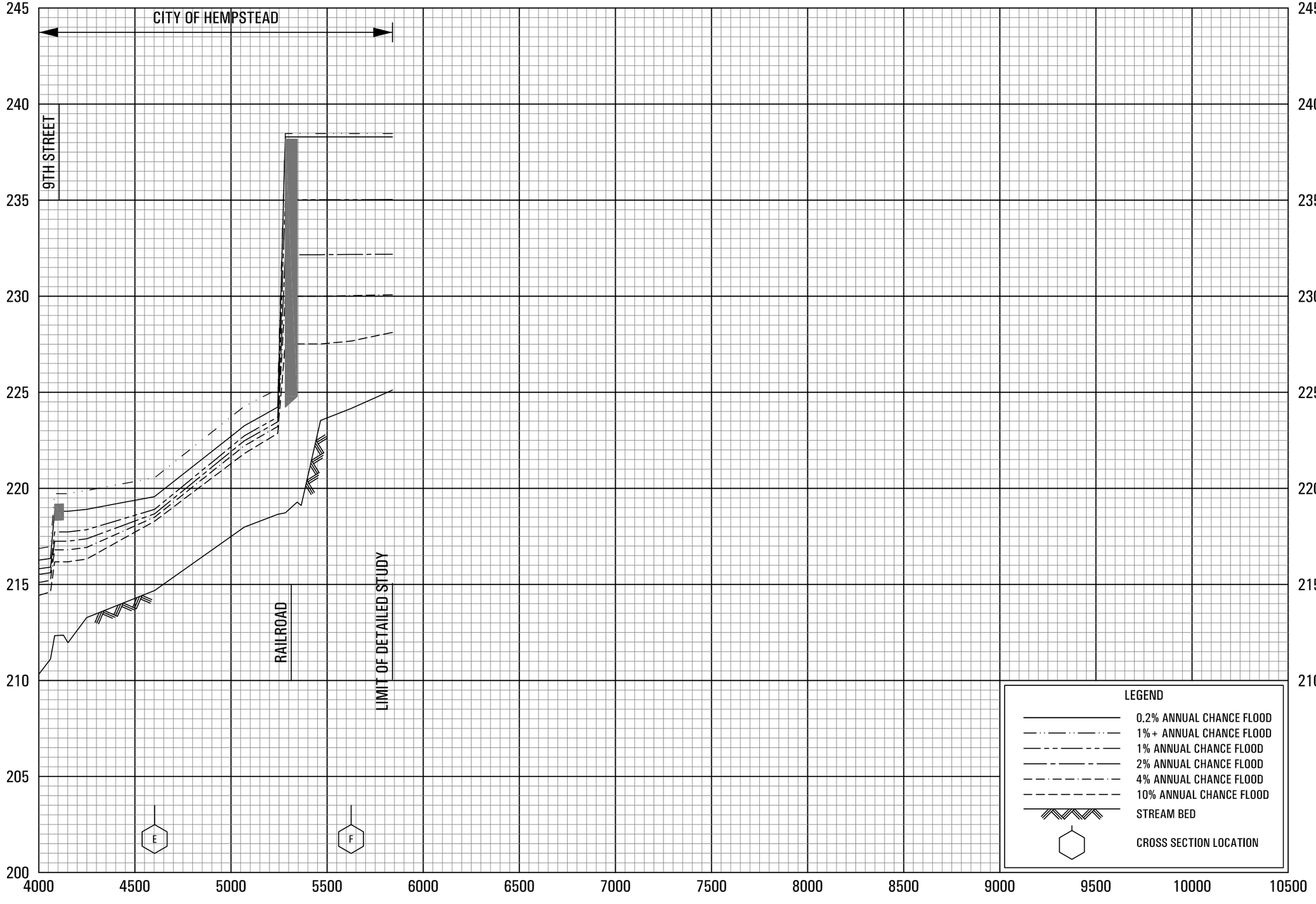
UNNAMED TRIBUTARY 1 TO BLASINGAME CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

78(B)P



FLOOD PROFILES

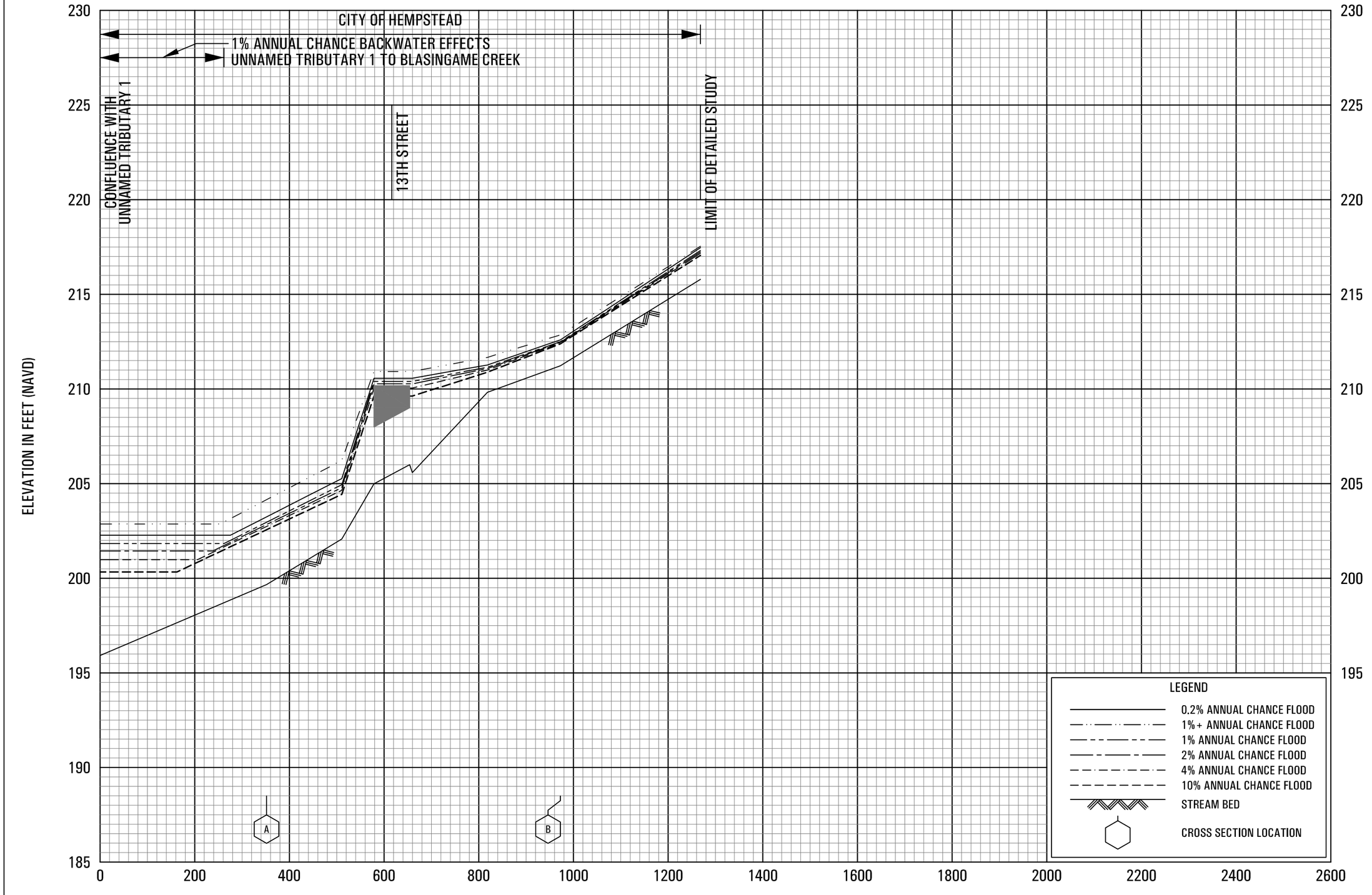
UNNAMED TRIBUTARY 1 TO BLASINGAME CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

78(B1)P



FLOOD PROFILES

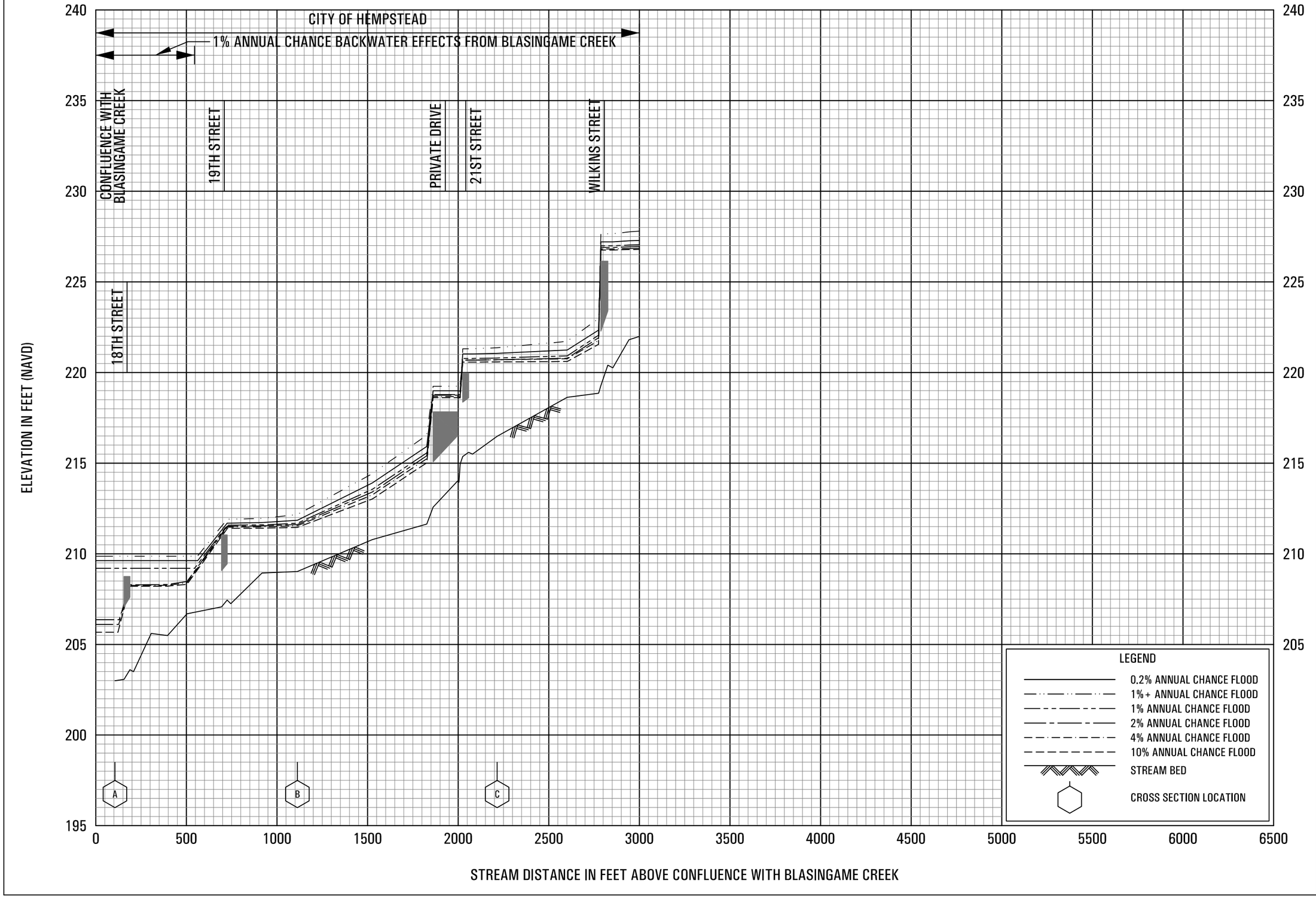
UNNAMED TRIBUTARY 1-1 TO BLASINGAME CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

78(C)P



FLOOD PROFILES

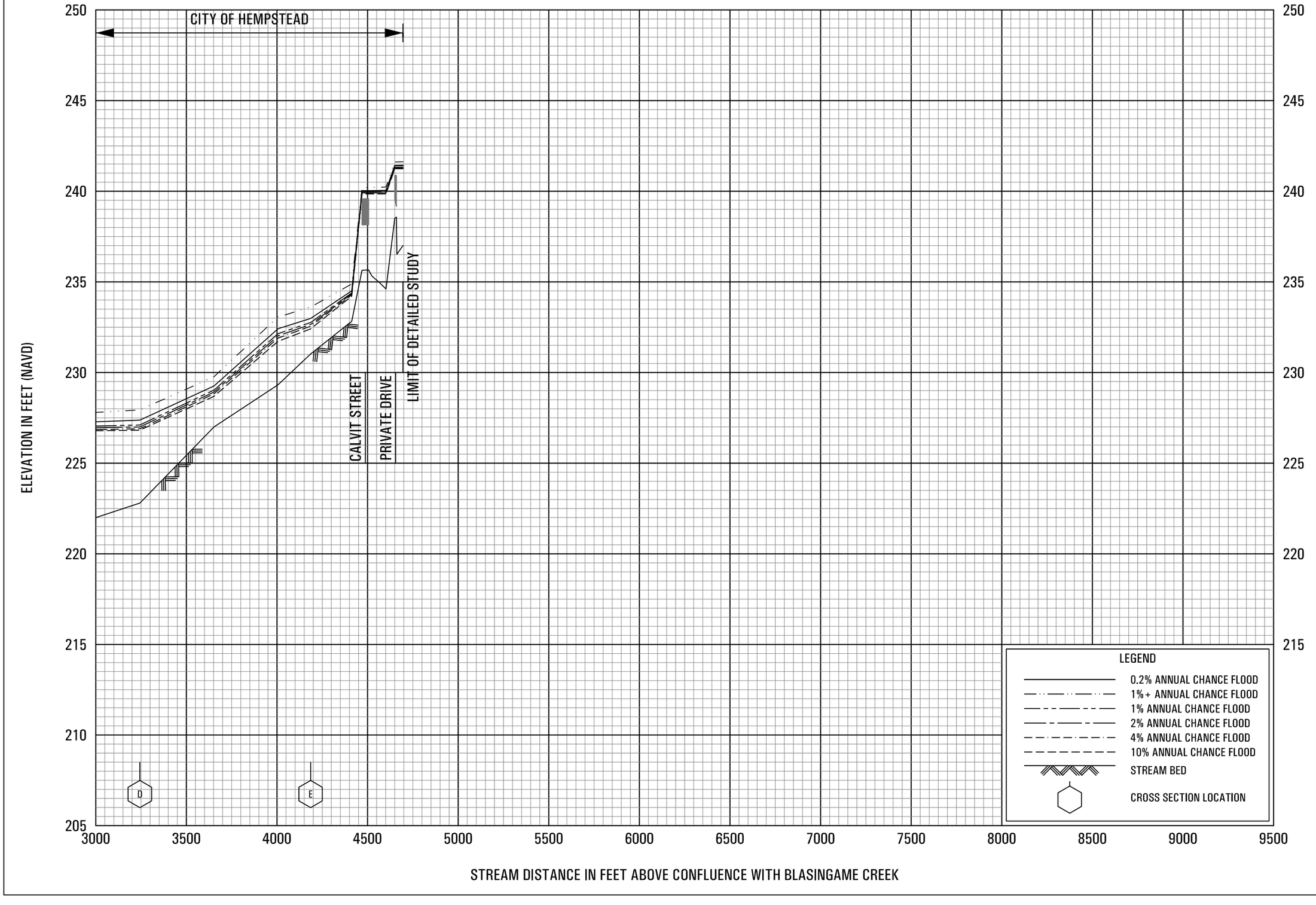
UNNAMED TRIBUTARY 2 TO BLASINGAME CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

78(D)P



FLOOD PROFILES

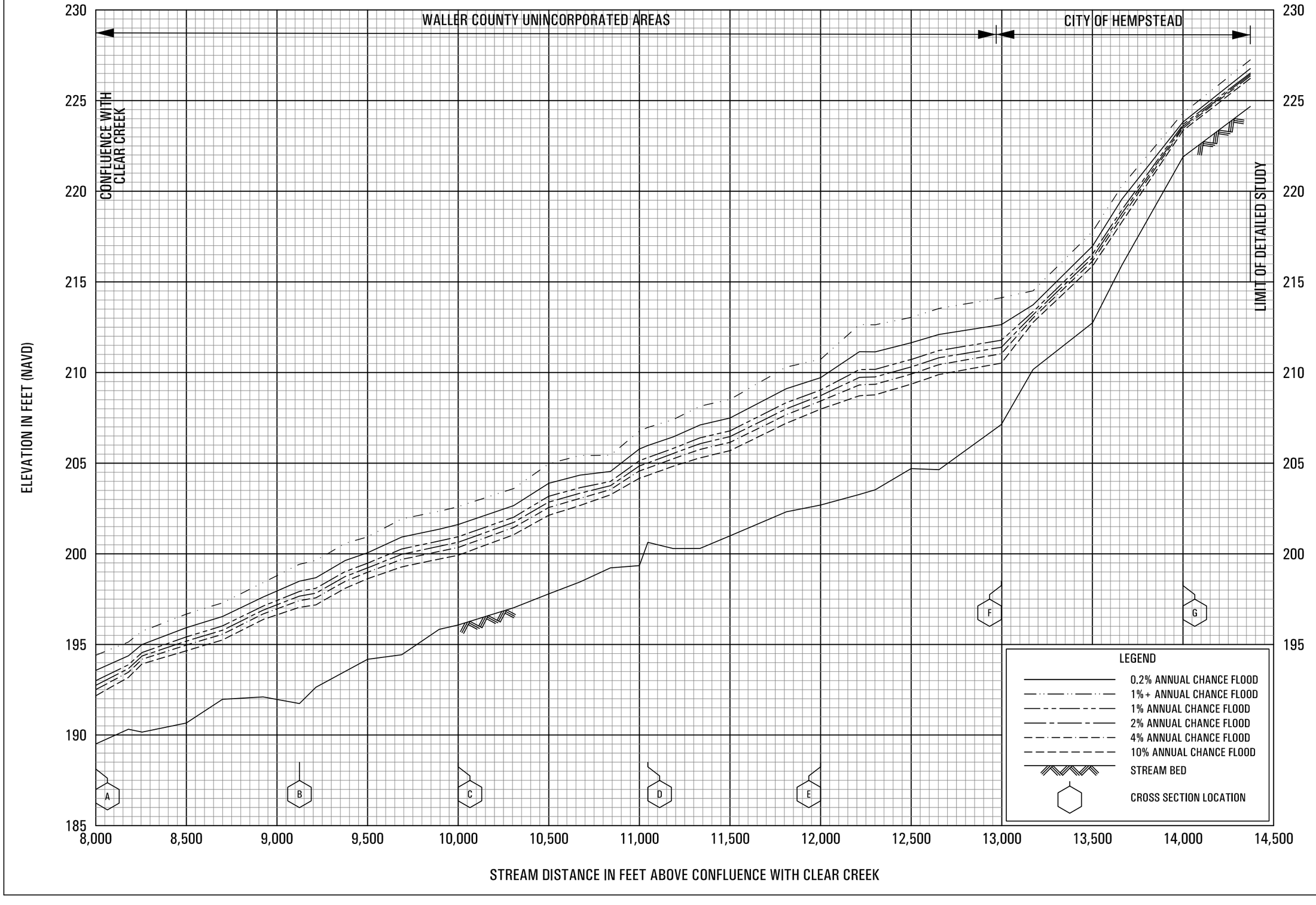
UNNAMED TRIBUTARY 2 TO BLASINGAME CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

78(D1)P



FLOOD PROFILES

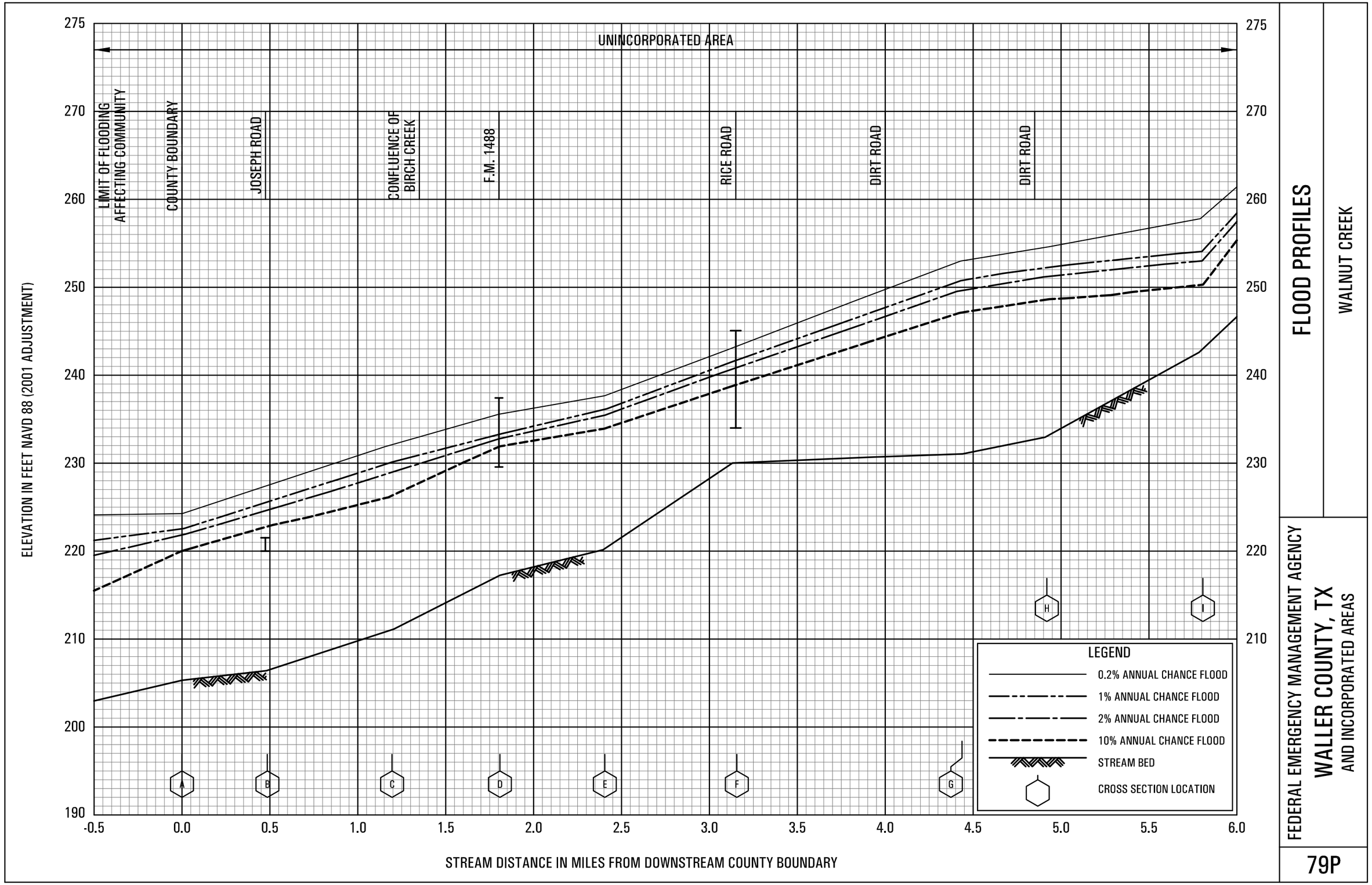
UNNAMED TRIBUTARY TO CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

78(E)P



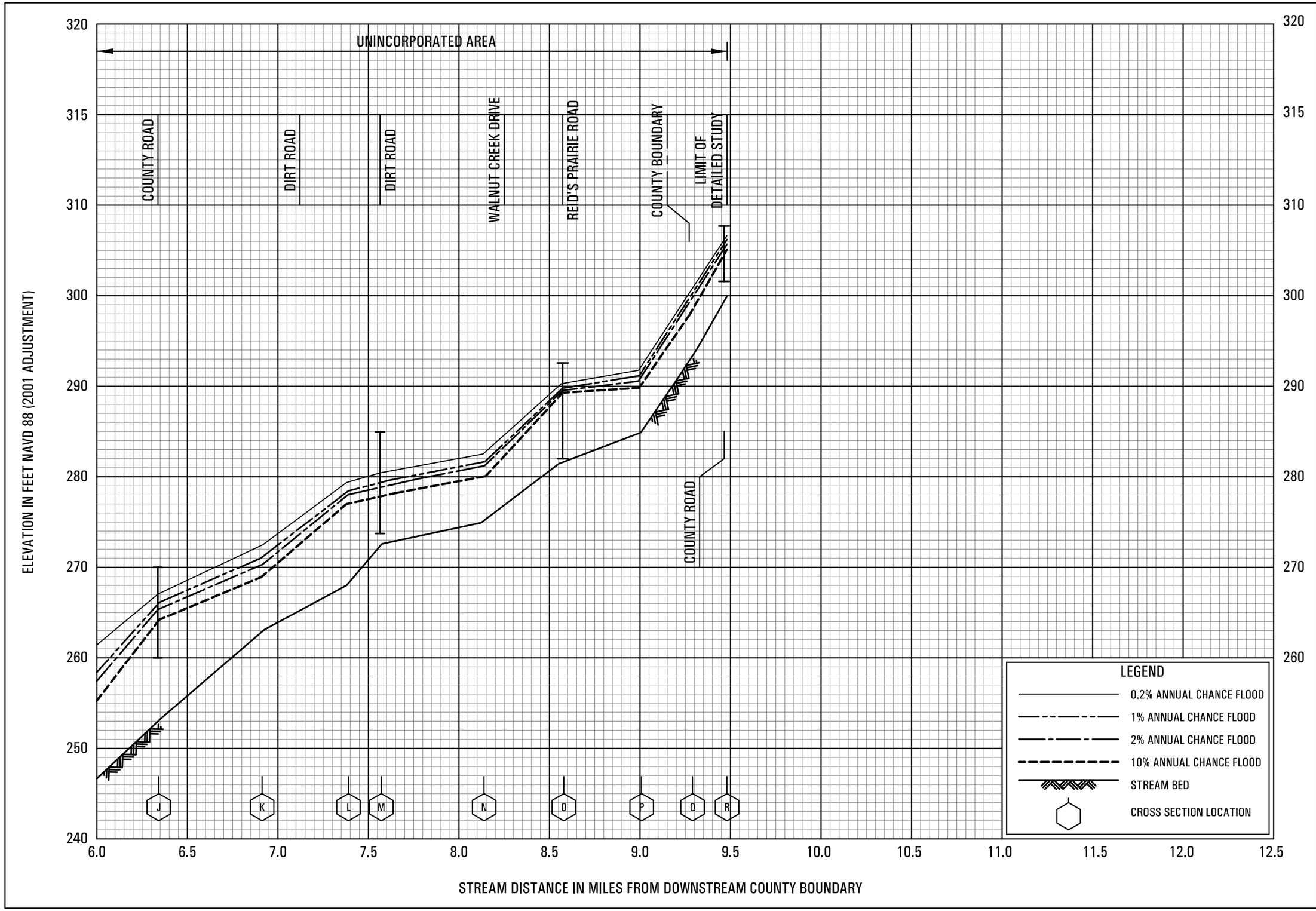
FLOOD PROFILES

WALNUT CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS



FLOOD PROFILES

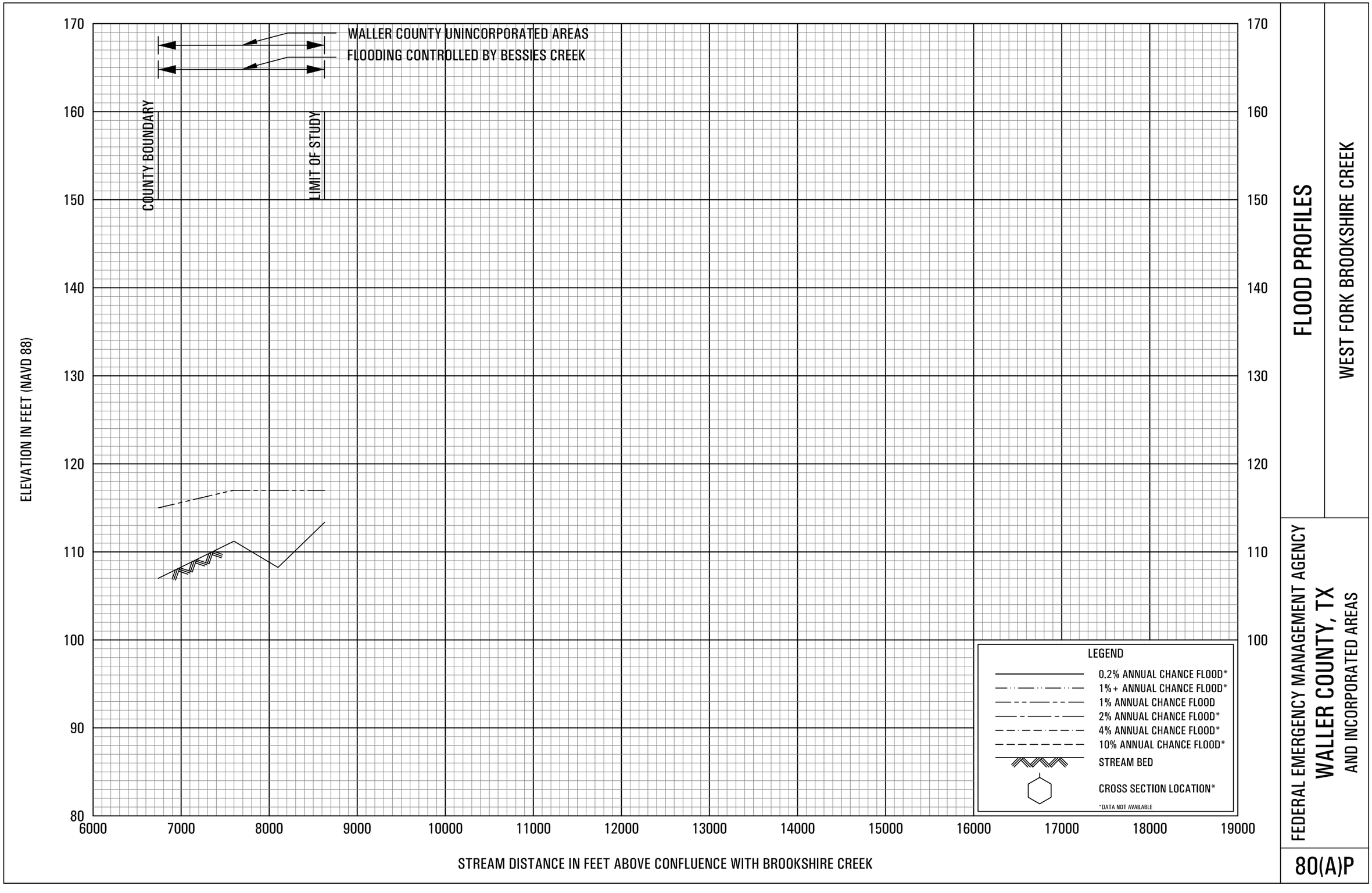
WALNUT CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

80P



FLOOD PROFILES

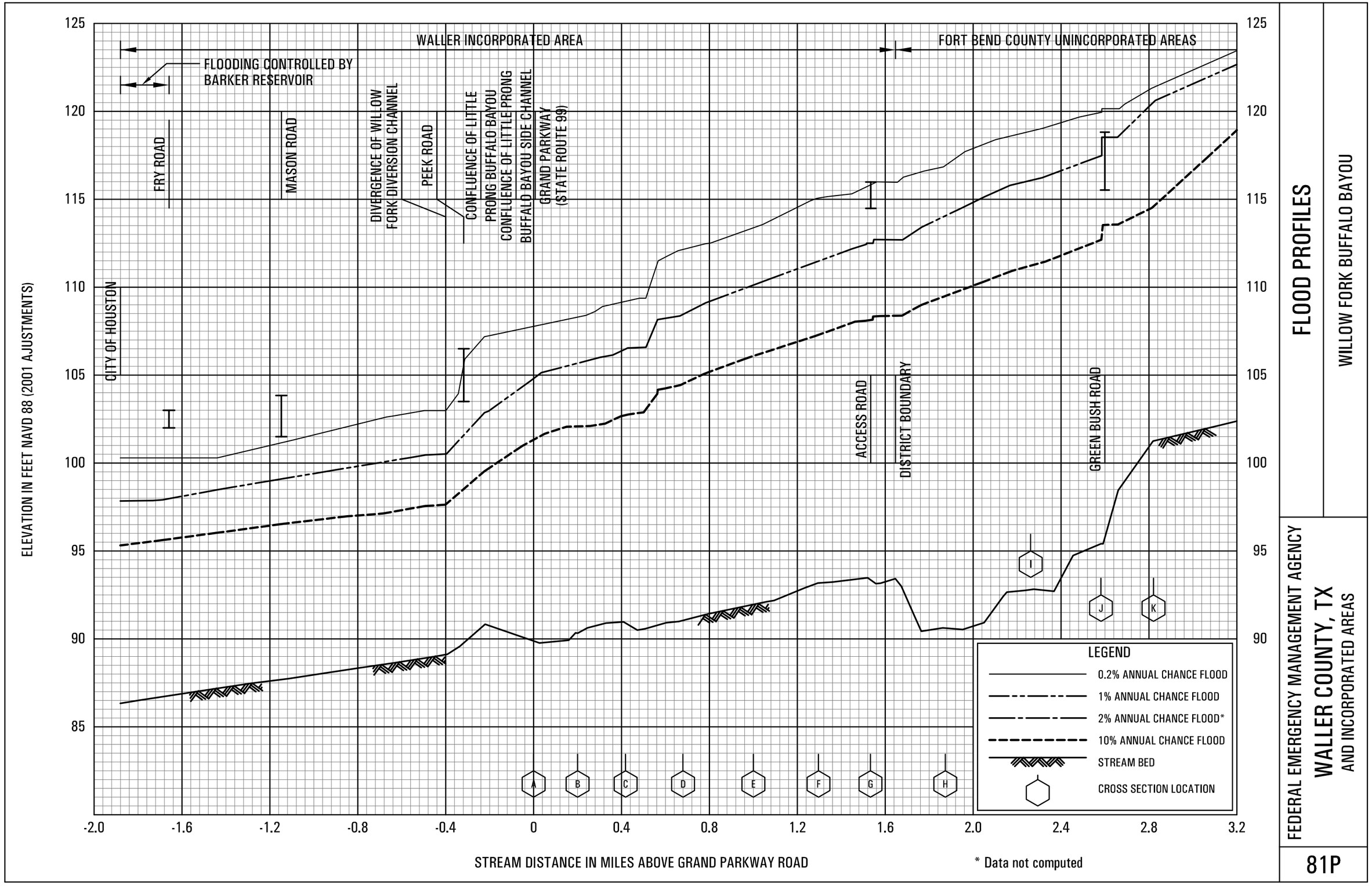
WEST FORK BROOKSHIRE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

80(A)P



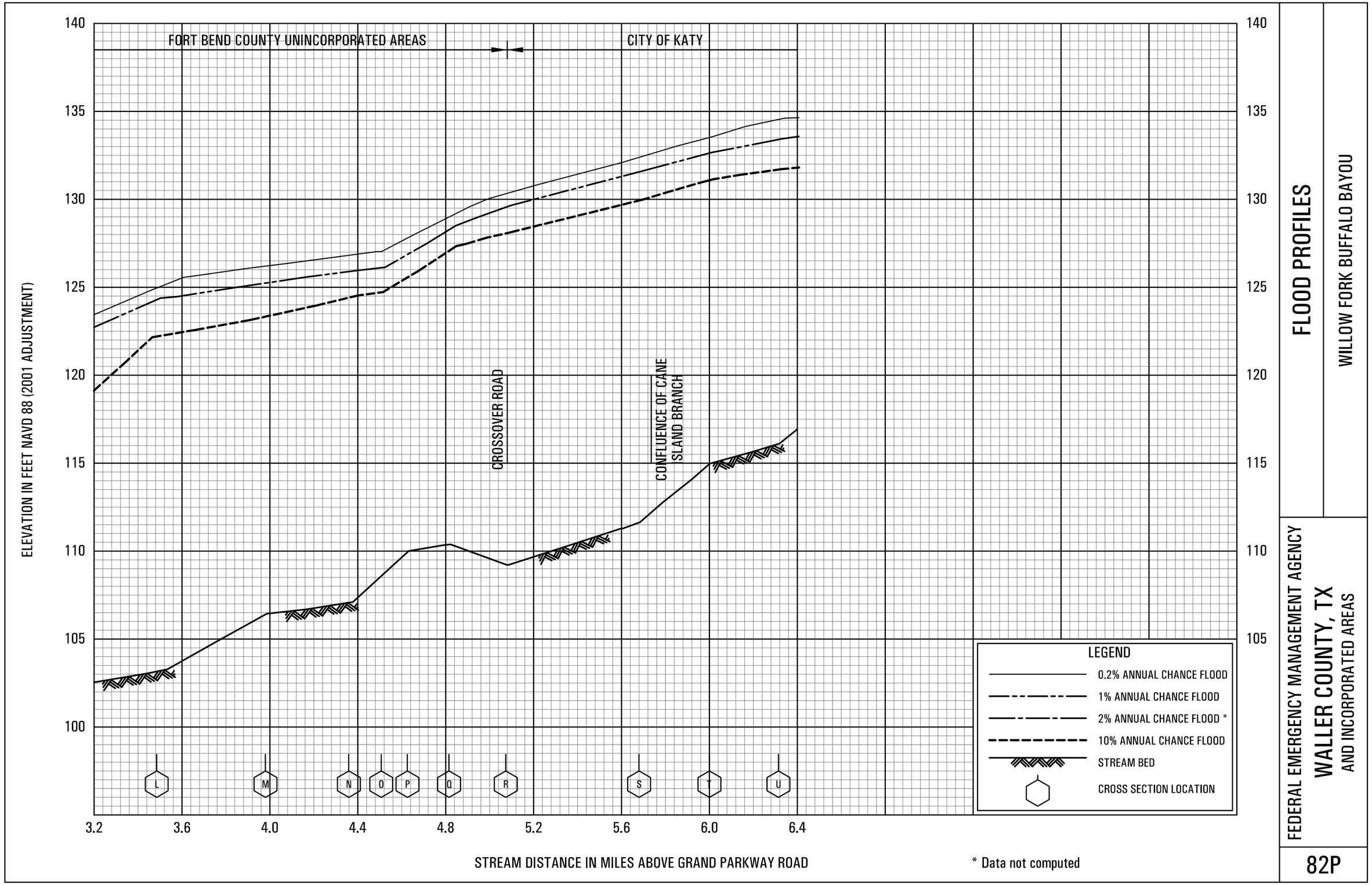
FLOOD PROFILES

WILLOW FORK BUFFALO BAYOU

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX
AND INCORPORATED AREAS

81P



FLOOD PROFILES

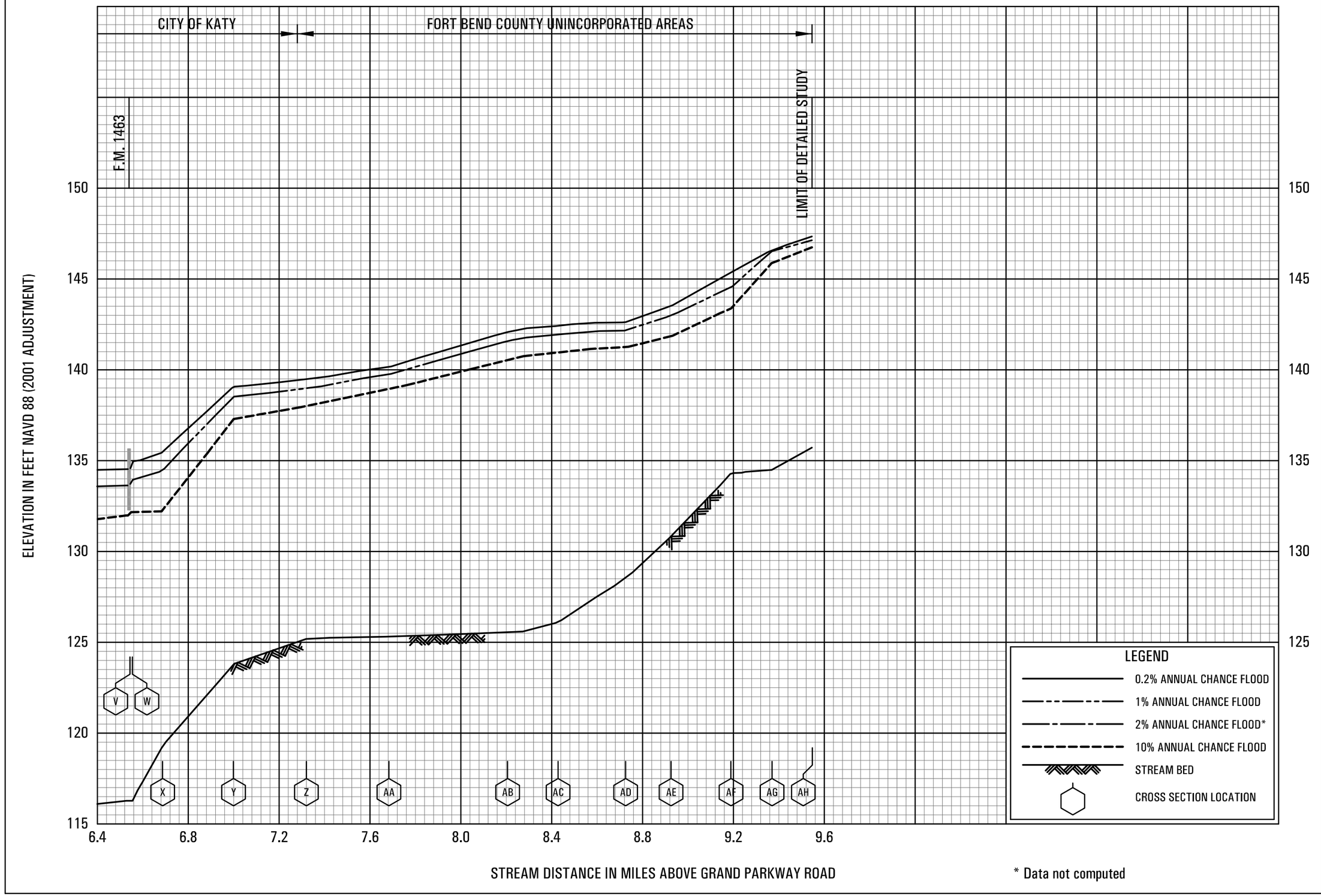
WILLOW FORK BUFFALO BAYOU

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS

82P



FLOOD PROFILES

WILLOW FORK BUFFALO BAYOU

FEDERAL EMERGENCY MANAGEMENT AGENCY

WALLER COUNTY, TX

AND INCORPORATED AREAS