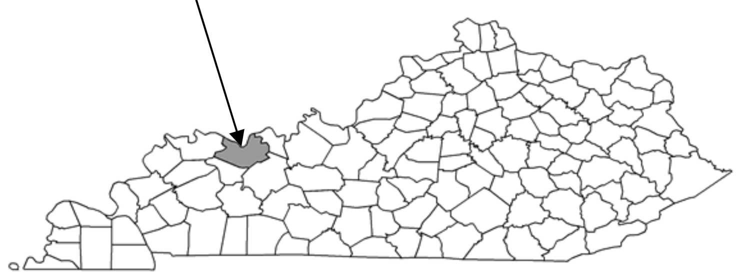
FLOOD INSURANCE STUDY

DAVIESS COUNTY, KENTUCKY
AND INCORPORATED AREAS



COMMUNITY NAME	COMMUNITY NUMBER
DAVIESS COUNTY (UNINCORPORATED AREAS)	210062
OWENSBORO, CITY OF	210063
*WHITESVILLE, CITY OF	210438

*NON-FLOODPRONE COMMUNITY

REVISED
April 16, 2009

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER

21059CV000A

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program (NFIP) have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

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

Initial Countywide FIS Effective Date: March 3, 1997

Revised Countywide FIS Date: April 16, 2009

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FLOOD INSURANCE STUDY
DAVIESS COUNTY, KENTUCKY, 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, or revises and updates a previous FISs/Flood Insurance Rate Map (FIRMs) for the geographic area of Daviess County, including the City of Owensboro, City of Whitesville; and the unincorporated areas of Daviess County (referred to collectively herein as Daviess County). This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. 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 Whitesville is non-floodprone.

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

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

1.2 Authority and Acknowledgments

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

Information on the authority and acknowledgments for the previously printed countywide FIS is shown below.

In the initial countywide study, the hydrologic and hydraulic analyses were prepared by Mayes, Sudderth & Etheredge, Inc., for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-90-C-3099. This work was completed on February 28, 1992.

For this revised countywide FIS, new hydrologic and hydraulic analyses were prepared for FEMA by AMEC Earth & Environmental, Inc. under Contract No. EMA-2005-CA-5212 and this work was completed in May 2006. The extents of these analyses are listed in Section 2.0 of this report. The topographic information consisted of 2 (Reference 27) and 4 (Reference 28) feet contours and additional topographic information consisted of 10 meter Digital Elevation Models produced by the U.S. Geological Survey (USGS). Non revised areas were converted to digital format in conformance with FEMA DFIRM specifications.

Planimetric base map information shown on all FIRM panels was derived from multiple sources. Base map files were provided in digital format by Kentucky Geographic Network. Additional information was derived from the U.S. Geological Survey. Users of this FIRM should be aware that minor adjustments may have been made to specific base map features.

The coordinate system used for the production of this FIRM is State Plane, Lambert Conformal Conic, Kentucky Single Zone 1600, North American Datum of 1983 (NAD 83), GRS 80 spheroid. Corner coordinates shown on the FIRM are in latitude and longitude referenced to the UTM projection, NAD 83. Differences in the datum and spheroid used in the production of FIRMs for adjacent counties may result in slight positional differences in map features at the county boundaries. These differences do not affect the accuracy of information shown on the FIRM.

1.3 Coordination

An initial Consultation Coordination Officer's (CCO) meeting is held with representatives of the communities, FEMA, and the study contractors to explain the nature and purpose of the FIS, and to identify the streams to be studied by detailed methods. A final CCO meeting is held with representatives of the communities, FEMA, and the study contractors to review the results of the study.

An initial CCO meeting for this revised countywide study was held on October 04, 2005, YEAR, and a final CCO meeting was held on August 17, 2007. These meetings were attended by representatives of Daviess County, the City of Owensboro, AMEC Earth & Environmental Inc., Kentucky Division of Water (KYDOW), the Regional Water Resource Agency, the National Service Provider (NSP) - Michael Baker Corporation and FEMA. The results of the study were reviewed at the final CCO meeting, and all problems raised at that meeting have been addressed in this study.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS report covers the geographic area of Daviess County, Kentucky, including the incorporated communities listed in Section 1.1 The areas studied by detailed methods were selected with priority given to all known flood hazards and areas of projected development or proposed construction through August 2006.

All or portions of the flooding sources listed in Table 1 “Flooding Sources Studied by Detailed Methods” were studied by detailed methods. Limits of detailed study are indicated on the Flood Profiles (Exhibit 1) and on the FIRMs (Exhibit 2).

TABLE 1 – DETAILED STUDIED STREAMS

Big Ditch	Panther Creek
Carter Ditch	Persimmon Ditch
Devins Ditch	Pup Creek
Gilles Ditch	Scherm Ditch
Goetz Ditch	Tamarack Ditch
Harsh Ditch	Unnamed Tributary 46 Horse Fork
Horse Fork	West Tributary of Harsh Ditch
North Fork Panther Creek	Yellow Creek
Ohio River	

This revision was carried out in order to update flood hazard information for all of the jurisdictions within Daviess County. As part of this revision, updated analyses were included for the flooding sources shown in Table 2, “Scope of Revision.”

TABLE 2 – SCOPE OF REVISION

Stream	Limits of Detailed Study or New Detailed Study
Big Ditch	From a point approximately 3,650 feet above Keller Road upstream to Tamarack Road
Carter Ditch	From Tamarack Road to U.S. Route 60 ByPass/State Route 212
Devins Ditch*	From a point approximately 500 feet downstream of Crabtree Avenue to a point approximately 1,600 feet upstream of the west entrance ramp to Audubon Parkway
Gilles Ditch	From Lyddane Bridge Road to a point approximately 2,500 feet above U.S. Route 60
Goetz Ditch	From a point approximately 1,500 feet below South Town Boulevard upstream to a point approximately 1,600 feet above Lewis Lane
Harsh Ditch*	From the confluence with Horse Fork upstream to 27th street
Horse Fork	From approximately 2200 feet downstream of Veach Road upstream to State Route 54
North Fork Panther Creek*	From its confluence with Panther Creek and South Fork Panther Creek to State Route 764 (Entire length within

TABLE 2 – SCOPE OF REVISION

Stream	Limits of Detailed Study or New Detailed Study
	Daviess County)
Ohio River	For its entire length within Daviess County
Panther Creek*	From the Green River upstream to the confluence of the North Fork and South Fork Panther Creeks
Persimmon Ditch	From the Ohio River upstream to U.S. Route 60
Pup Creek*	From its confluence with the Ohio River to County Route 1389
Scherm Ditch	From its confluence with Carter Ditch to Mayfair Avenue
Tamarack Ditch*	From its confluence with Big Ditch upstream to Arlington Drive
West Tributary of Harsh Ditch*	From its confluence with Harsh Ditch upstream to Wildwood Drive
Unnamed Tributary 46 Horse Fork	From the confluence with Horse Fork upstream to Fairview Drive
Yellow Creek	From its confluence with the Ohio River to just upstream of the Wendell Ford Expressway

*Devins Ditch, North Fork Panther Creek, Panther Creek, Pup Creek, Harsh Ditch, West Tributary of Harsh Ditch and Tamarack ditch were redelineated based on H&H from the previously printed FIS for Daviess County and Incorporated Areas dated March 3, 1997 and updated topographical data.

This revised countywide study incorporates the determination of a Letter of Map Revision case number 99-04-025P issued by FEMA on May 24, 1999, for the unincorporated areas of Daviess County. That letter reflect the placement of fill and updated hydraulic modeling along Harsh Ditch along a reach in the vicinity of the Alexandria subdivision.

The detailed study on the Ohio River Tributary was removed from the previous countywide study dated March 3, 1997 due to the placement of a channel and culvert and by request from the local community. Only the backwater from the Ohio River will affect this tributary.

Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon, by FEMA and representatives of Daviess County, the City of Owensboro, AMEC Earth & Environmental Inc., Kentucky Division of Water (KYDOW), the Regional Water Resource Agency and the National Service Provider (NSP) - Michael Baker Corporation.

2.2 Community Description

Daviess County is located on the south bank of the Ohio River, in northwest Kentucky, approximately 15 miles east of Evansville, Indiana, and 90 miles southwest of Louisville, Kentucky. Daviess County was formed from a part of

Ohio County around 1815. In 2006, Daviess County had a population of 93,334 (Reference 25).

Daviess County is situated on a flat expanse bounded on the north by the Ohio River and on the west by the Green River. Across the Ohio River lies Spencer County, Indiana, and across the Green River lies Henderson County, Kentucky. The remainder of the county is bordered by McLean County, Kentucky, to the southwest; Ohio County, Kentucky, to the southeast; and Hancock County, Kentucky, to the east. Daviess County lies within the West Kentucky Coal Field physiographic region, and coal deposits are found in the county. The area is underlain at the surface by sedimentary rock of Pennsylvanian age, consisting mainly of sandstone, siltstone, and shale.

The county seat, Owensboro, is located in the north-central section of the county and was the place of residence for a 2005 population of 55,459 (Reference 25). The northern half of the city drains to the Ohio River and the southern half drains to Panther Creek through very flat channels. A number of these channels have been replaced, in part, by storm sewers. The Panther Creek basin drains that portion of Daviess County, which lies south of Owensboro.

Daviess County's climate varies, with moderately warm summers and cool winters. The average temperature is 40 degrees Fahrenheit (°F) in the winter and 77°F in the summer. The average annual rainfall is approximately 43 inches, with extremes ranging from approximately 28 inches in dry years to 62 inches in wet years.

2.3 Principal Flood Problems

Historic accounts of past floods along the Ohio River indicate that, at least six times in the last 75 years, floods of large magnitude have occurred in Daviess County, causing extensive damage to roads, bridges, homes, and livestock. These floods occurred in 1913, 1937, 1945, 1950, 1962, and 1964. The most recent flood, that of February 1989, had a frequency of approximately 25 years. During the flood of January 28, 1937, the Ohio River attained its greatest recorded peak discharge, 1,410,000 cubic feet per second as measured at the USGS gage at Evansville, Indiana. The frequency of the January 28, 1937, flood is greater than a 500-year flood.

Large expanses of Daviess County are inundated when the Ohio River spreads across the broad floodplain along the county's northern limits. Serious and persistent flooding of the Ohio River will continue to pose a hazard for unprotected areas.

Backwater from the Ohio River contributes to flooding on Ohio River Tributary, Pup Creek, Yellow Creek, Persimmon Ditch, and Panther Creek. Owensboro is sufficiently elevated so that it is not subject to flooding along the main channel of the Ohio River.

Floods on Panther Creek and its tributaries inundate residential and agricultural sections in a large part of the central Daviess County area and the residential sections around the south side of Owensboro. Damaging floods have been experienced many times as a result of the poor drainage conditions in Panther Creek. Of these occurrences, the floods of 1959 and 1964 reportedly caused the most damage. Stream gage records, kept by the USGS, in the Panther Creek basin are limited, with a record available only from 1968 to 1983. The gage records show that two large floods of equal size occurred in December 1979 and April 1983.

The frequency of the 1959 flood on the main stern of Panther Creek was considerably less than 10 years. At the junction with North Fork Panther Creek, the 1959 flood begins to approach a 10-year event.

The principal flood problems in the urbanized portions of Daviess County near the City of Owensboro are caused by very flat channels that flow into and out of the city and the increased runoff due to urbanization of the areas drained by these channels. The severity of the problem caused by the flatness of these channels is indicated by the slopes of the Panther Creek tributaries, which range from 0.0007 to 0.0009 foot per foot. This compares to an average slope of 0.01 foot per foot for the Ohio River Tributary. Storm sewers exist on several of the ditches inside the City of Owensboro. In these areas, the stream channel is poorly defined or has been filled in. Ponding of water above the storm sewers is a common problem.

The existing channels in the Panther Creek basin can convey very little storm runoff because of low velocities generated by the flat slopes and because the velocities are so low that the streams are unable to scour the banks of trees and brush, further diminishing channel capacity.

The main flood season for Daviess County along the Ohio River covers the period from January through April. Larger floods have occurred as a result of widespread heavy rain, sometimes coinciding with snowmelt. Winter and early spring storms are usually of long duration, but low intensity. These storms frequently occur when streams are already carrying flows from a prior rainfall. The saturated ground conditions, in addition to the rainfall, add to the sustained nature of the flood, and stream runoff is very slow because of the flat channel slopes.

In summer and early fall, the ground is apt to be dry and channels empty before the storm, but the rainfall is often so intense and of such short duration that flash flooding may take place.

Urban areas located on headwater streams in the Ohio River Valley have traditionally suffered more flood damages from the short duration, high-intensity storm rather than from the less frequent, long duration storms that greatly elevate river stages.

2.4 Flood Protection Measures

The system of flood control reservoirs on upstream tributaries of the Ohio River will reduce the elevations of a flood of the magnitude of the January 1937 flood by approximately 2 feet in this study area. The information presented of probable future flood levels reflects the reduction in flood heights attributable to existing reservoirs. The Ohio River backwater affects Yellow Creek, Persimmon Ditch, Ohio River Tributary, Pup Creek, and Panther Creek.

A system of flood control reservoirs has also been constructed on the Green River and its tributaries. The Green River and the Ohio River's backwater affects Panther Creek. The four projects, Green, Barren, Rogh, and Nolin River Lakes will combine to reduce a flood equal to that of January 1937 by approximately 2.3 feet at Lock and Dam No.2 at Calhoun, Kentucky. Flood reductions in the study area would be minimal because of the contributing influence of the Ohio River backwater in any major flood event.

In 1968, the USAGE completed a clearing and snagging project for the main stem of Panther Creek and its major tributaries. This project increased channel capacity and provides for a shorter duration of flooding in the area. Other than this project, no measures for flood damage reduction have been initiated for the Panther Creek basin. The Carter Ditch channel is being relocated and improved in conjunction with the Carter Road construction project.

Owensboro and Daviess County adopted a drainage ordinance and land use controls, which place restrictions on the use of floodplain areas.

The Kentucky Department for Natural Resources and Environmental Protection, Division of Water, regulates construction within channel and floodway, but does not govern floodplain development.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 1-percent- annual-chance flood in any 50-year period is approximately 40 percent (4 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied in detail affecting the community.

<u>Precountywide Analyses</u>

To obtain discharges for Ohio River Tributary, the Colorado Urban Hydrograph Procedure was used (Reference 2). That procedure is a synthetic unit hydrograph approach that is used for analysis when there is no runoff data for the basin study. Runoff was calculated using the Soil Conservation Service curve number method (Reference 8). This procedure is used to define a relationship between known rainfall values and desired runoff estimates.

The unit hydrographs calculated by the CUHP are multiplied by rainfall excesses calculated by applying the Soil Conservation Service curve numbers to synthetic storms prepared from rainfall intensity-duration-frequency curves taken from U.S. Weather Bureau data in order to determine the runoff hydrographs (References 3, 4, and 5). The peak discharge taken from the runoff hydrograph is then used as an input to the water-surface profile calculations.

Discharges for North Fork Panther Creek were analyzed by a model of the Panther Creek basin using the HEC-1 computer program (Reference 6). The model simulates rainfall-runoff relationships in the determination of flood hydrographs for the main stem of Panther Creek resulting from the 10-, 50-, 100-, and 500-year peak discharges for selected places in the Panther Creek basin.

The Whitesville gaging station (drainage area 58.2 square miles) located on South Fork Panther Creek was the principal source of data for determining discharge-frequency relationships for the Panther Creek basin. This gage has been operated since 1968. The Whitesville gage was used to optimize a unit hydrograph using the HEC-1 Flood Hydrograph Package (Reference 6). The optimized unit hydrograph and loss rate parameters were determined to be the best fit for nine distinct rainfall-runoff events in the gaged basin.

Basin rainfall was input to the model as synthetic storms, which were developed from rainfall-frequency data for the respective return intervals of 10-, 50-, 100-, and 500-years (References 7 and 8). The Panther Creek basin was divided into subareas in order to model the basin response to rainfall. Flood hydrographs from each subarea were routed through the model network by use of the Modified-Puls Method. Backwater rating curves were developed for each subarea by use of the HEC-2 computer program in order to account for floodplain storage in the basin (Reference 8). Adjustments were made for contributions from the urban Owensboro area draining into the basin.

The results of the Panther Creek hydrologic analysis were applied directly to Pup Creek in order to determine flows in that basin.

Countywide Analysis

Information on the methods used to determine peak discharges-frequency relationships for the streams studied by detailed methods is shown below.

A synthetic unit hydrograph approach was used for analysis of the streams subject to urbanization around Owensboro because there is no runoff data for any of these streams. The following streams were analyzed in such a way:

Persimmon and Tributary to Persimmon Ditches; Devins Ditch; Carter Ditch; Big Ditch; Scherm Ditch; Tamarack Ditch; Goetz Ditch; Harsh and West Tributary of Harsh Ditches; Horse Fork and Unnamed Tributary 46 Horse Fork; Gilles Ditch and Yellow Creek. The HEC-1 Flood Hydrograph package was utilized with Snyder's synthetic unit hydrograph procedure (Reference 6). The lag time for Snyder's method was calculated from preliminary backwater analyses that provided velocities and travel times of various flood events.

Natural discharge-frequency curves on the Ohio River were developed in accordance with methods presented in Statistical Methods in Hydrology (Reference 9). Modified discharge-frequency curves on the Ohio River resulted from routing 12 representative floods for the Ohio River modified by an upstream reservoir system. That system included reservoirs that were completed or under construction in 1976. Data were plotted opposite original flood data on a grid containing a reference (1965) flow reduction of natural flow, and a new best fit curve was drawn. Total reductions were read from the new curve at selected natural flow frequencies and subtracted from natural flows at those frequencies to obtain new modified-flow values.

Discharges for Panther Creek were also analyzed by a model of the Panther Creek basin using the HEC-1 computer program utilizing Snyder's method (Reference 6). This model also simulates rainfall-runoff relationships in the determination of flood hydrographs for the main stem of Panther Creek basin.

The Whitesville gaging station (drainage area 58.2 square miles) located on South Fork Panther Creek was the principal source of data for determining discharge-frequency relationships for the Panther Creek basin. The gage was operated by the

USGS from 1968-1983. The Whitesville gage was used to optimize a unit hydrograph using the HEC-1 Flood Hydrograph Program. The optimized unit hydrograph and loss rate parameters were determined to be the best fit for nine distinct rainfall-runoff events in the gaged basin. The lag time for Panther Creek is also based on a calibration at the Whitesville gage.

Basin rainfall was input to the model as synthetic storms that were developed from rainfall-frequency data for the respective return intervals 10-, 50-, 100-, and 500-years (References 4, 5, and 7). Because of the very large amounts of floodplain storage, the Panther Creek basin was divided into subareas in order to model the basin response to rainfall. Flood hydrographs from each subarea were routed through the model network by use of the Modified-Puls Method (Reference 6). Backwater rating curves were developed for each subarea by use of the HEC-2 water-surface profile computer program in order to account for floodplain storage in the basin (Reference 8).

Similarly to Panther Creek, storage-routing methods were used for Devins Ditch, Scherm Ditch, Tamarack Ditch, Carter Ditch, Big Ditch, Persimmon Ditch and Gilles Ditch because the streams displayed significant floodplain storage and low overbank flood velocities.

Tamarack Ditch above the Bypass is drained by a storm sewer. Surface flows in this area are stored on the land surface prior to being discharges by the storm sewer. Using contours from the topographic maps, the surface storage was calculated at various elevations. A storage-elevation-discharge relationship was derived and a stage-discharge relationship was formulated using HEC-1.

The lower reaches of Devins Ditch below the detention basin were also analyzed using a storage-elevation-discharge relationship and HEC-1. This area had large inflows, but discharges were restricted by the receiving storm sewer to 76, 123, 137, and 183 cfs for the 10-, 50-, 100-, and 500-year events, respectively.

Peak discharge-drainage area relationships for Panther Creek, Pup Creek, Yellow Creek, and all of the urban streams are shown in Table 3, “Summary of Discharges.” On some streams, the peak discharges decrease as the drainage area increases. This is due to the terrain being so flat in these areas that bridges and other obstructions will cause upstream storage of floodwaters and greatly increased travel time for floods. The reduces the peak flow rate experienced downstream of the obstruction.

Revised Countywide Analysis

Hydrology for Yellow Creek was computed using SCS methodology within HEC-HMS. Curve numbers were developed based on aerial photography as well as local soils data. Times of Concentration were computed using the NRCS Technical Release No. 55 3 segment approach. Rainfall data was obtained from the National Weather Service (NWS) Technical Paper No. 40 (TP-40), "Rainfall Frequency Atlas of the United States for Durations from 30 minutes to 24 hours and Return periods from 1 to 100 Years". The 500-year precipitation was extrapolated using the methodology from TP-40. The NRCS Type II synthetic rainfall distribution was used in the hydrologic modeling. The computed peak flood discharges were compared to peak flows in the previously printed FIS for Daviess County and Regression equations for the area.

Peak discharge-drainage area relationships for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods of each flooding source studied in detail in the community are shown in Table 3, Summary of Discharges.

TABLE 3 - SUMMARY OF DISCHARGES

		PEAK DISCHARGES (cubic feet per second)			
FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	10-Percent Annual Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent Annual Chance
BIG DITCH					
At confluence with Panther Creek	3.91	752	1,068	1,163	1,478
CARTER DITCH					
At Tamarack Ditch	3.12	620	942	1,001	1,284
DEVINS DITCH					
At Crabtree Avenue	1.02	541	764	852	1,085
At East Ramp of Audubon Parkway	0.37	226	335	378	493
GILLES DITCH					
At Lydane Bridge Road	4.43	942	1,506	1,719	2,396
At Audubon Parkway	2.77	564	952	1,099	1,517
GOETZ DITCH					
At confluence with Panther Creek	1.59	513	736	829	1,001
At U.S. Route 60 Bypass	0.42	217	296	300	311
HARSH DITCH					
At confluence with Horse Fork	3.01	758	1,191	1,354	1,812
At confluence of West Tributary of Harsh Ditch	1.66	470	729	829	1,105
HORSE FORK					
At confluence with Panther Creek	10.69	2,905	4,476	5,076	6,735
At U.S. Route 60 Bypass	6.04	1,835	2,859	3,254	4,333
At U.S. Route 60 Bypass (East)	3.16	1,336	2,095	2,388	3,190

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cubic feet per second) 10-Percent Annual Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent Annual Chance
NORTH FORK PANTHER CREEK					
At confluence with Panther Creek	92.71	4,152	5,375	5,796	7,000
At Millers Mill Road	77.94	5,663	7,438	8,084	9,882
At State Route 56 (Old Litchfield Road)	48.79	4,703	6,242	6,792	8,498
At Haynes Station Road	28.18	3,741	4,983	5,384	6,599
OHIO RIVER					
At corporate limits	100,000	660,000	820,000	885,000	1,035,000
PANTHER CREEK					
At confluence with the Green River	371.25	11,867	16,027	17,547	21,702
At Lyddane Road	329.33	9,221	11,889	12,854	15,501
At Big Ditch	294.15	7,716	9,615	10,266	11,952
At mouth of Horse Fork	253.46	9,347	12,446	13,567	16,974
At confluence of North Fork and South Fork Panther Creeks	242.10	10,185	13,471	14,669	17,841
PERSIMMON DITCH TRIBUTARY					
At confluence with Persimmon Ditch	0.09	153	220	247	316
PUP CREEK					
At confluence with the Ohio River	38.99	4,225	5,625	6,075	7,450
Upstream of State Route 405	30.13	3,875	5,100	5,525	6,800
At approximately 1,850 feet downstream of County Route 1389	25.92	3,600	4,750	5,200	6,300
At confluence with the Ohio River	1.45	781	1,128	1,246	1,541
At Persimmon Ditch Tributary	0.72	551	719	789	961
SCHERM DITCH					
At confluence with Carter Ditch	2.06	477	725	820	1,079
At Lewis Lane	0.89	209	548	582	877

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cubic feet per second) 10-Percent Annual Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent Annual Chance
TAMARACK DITCH					
At confluence with Big Ditch	0.47	84	104	118	172
At U.S. Route 60 Bypass	0.27	265	435	497	662
UNNAMED TRIBUTARY HORSE FORK					
At confluence with Horse Fork	1.30	568	889	1,013	1,357
WEST TRIBUTARY OF HARSH DITCH					
At confluence with Harsh Ditch	0.74	204	316	359	476
YELLOW CREEK					
Approximately 1900 feet upstream of US-60	13.7	4830	7295	8280	11580
Approximately 3200 feet Upstream of KY-144	6.8	2822	4215	4750	6590
At Reid Road	5.0	2015	3015	3400	4720
Approximately 2350 feet upstream of Daniels Ln.	2.6	940	1350	1510	2050
At US-60B	.54	380	530	590	770

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the Flood Insurance Rate Map (FIRM) represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data table in the FIS report. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to us the flood elevation data presented in this FIS report in conjunction with the data shown on the FIRM.

Precountywide Analyses

Cross sections for the flooding sources studied by detailed methods except the Ohio River were obtained from field surveys. Cross sections for the Ohio River were obtained from floodplain maps prepared by the USACE at a scale of 1:7,200 with a contour interval of 5 feet (Reference 10). All bridges, dams, and culverts were field surveyed to obtain elevation data and structural geometry.

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 (Exhibit 2).

Water-surface elevations of floods of the selected recurrence intervals were computed using the USACE HEC-2 step-backwater computer program (Reference 8). Starting water-surface elevations for Pup Creek and Ohio River Tributary were taken from the Ohio River backwater curves. These elevations were based on data developed during the preparation of the Green River Flood Plain Information report by the USACE (Reference 11). Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

Channel roughness factors (Manning's "n") used in the hydraulic computations were chosen for all streams except the Ohio River on the basis of field inspection of channel and floodplain areas. Channel roughness values ranged from 0.035 in the urban areas to 0.028 in the channelized Ohio River. Overbank roughness values were assumed to be 0.050. Roughness values for the Ohio River were determined by running backwater curves until derived profile verified known stage-frequency relationships and high-water marks. Roughness values ranged from 0.028 to 0.030 in the channel, and a value of 0.050 was used in the overbank areas.

Countywide Analysis

Information on the methods used to determine cross sections, water-surface elevations, and channel roughness factors (Manning's "n") for the streams revised or restudied as part of this countywide study is shown below.

Cross sections for the flooding sources studied by detailed methods were obtained from aerial photographs at selected intervals to model conveyance of the valley and at close intervals above and below bridges and culverts in order to compute any significant backwater effects of such structures. Topographic mapping at a scale of 1:6,000 was prepared from the March 1991 aerial photographs (Reference 12). Sections within the stream banks as well as bridges, dams, culverts and storm sewers were field surveyed to obtain elevation data and structural geometry.

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 (Exhibit 2).

Water-surface elevations of floods of the selected recurrence intervals were computed using the USACE HEC-2 step-backwater computer program (Reference 8).

Starting water-surface elevations at the selected recurrence intervals for the Ohio River were taken from a rating curve developed at the Newburgh Lock and Dam. Starting water-surface elevations for Pup Creek and Ohio River Tributary were taken from the Ohio River backwater curves. Starting water-surface elevations for Goetz Ditch and Horse Fork were taken from the Panther Creek backwater curves. Harsh Ditch and West Tributary of Harsh Ditch starting water-surface elevations were obtained from backwater curves of Horse Fork and Harsh Ditch, respectively. Upon determination that Carter Ditch and Devins Ditch are not influenced by the Panther Creek backwater reaches under study, starting water-surface elevations for those streams were developed by the slope/area method. Starting water-surface elevations for Scherm Ditch and Tamarack Ditch were taken from the backwater curves of Carter Ditch.

Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

Certain reaches of Devins Ditch and Tamarack Ditch are enclosed in the storm sewers. However, the storm sewers are of very limited capacity and will overflow during large floods. To evaluate their effects on flooding, the capacity of the storm sewers was calculated and stage-storage-discharge curves were developed. Ponding elevations were then estimated using the HEC-1 computer program.

Channel roughness factors (Manning's "n") used in the hydraulic computations were chosen on the basis of field inspection of channel and floodplain areas and supplemented by an examination. For all the streams studied by detailed methods, the channel "n" values ranged from 0.012 to 0.095, and the overbank "n" values ranged from 0.020 to 0.100.

The Tributary to Persimmon Ditch was found to be more accurately analyzed as if it were part of the right floodplain of Persimmon Ditch.

The extent of flooding along streams studied by approximate methods was obtained through the use of normal calculations using cross sections taken from topographic maps at a scale of 1:24,000 enlarged to a scale of 1:12,000, with a contour interval of 10 feet (Reference 11).

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.

<u>Revised Countywide Analysis</u>

Gilles Ditch, Goetz Ditch, Horse Fork, Persimmon Ditch, Scherm Ditch and

Yellow Creek were restudied, incorporating recent development and updated ground surface information. Water surface elevations from all other streams studied in the countywide analysis with the exception of the Ohio River were applied to the updated ground surface at their respective locations and floodplains redelineated using automated GIS methods. Updated water surface elevations for the Ohio River were obtained from the USACE and plotted using automated GIS methods.

All hydraulic modeling was performed using HEC-RAS, version 3.1.2, from the U.S. Army Corps of Engineers, Hydrologic Engineering Center (HEC). Basic modeling data for the detailed hydraulic analysis we performed using GeoRAS, a Geographic Information Systems (GIS) interface developed by HEC for the preparation of hydraulic models.

Cross data for over bank areas was compiled from topographical data consisting of 2ft contours as well as field survey data. Channel data was based on field survey data.

Stream crossing information was taken from field survey points. Field notes consisting of structure dimensions and channel geometry, as well as structure material (i.e. corrugated metal pipe), were used in conjunction with survey data to most accurately represent the structures. Roughness coefficients were assigned based on aerial photography and field reconnaissance. Peak flow values for Yellow Creek were obtained from the corresponding HEC-HMS model. Flows for all other re-studied streams were taken from the existing FEMA effective models. Starting water surface elevations for all re-studied streams were computed using normal depth calculations.

For detailed analyses, flood profiles were computed for the 10-, 50-, 100-, and 500-year recurrence interval flood events. In addition, the floodway was determined using equal reduction of conveyance on opposite sides of the stream while allowing a maximum surcharge of 1.0 ft.

Water-surface elevations for floods of the selected recurrence interval for the Ohio River were computed using the USACE HEC-RAS River Analysis step-backwater computer program. Cross sections for the flooding source were determined from detailed mapping with bathymetry (1” = 600’ with 5-foot contour intervals), developed for Corps of Engineers - Ohio River navigation studies. Starting water-surface elevations for the Ohio River HEC-RAS models were obtained using gauge data and known elevation-discharge relationships at those locations.

Roughness coefficients (Manning’s “n”) used in the hydraulic computations of the Ohio River were chosen by field inspection and HEC-2 model reproduction of historic highwater profiles. Coefficients for re-studied streams were determined based on digital orthophotos as well as field reconnaissance.

TABLE 4 – MANNING'S "N" ROUGHNESS COEFFICIENT SUMMARY

STREAM	CHANNEL	OVERBANK
Gilles Ditch	0.035-0.04	0.08-0.1
Goetz Ditch	0.011-.045	0.05-0.07
Horse Fork	0.042-0.047	0.08-0.12
Ohio River	0.028-0.034	0.05
Persimmon Ditch	0.045-0.048	0.1-0.11
Scherm Ditch	0.025-0.09	0.065-0.012
Yellow Creek	0.04-.05	0.06-0.12

Floodplains were delineated using automated GIS procedures. Floodplains were mapped to include backwater effects that govern each flooding source near its downstream extent. Floodplains were reviewed for accuracy and adjusted as necessary.

For the streams that were not restudied but were redelineated, the FEMA effective models were rerun and the elevations adjusted to NAVD 88 and delineated on available topography.

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.

The hydraulic analyses for all studies 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.

All qualifying benchmarks within a given jurisdiction that are catalogued by the National Geodetic Survey (NGS) and entered into the National Spatial Reference System (NSRS) as First or Second Order Vertical and have a vertical stability classification of A, B or C are shown and labeled on the FIRM with their 6-character NSRS Permanent Identifier.

Benchmarks catalogued by the NGS and entered into the NSRS vary widely in vertical stability classification. NSRS vertical stability classifications are as follows:

- Stability A: Monuments of the most reliable nature, expected to hold position/elevation (e.g., mounted in bedrock)
- Stability B: Monuments which generally hold their position/elevation (e.g., concrete bridge abutment)

- Stability C: Monuments which may be affected by surface ground movements (e.g., concrete monument below frost line)

- Stability D: Mark of questionable or unknown vertical stability (e.g., concrete monument above frost line, or steel witness post)

In addition to NSRS benchmarks, the FIRM may also show vertical control monuments established by a local jurisdiction; these monuments will be shown on the FIRM with the appropriate designations. Local monuments will only be placed on the FIRM if the community has requested that they be included, and if the monuments meet the aforementioned NSRS inclusion criteria.

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

It is important to note that 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.

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.

All flood elevations shown in this FIS report and on the FIRM are now referenced to NAVD 88. In order to perform this conversion, effective NGVD 29 elevation values were adjusted downward by 0.33 foot. Structure and ground elevations in the community must, therefore, be referenced to NAVD 88. It is important to note that adjacent communities may be referenced to NGVD 29. This may result in differences in base flood elevations across the corporate limits between the communities.

For more information on NAVD 88, see Converting the National Flood Insurance Program to the North American Vertical Datum of 1988, FEMA Publication FIA-20/June 1992, or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center 3
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191
http://www.ngs.noaa.gov/

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the Technical Support Data Notebook associated with the FIS report and FIRM for this community. Interested individuals may contact FEMA to access these data.

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

4.1 Floodplain Boundaries

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

Countywide Analysis

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 cross sections, the boundaries were interpolated using topographic maps at a scale of 1:24,000 and 1:6,000 with contour intervals of 10 and 4 feet, respectively (References 13 and 12).

For the streams studied by approximate methods, the 1-percent-annual-chance floodplain boundaries were interpolated using topographic maps at a scale of 1:24,000 enlarged to a scale of 1:12,000 with a contour interval of 10 feet (Reference 13).

Revised Countywide Analysis

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 cross sections, the boundaries were interpolated using topographic maps at a scale of 1"=100', with a contour interval of 2 and 4 feet (Reference 27 & 28).

For the streams studied by approximate methods, the 1-percent-annual-chance floodplain boundaries were interpolated using 10 meter Digital Elevation Models produced by the U.S. Geological Survey (USGS) (Reference 26).

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

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

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent-annual-chance flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodway presented in this FIS report and on the FIRM was computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations have been tabulated for selected cross sections (Table 5). In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown. Portions of the floodway width for the Ohio River extend beyond the county boundary.

In areas served by storm sewers and the detention basin area of Devins Ditch, no floodway was determined. These areas lie in and around the highly urbanized sections of Owensboro, where no additional floodplain development is likely to occur. The storm sewer areas are drained by underground structures and do not lend themselves to the channel-floodway concept.

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 (WSEL) of the base 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 1.

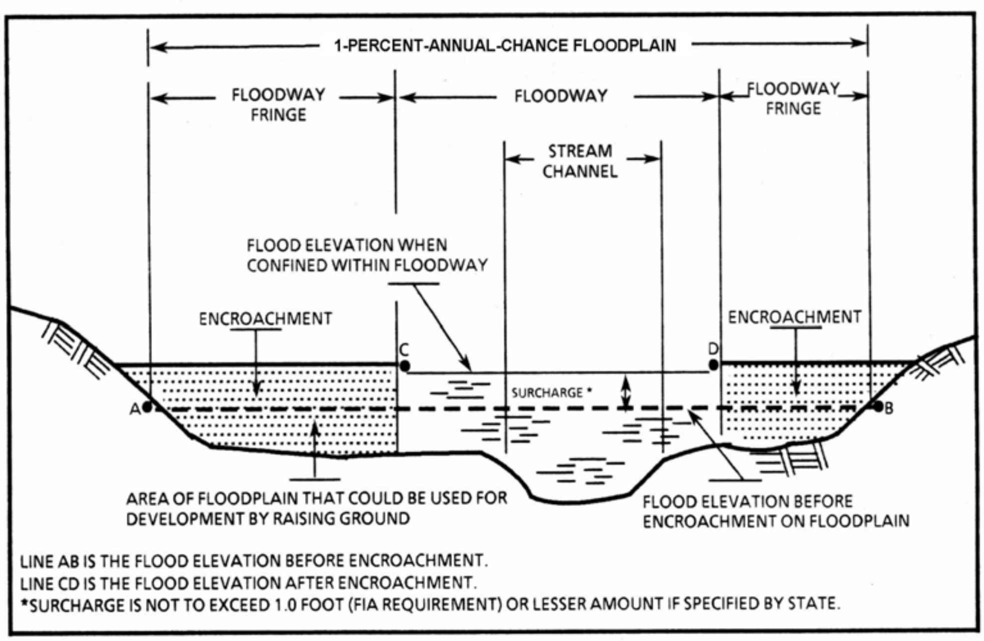

FIGURE 1 : FLOODWAY SCHEMATIC

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 5 for certain downstream cross sections are lower than the regulatory flood elevations in that area, which must take into account the 1 percent annual chance flooding due to backwater from other sources.

Encroachment into areas subject to inundation by floodwaters having hazardous velocities aggravates the risk of flood damage, and heightens potential flood hazards by further increasing velocities. A listing of stream velocities at selected cross-sections is provided in Table 5, "Floodway Data." In order to reduce the risk of property damage in areas where the stream velocities are high, the community may wish to restrict development in areas outside the floodway.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Big Ditch								
A	10639	244	556	2.2	392.0	390.8[2]	391.8	1.0
B	12894	33	212	5.5	392.3	392.3	393.1	0.8
C	15196	80	507	2.3	394.4	394.4	394.9	0.5

[1]Stream distance in feet above confluence with Panther Creek
[2]Elevation computed without consideration of backwater effects from Panther Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

FLOODWAY DATA

BIG DITCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Carter Ditch								
D	17350	66	491	2.0	395.4	395.4	396.0	0.6
E	19050	72	428	0.5	395.5	395.5	396.2	0.7

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

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

FLOODWAY DATA

CARTER DITCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Devins Ditch								
A	7472	124	209	1.0	391.1	391.1	392.1	1.0
B	9262	44	125	1.6	395.5	395.5	396.3	0.8
C	9663	41	176	1.1	396.6	396.6	397.4	0.8
D	10540	52	205	1.0	398.4	398.4	399.0	0.6
E	11781	68	247	0.8	398.5	398.5	399.1	0.6

[1]Stream distance in feet above Conway Avenue

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

FLOODWAY DATA

DEVINS DITCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Gilles Ditch								
A	6323	114	542	3.2	390.4	390.4	391.3	0.9
B	6535	112	414	4.2	391.1	391.1	391.9	0.8
C	7696	140	541	3.2	392.4	392.4	393.2	0.8
D	8668	97	529	3.3	394.0	394.0	395.0	1.0
E	9903	82	463	2.2	396.0	396.0	396.7	0.7
F	10635	87	615	1.7	398.7	398.7	399.5	0.8
G	12382	260	1008	1.0	399.0	399.0	399.8	0.8
H	13781	346	966	1.1	399.3	399.3	400.3	1.0
I	15803	236	1228	0.6	401.3	401.3	401.4	0.1
J	17518	59	180	4.0	402.6	402.6	402.7	0.1
K	18149	25	107	6.6	404.1	404.1	404.1	0.1
L	19055	29	129	5.5	407.6	407.6	407.6	0.0
M	19616	30	194	3.7	409.0	409.0	409.0	0.0
N	20409	37	196	3.6	412.4	412.4	412.7	0.3
O	21275	33	134	5.3	415.0	415.0	415.1	0.1

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

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

FLOODWAY DATA

GILLES DITCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Goetz Ditch								
A	12076	381	657	1.2	392.0	390.2[2]	390.8	0.6
B	12744	294	391	2.1	392.0	390.8[2]	391.4	0.6
C	13303	128	231	3.5	392.0	391.8[2]	392.1	0.3
D	14700	74	288	1.9	395.0	395.0	395.1	0.1
E	15848	303	2437	0.2	395.3	395.3	395.5	0.2
F	17038	235	1730	0.3	395.3	395.3	395.5	0.2
G	17552	236	1965	0.2	395.5	395.5	395.6	0.1
H	18099	138	809	0.6	396.8	396.8	397.0	0.1
I	18539	38	174	1.7	396.8	396.8	396.9	0.1
J	19115	50	224	1.3	396.9	396.9	397.1	0.2
K	19659	44	206	1.5	396.9	396.9	397.1	0.2
L	20218	48	238	1.2	396.9	396.9	397.2	0.3

[1]Stream distance in feet above confluence with Panther Creek
[2]Elevation computed without consideration of backwater effects from Panther Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

FLOODWAY DATA

GOETZ DITCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Harsh Ditch								
A	855	820[3]	615	2.2	393.8	389.0[2]	390.0	1.0
B	2387	150	392	3.5	394.0	389.9[2]	390.5	0.6
C	3538	172	441	3.1	394.1	392.1[2]	392.8	0.7
D	3849	154	397	3.4	394.1	392.1[2]	393.0	0.9
E	4187	142	674	2.0	394.1	393.1[2]	393.5	0.4
F	4694	189	1,038	1.2	394.4	394.4	394.9	0 5
G	4800	203	905	1.3	394.4	394.4	394.9	0.5
H	4873	202	1,296	0.9	394.4	394.4	394.9	0.5
I	5048	199	935	1.3	394.4	394.4	394.9	0.5
J	5280	196	813	1.0	394.4	394.4	394.9	0.5
K	5729	191	683	1.2	394.4	394.4	394.9	0.5
L	6098	136	517	1.6	394.5	394.5	395.0	0.5
M	6653	100	255	3.3	395.3	395.3	396.0	0.7
N	7672	332	1,290	0.6	396.1	396.1	397.1	1.0
O	8057	291	611	1.4	396.1	396.1	397.1	1.0
P	9673	380	835	1.0	397.0	397.0	398.0	1.0
Q	10058	280	605	1.4	397.2	397.2	398.2	1.0
R	10380	280	597	1.4	397.6	397.6	398.4	0.8
S	11167	280	805	1.1	397.7	397.7	398.7	1.0

[1]Stream distance in feet above confluence with Horse Fork
[2]Elevation computed without consideration of backwater effects from Horse Fork
[3]Combined floodway width of Harsh Ditch and Horse Fork

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

FLOODWAY DATA

HARSH DITCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Horse Fork								
A	7032	551	2398	2.1	392.1	388.3[2]	389.3	1.0
B	8537	280	1209	4.2	392.1	390.3[2]	391.0	0.7
C	9575	487	2903	1.8	392.7	392.7	393.0	0.3
D	11522	739	3516	0.9	394.1	394.1	394.7	0.6
E	12045	808	3059	1.1	394.2	394.2	394.9	0.6
F	12719	403	1283	2.5	394.4	394.4	395.3	0.8
G	13234	184	792	4.1	395.7	395.7	396.4	0.7
H	14524	510	2631	1.2	398.1	398.1	399.0	1.0
I	14957	255	1362	2.4	398.2	398.2	399.2	1.0
J	15342	170	1442	2.3	399.5	399.5	400.1	0.6
K	16935	467	2120	1.5	400.7	400.7	401.3	0.7
L	17349	175	789	4.1	400.9	400.9	401.6	0.7
M	17557	175	957	3.4	401.7	401.7	402.1	0.4
N	17927	525	2374	1.4	402.3	402.3	403.0	0.6
O	19070	805	2720	1.2	402.8	402.8	403.7	1.0
P	20740	772	1826	1.8	404.4	404.4	405.2	0.8
Q	21769	211	951	3.4	406.8	406.8	407.7	1.0
R	22149	218	1174	2.8	411.9	411.9	412.7	0.8
S	22985	620	4561	0.7	412.3	412.3	413.3	1.0
T	24393	544	1817	1.3	412.7	412.7	413.6	0.9
U	25260	299	1040	2.3	413.6	413.6	414.5	0.9
V	26430	90	381	2.6	415.6	415.6	416.5	0.9
W	27162	35	152	6.6	416.2	416.2	417.0	0.8

[1]Stream distance in feet above confluence with Panther Creek
[2]Elevation computed without consideration of backwater effects from Panther Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

FLOODWAY DATA

HORSE FORK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
North Fork Panther Creek								
A	6970	1,950	7,421	0.8	392.1	390.3[2]	391.3	1.0
B	7814	2,275	10,377	0.6	392.1	392.1[2]	392.6	0.5
C	11510	5,525	25,436	0.2	392.2	392.2	392.7	0.5
D	21120	1,415	2,321	3.5	394.0	394.0	394.0	0.0
E	30360	2,872	10,567	0.8	400.3	400.3	400.3	0.0
F	36432	2,413	4,561	1.5	401.3	401.3	401.5	0.2
G	47520	692	2,456	2.8	409.8	409.8	410.6	0.8
H	50213	1,125	3,401	2.0	411.8	411.8	412.5	0.7
I	54226	1,193	4,172	1.6	414.3	414.3	415.2	1.0
J	58978	1,550	5,343	1.0	419.5	419.5	419.5	0.0
K	67109	900	1.427	3.8	427.0	427.0	427.0	0.0

[1]Stream distance in feet above confluence with Panther Creek
[2]Elevation computed without consideration of backwater effects from Panther Creek

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

FLOODWAY DATA

NORTH FORK PANTHER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Ohio River								
AL	742.0	10409/1060	230,737	3.8	393.2	393.2	394.2	1.0
AK	743.0	10276/8411	217,771	4.0	392.8	392.8	393.8	1.0
AJ	744.0	10627/9925	231,589	3.8	392.5	392.5	393.4	1.0
AI	745.0	11590/11478	244,573	3.6	392.1	392.1	393.1	1.0
AH	746.0	13780/13628	281,976	3.1	391.9	391.9	392.9	1.0
AG	747.0	14080/13961	289,084	3.0	391.7	391.7	392.7	1.0
AF	748.0	12882/12882	245,914	3.5	391.1	391.1	392.1	1.0
AE	749.0	11169/11169	240,431	3.6	390.7	390.7	391.7	1.0
AD	750.0	10393/8650	237,462	3.7	390.4	390.4	391.3	1.0
AC	751.0	10330/5207	247,837	3.5	390.0	390.0	391.0	1.0
AB	752.0	11500/3496	278,005	3.1	389.8	389.8	390.8	1.0
AA	753.0	13660/2860	336,597	2.6	389.5	389.5	390.5	1.0
Z	754.0	15381/3132	369,231	2.4	389.4	389.4	390.3	1.0
Y	755.0	15888/2872	358,610	2.4	389.1	389.1	390.1	1.0
X	756.0	16445/2600	398,886	2.2	389.0	389.0	390.0	1.0
R	757.0	16624/2345	395,118	2.2	388.7	388.7	389.7	1.0
Q	758.0	15928/2776	370,755	2.4	388.5	388.5	389.5	1.0
P	759.0	12890/1757	286,654	3.0	388.2	388.2	389.1	1.0
O	760.0	10212/2113	251,473	3.5	387.8	387.8	388.7	1.0
N	761.0	11934/5543	273,669	3.2	387.5	387.5	388.5	1.0
M	762.0	13070/9631	298,647	2.9	387.2	387.2	388.2	1.0
L	763.0	12110/9524	271,133	3.2	386.8	386.8	387.8	1.0

[1]Miles below Pittsburg
[2]Width/width within county boundary

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

FLOODWAY DATA

OHIO RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Ohio River (Continued)								
K	764.0	9733/8420	219,494	4.0	386.3	386.3	387.2	1.0
J	765.0	6961/6586	195,110	4.5	386.0	386.0	387.0	1.0
I	766.0	7813/7158	201,915	4.3	385.7	385.7	386.6	1.0
H	766.5	8810/7821	207,614	4.2	385.5	385.5	386.4	1.0
G	767.0	9238/7730	222,036	3.9	385.3	385.3	386.2	1.0
F	768.0	11695/6409	246,444	3.5	384.9	384.9	385.8	1.0
E	769.0	12667/7501	278,132	3.1	384.6	384.6	385.5	1.0
D	770.0	12856/8031	287,093	3.0	384.3	384.3	385.3	1.0
C	771.0	12080/6462	244,558	3.6	383.8	383.8	384.8	1.0

[1]Miles below Pittsburg
[2]Width/width within county boundary

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

FLOODWAY DATA

OHIO RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Panther Creek								
A	803	370	3,583	4.9	386.0	367.8[2]	368.8	1.0
B	5555	2,205	9,928	1.8	386.0	369.9[2]	370.6	0.7
C	14040	320	3,070	5.7	386.0	372.6[2]	373.0	0.4
D	17371	260	3,409	4.2	386.0	374.9[2]	375.1	0.2
E	30117	397	5,904	2.4	386.0	377.1[2]	378.0	0.9
F	37382	990	13,067	1.1	386.0	378.0[2]	379.0	1.0
G	52425	435	4,426	3.2	386.0	378.7[2]	379.7	1.0
H	57531	370	5,078	2.6	386.0	382.2[2]	382.7	0.5
I	67119	620	6,390	2.0	386.0	384.0[2]	384.6	0.6
J	70330	126	2,123	6.1	386.0	384.5[2]	385.2	0.7
K	75319	112	2,048	6.3	387.2	387.2	387.7	0.5
L	85283	307	4,615	2.8	389.4	389.4	390.0	0.6
M	89211	213	3,431	3.7	390.2	390.2	390.8	0.6
N	91360	200	3,512	3.7	391.3	391.3	391.8	0.5
O	98820	2,085	16,340	0.6	392.0	392.0	392.5	0.5
P	103683	4,500	20,805	0.5	392.0	392.0	392.6	0.6
Q	106725	8,383	49,197	0.2	392.1	392.1	392.7	0.6
R	110463	6,481	43,808	0.2	392.1	392.1	392.7	0.6
S	115405	5,177	20,149	0.5	392.1	392.1	392.7	0.6
T	116081	6,642	63,218	0.2	392.1	392.1	392.7	0.6
U	121667	6,276	52,011	0.3	392.1	392.1	392.7	0.6
V	124729	5,122	41,996	0.3	392.1	392.1	392.7	0.6

[1]Stream distance in feet above confluence with Green River
[2]Elevation computed without consideration of backwater effects from the Ohio River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

FLOODWAY DATA

PANTHER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Persimmon Ditch								
A	434	30	175	8.7	388.5	369.0[2]	369.1	0.2
B	1263	40	438	2.9	388.5	384.5[2]	384.5	0.0
C	2342	40	302	4.1	388.6	388.6	388.7	0.1
D	3403	29	190	6.6	390.1	390.1	390.8	0.7
E	4148	30	174	4.5	393.7	393.7	393.8	0.1
F	5330	25	184	4.3	396.8	396.8	396.9	0.1
G	6362	24	182	4.3	398.3	398.3	398.4	0.1
H	7127	24	182	3.4	399.5	399.5	399.6	0.1

[1]Stream distance in feet above confluence with Ohio River
[2]Elevation computed without consideration of backwater effects from the Ohio River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

FLOODWAY DATA

PERSIMMON DITCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Pup Creek								
A	9134	625	3823	1.6	390.3	355.1[2]	355.9	0 8
B	13094	110	930	6.5	390.3	368.6[2]	369.1	0 5
C	16843	350	1376	4.2	390.3	378.2[2]	379.0	0 8
D	25714	882	5890	1.0	390.3	383.7[2]	384.3	0.6
E	31944	800	6776	0.8	390.3	384.6[2]	385.2	0.6
F	34426	147	977	5.7	390.7	390.7	390.7	0.0
G	37963	408	2477	2.2	394.4	394.4	395.1	0.7
H	46358	577	3932	1.3	398.0	398.0	399.0	1.0
I	52008	572	2697	1.9	400.6	400.6	401.6	1.0

[1]Stream distance in feet above confluence with Ohio River
[2]Elevation computed without consideration of backwater effects from the Ohio River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

FLOODWAY DATA

PUP CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Scherm Ditch								
A	786	66	441	1.9	395.4	394.0[2]	394.0	0.0
B	2505	35	243	3.4	395.4	395.3[2]	395.8	0.5
C	3562	59	334	2.5	396.5	396.5	397.0	0.5
D	5444	32	192	4.3	397.5	397.5	398.1	0.6

[1]Stream distance in feet above confluence with Carter Ditch
[2]Elevation computed without consideration of backwater effects from Carter Ditch

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

FLOODWAY DATA

SCHERM DITCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Tamarack Ditch								
A	1658	16	52	3.5	394.9	393.6[2]	393.6	0.0
B	3105	24	74	1.3	394.9	394.5[2]	394.5	0.0

[1]Stream distance in feet above confluence with Big Ditch
[2]Elevation computed without consideration of backwater effects from Big Ditch

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

FLOODWAY DATA

TAMARACK DITCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Unnamed Tributary 46 Horse Fork								
A	1695	207	676	1.5	412.6	410.3[2]	411.3	1.0
B	2207	178	244	4.1	412.9	411.4[2]	412.2	0.8
C	2614	43	156	6.5	414.5	414.5	415.5	1.0

[1]Stream distance in feet above confluence with Horse Fork
[2]Elevation computed without consideration of overflow effects from Horse Fork

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

FLOODWAY DATA

UNNAMED TRIBUTARY 46 HORSE FORK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
West Tributary of Harsh Ditch								
A	206	25[3]	87	4.1	394.1	390.2[2]	391.2	1.0
B	296	25	90	4.0	394.1	390.5[2]	391.3	0.8
C	966	32	121	3.0	394.1	392.3[2]	393.0	0.7
D	1373	17	80	4.5	394.1	393.2[2]	393.7	0.5

[1]Stream distance in feet above confluence with Harsh Ditch
[2]Elevation computed without consideration of backwater effects from Harsh Ditch
[3] Combined floodway width of Harsh Ditch and West Tributary of Harsh Ditch

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

FLOODWAY DATA

WEST TRIBUTARY OF HARSH DITCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Yellow Creek								
A	7266	413	543	0.9	389.8	383.4[2]	384.1	0.7
B	9936	270	276	1.7	389.8	384.1[2]	384.8	0.7
C	10794	70	336	2.3	391.5	392.0	392.5	0.5
D	12687	330	599	0.8	391.8	392.6	393.4	0.8
E	14240	268	379	1.3	392.1	392.9	393.7	0.8
F	17041	222	224	2.1	393.3	394.2	395.1	0.9
G	18035	250	272	1.3	394.2	395.1	396.0	0.9
H	20248	280	201	1.7	395.9	396.6	397.4	0.8
I	22908	360	232	1.5	399.0	399.6	400.2	0.6
J	24518	270	141	2.4	401.6	402.3	403.0	0.7
K	26449	151	521	2.9	404.0	404.7	405.4	0.7
L	28580	353	717	0.2	404.5	405.3	406.1	0.8
M	30270	387	753	0.1	404.6	405.5	406.4	0.9
N	31470	372	386	0.3	404.6	405.5	406.4	0.9
O	32647	25	464	0.4	407.6	408.2	408.8	0.6

[1]Stream distance in feet above confluence with the Ohio River
[2]Elevation computed without consideration of backwater effects from the Ohio River

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

FLOODWAY DATA

YELLOW CREEK

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. The 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 base flood elevations 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. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals 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, and to areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by levees. No base flood elevations 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 risk zones as described in Section 5.0 and, in the 1-percent-annual-chance floodplains that were studied by detailed methods, shows selected whole-foot BFEs or average depths. Insurance agents use the zones and BFEs in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

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

The current FIRM presents flooding information for the entire geographic area of Daviess County. Previously, separate Flood Hazard Boundary Maps and/or FIRMs were prepared for each identified flood-prone incorporated community and the unincorporated areas of the county. This countywide FIRM also includes flood hazard information that was presented separately on Flood Boundary and Floodway Maps, where applicable. Historical data relating to the maps prepared for each community up to and including this countywide FIS are presented in Table 6, “Community Map History.”

7.0 OTHER STUDIES

FISs have been prepared for the unincorporated areas of Henderson County, McLean County, Spencer County, and Warrick County; Ohio County and Incorporated Areas; and the City of Rockport (References 14, 15, 16, 17, 18, and 19).

Two floodplain information reports that are indirectly related to this study were prepared by the U.S. Army Corps of Engineers. These are for Panther Creek and the Green River (References 20 and 21).

A study that deals with urban flooding problems in the City of Owensboro is entitled A Storm Water Facilities Plan for the Owensboro Kentucky Metropolitan Area (Reference 22).

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.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Daviess County (Unincorporated Areas)	December 6, 1974	None	September 3, 1980	
Owensboro, City of	May 24, 1974	February 20, 1976	August 1, 1980	
Whitesville, City of[1]	None	None	None	

[1]Non-Floodprone Community

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting Federal Insurance and Mitigation Division, FEMA Region IV, Koger-Center — Rutgers Building, 3003 Chamblee Tucker Road, Atlanta, GA 30341.

Future revisions may be made that do not result in the republishing of the Flood Insurance Study report. To ensure that any user is aware of all revisions, it is advisable to contact the map repository of flood hazard data located in the community.

9.0 BIBLIOGRAPHY AND REFERENCES

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23. Federal Emergency Management Agency, Federal Insurance Administration, <u>Flood Insurance Study, City of Owensboro, Daviess County, Kentucky</u>, Washington, D.C., Flood Insurance Study report dated February 1980, Flood Insurance Rate Map dated August 1, 1980.

24. Federal Emergency Management Agency, Federal Insurance Administration, <u>Flood Insurance Study, Unincorporated Areas of Daviess County, Kentucky</u>, Washington, D.C., Flood Insurance Study report dated March 1980, Flood Insurance Rate Map dated September 3, 1980.

25. Cabinet for Economic Development, Kentucky. Community Information, 2006. http://www.thinkkentucky.com/

26. U.S. Department of the Interior, Geological Survey, 7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 10 Feet. The National Elevation Dataset (NED) 1/3 Arc Second is a raster product assembled by the U.S. Geological Survey (USGS). NED 1/3 Arc Second is designed to provide National elevation data in a seamless form with a consistent datum, elevation unit, and projection. Data corrections are made in the NED 1/3 Arc Second assembly process to minimize, but not eliminate, artifacts, perform edge matching, and fill sliver areas of missing data. NED 1/3 Arc Second has a resolution of 1/3 arc-second (approximately 10 meters). Projection is geographic, horizontal datum is NAD83 and vertical datum is NAVD88. USGS, 2004

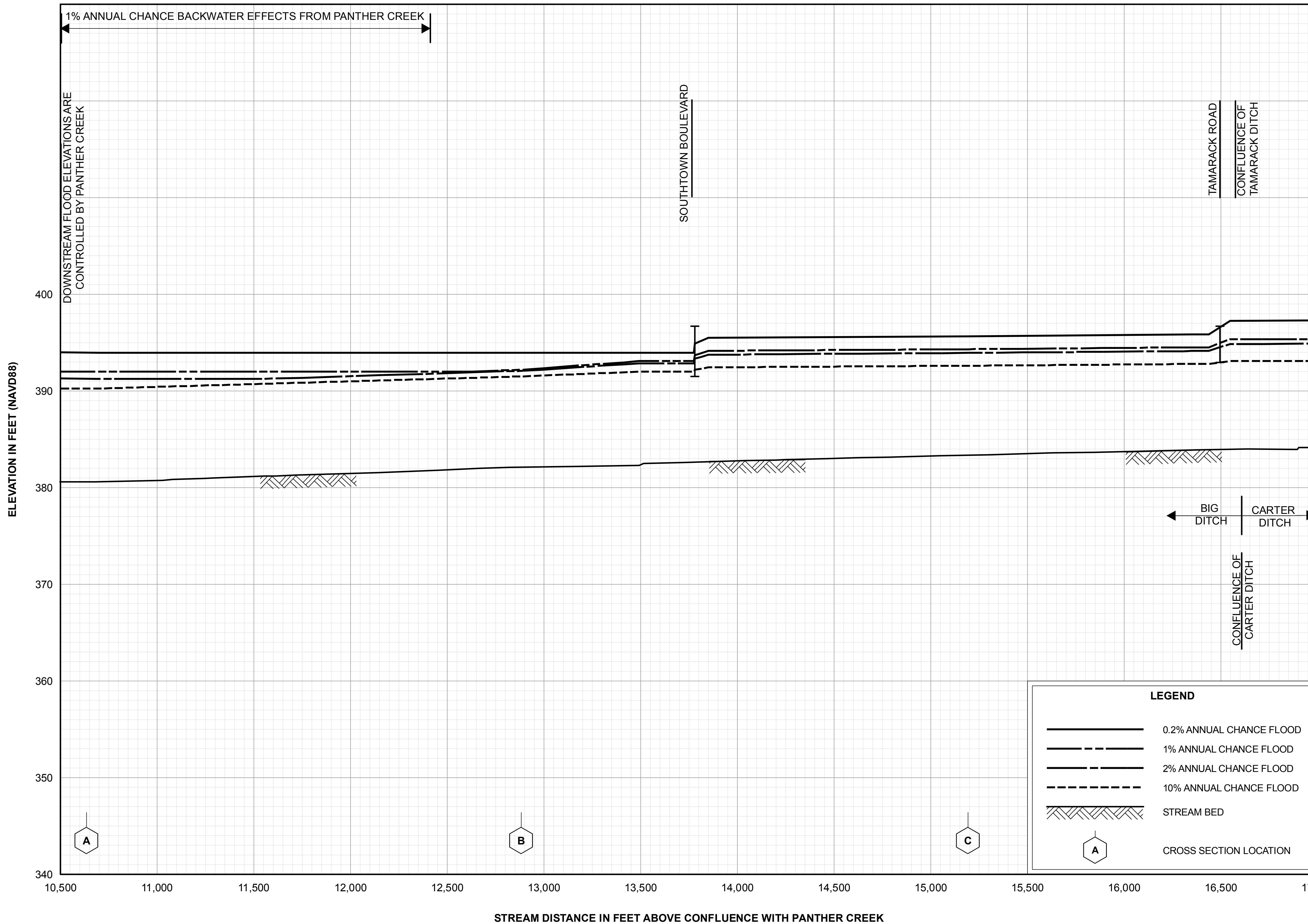
27. PhotoScience. Topographical data consisting of 2ft contours. Compiled for 1"=100' mapping. ASPRS Class I accuracy. Production date March 1999.

28. GRW, Inc. Topographical data consisting of 4ft contours. Compiled for 1"=100' mapping. ASPRS Class I accuracy. Production date March 2004.

Owensboro Metropolitan Planning Commission, <u>Land Use Plan (Draft)</u>, Owensboro, Kentucky, February 1991.

U.S. Department of the Interior, Geological Survey, Water Supply Paper 1849, <u>Roughness Characteristics of Natural Channels</u>, 1967.

U.S. Department of Agriculture, Soil Conservation Service, <u>Guide for Selecting Roughness Coefficient “n” Values for Channels</u>, December 1963.



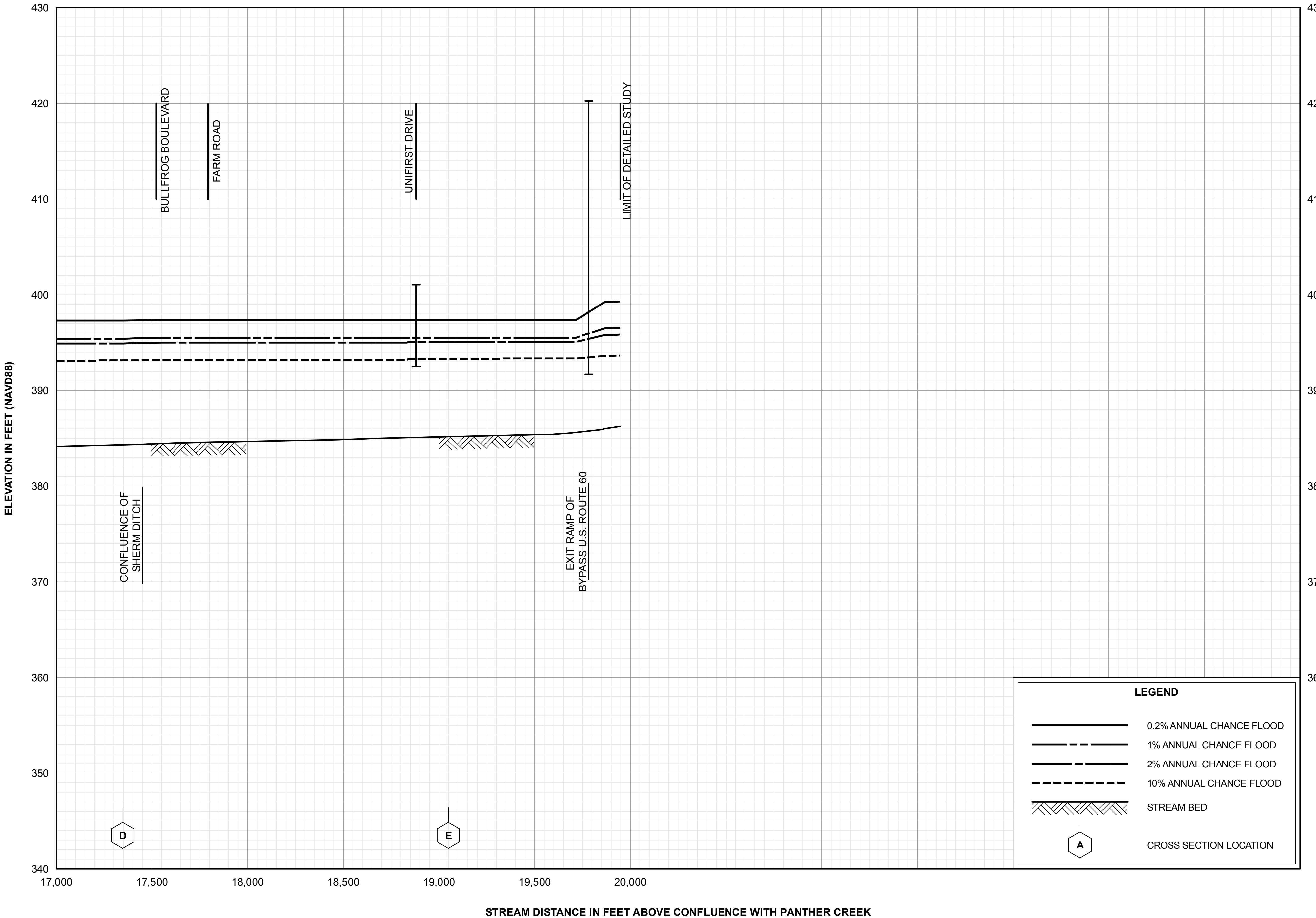
FLOOD PROFILES

BIG DITCH-CARTER DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS

01P

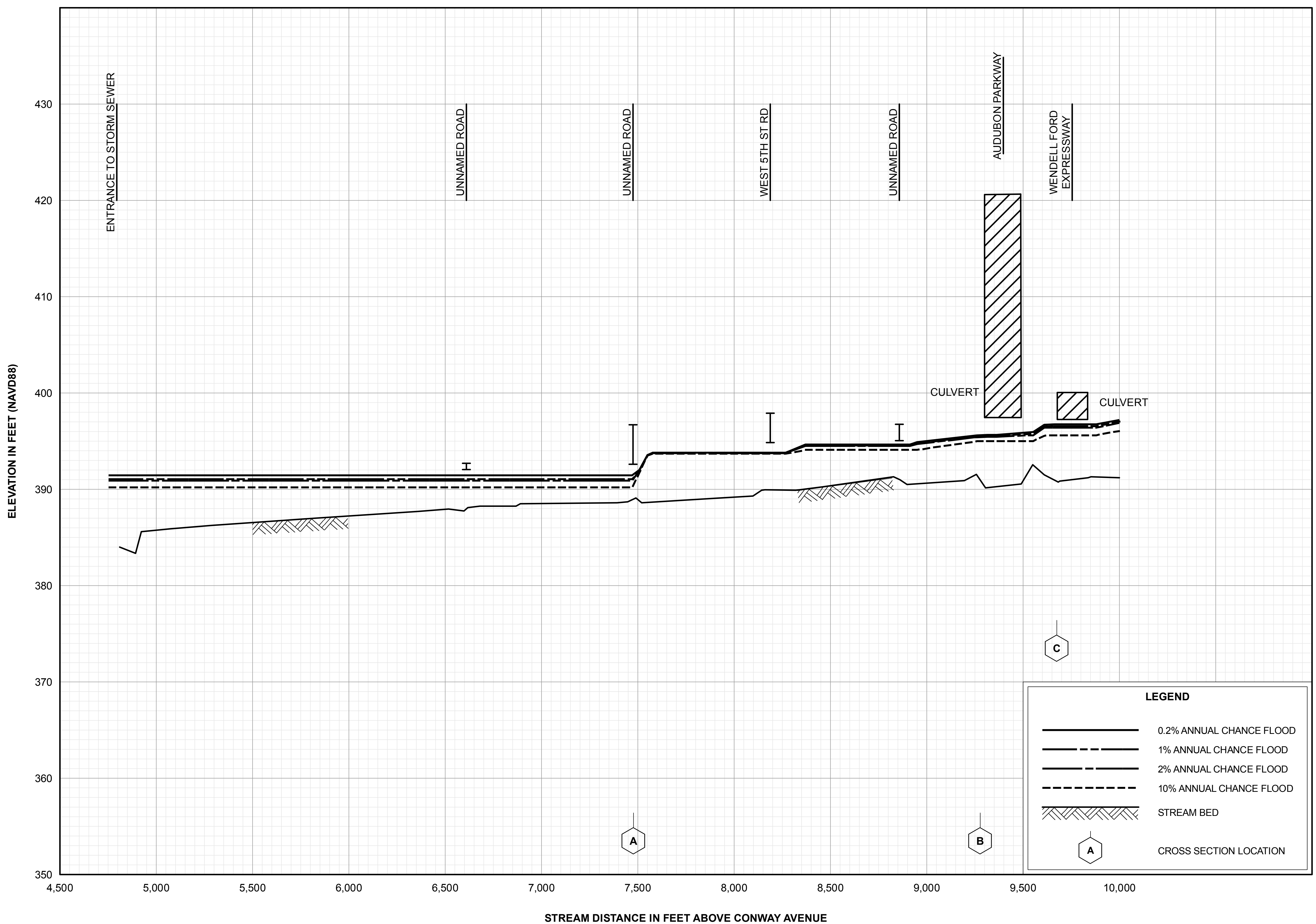


FLOOD PROFILES

CARTER DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS



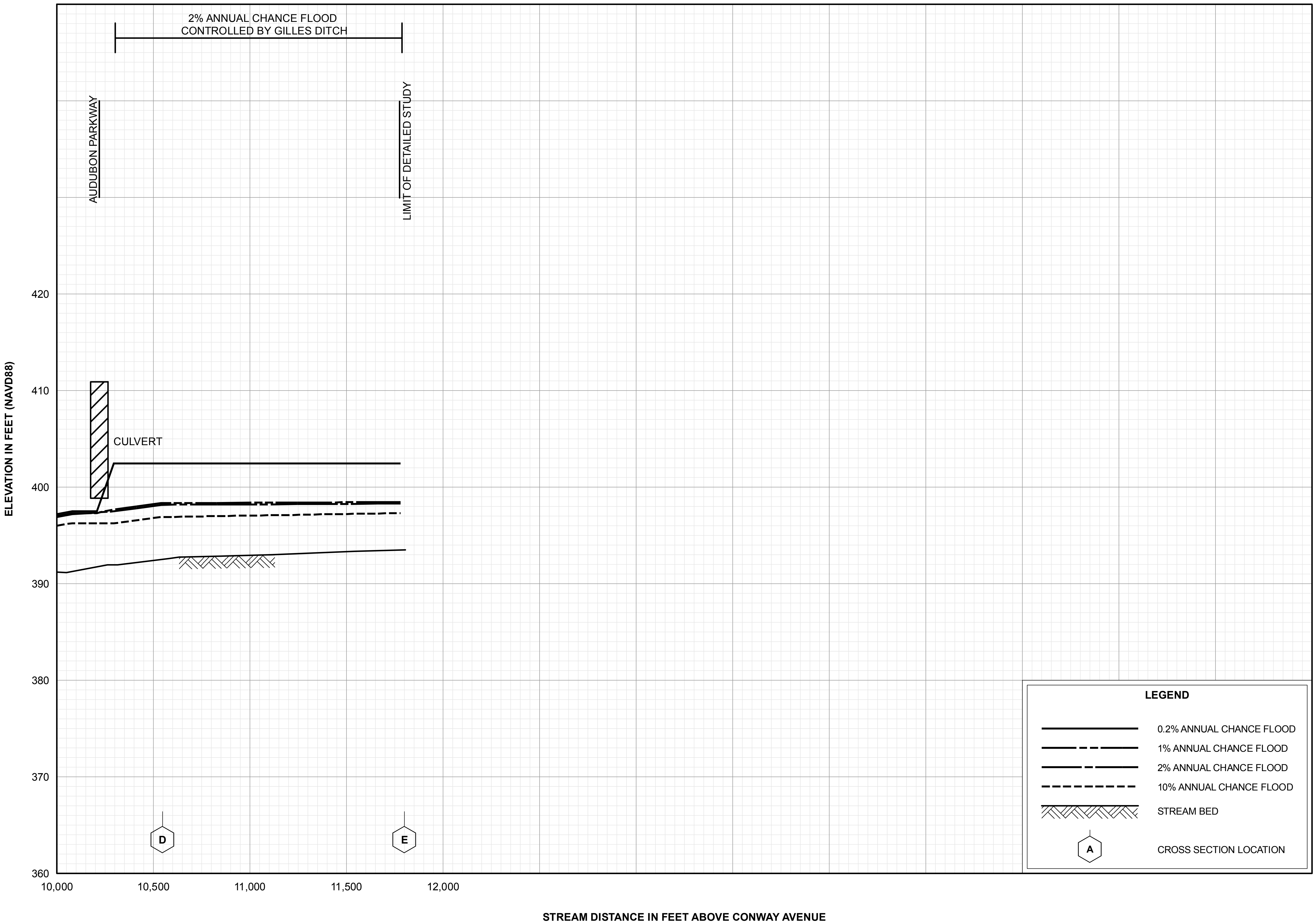
FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS

FLOOD PROFILES

DEVINS DITCH

03P



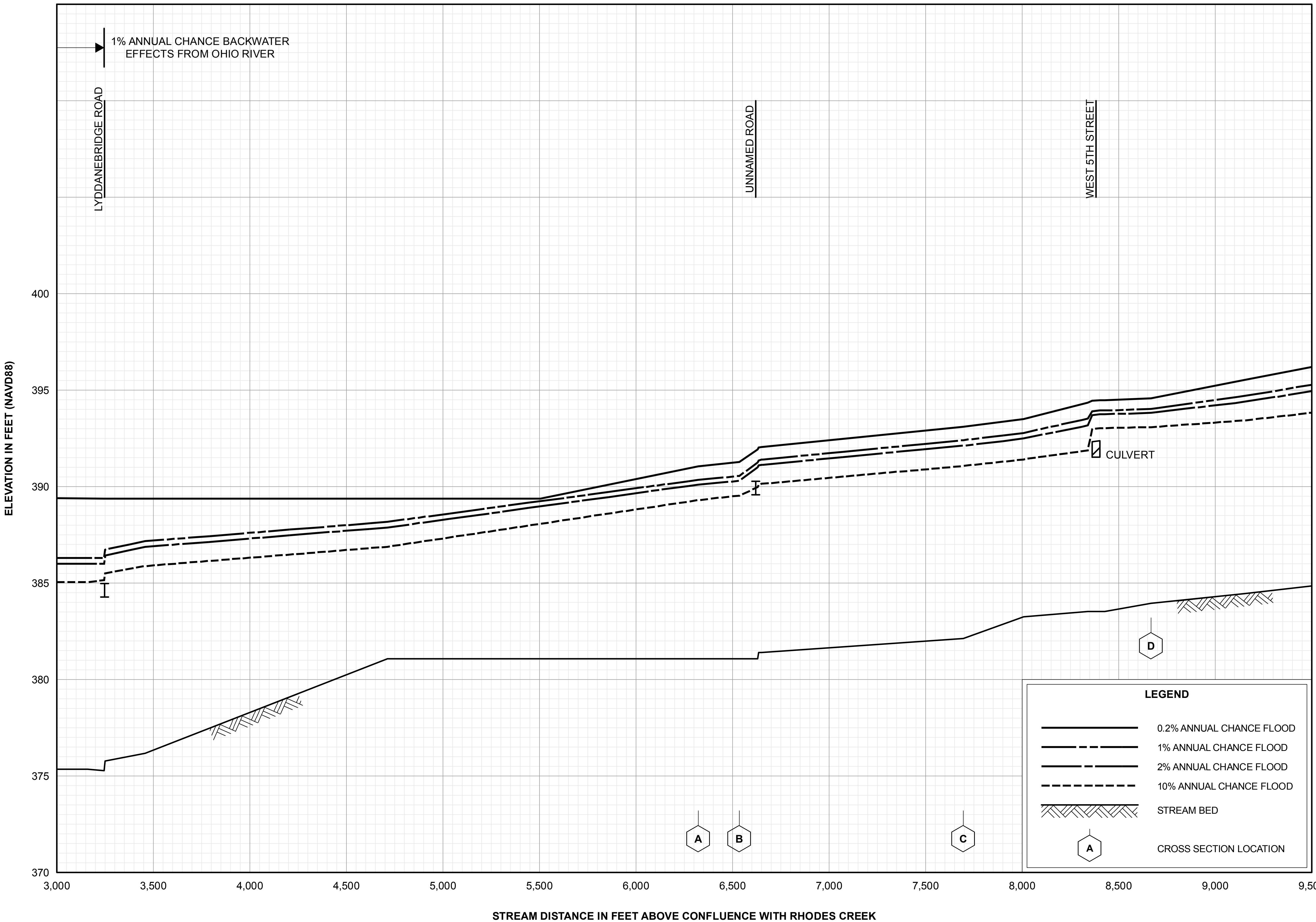
FLOOD PROFILES

DEVINS DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY

AND INCORPORATED AREAS



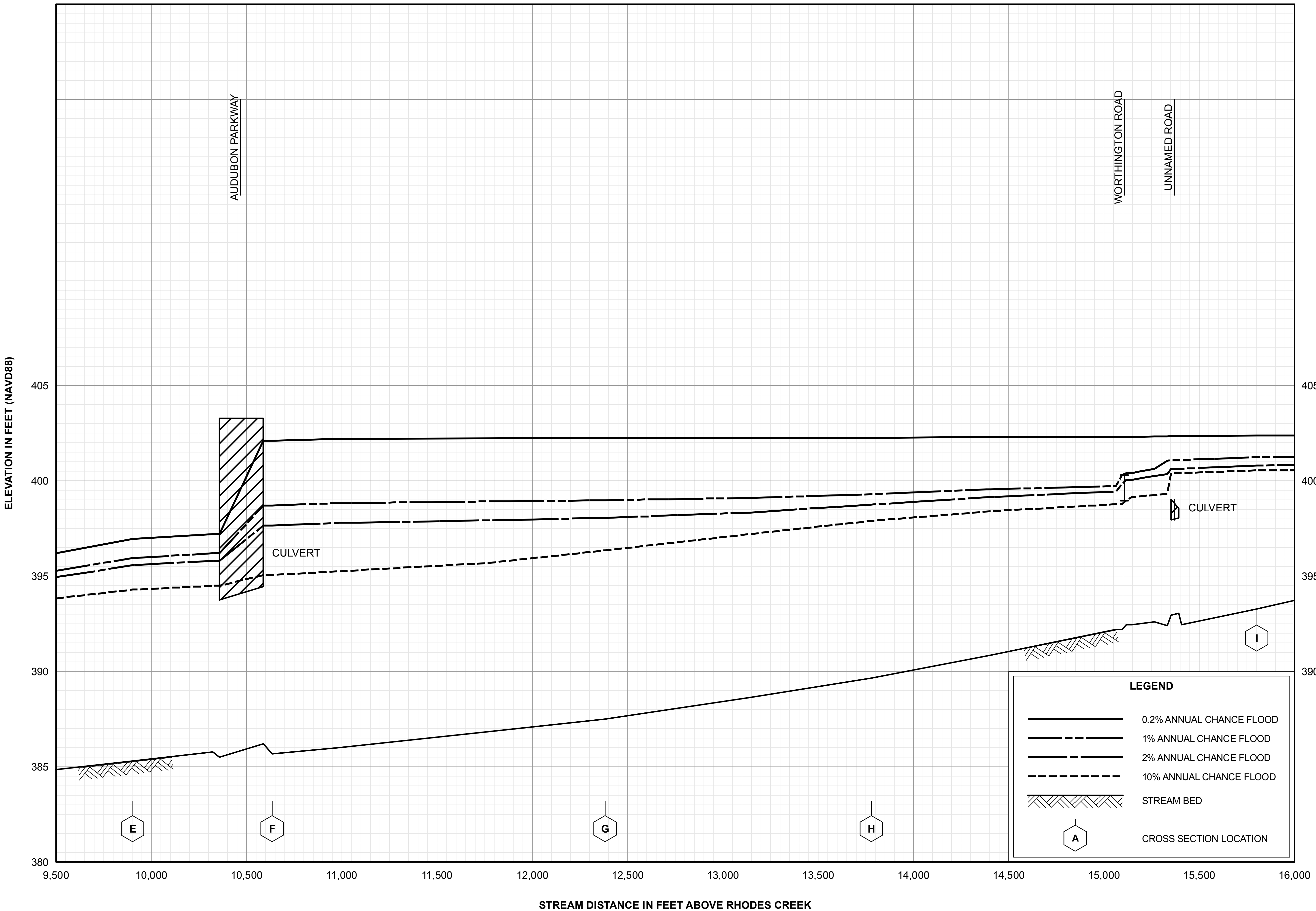
FLOOD PROFILES

GILLES DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

05P

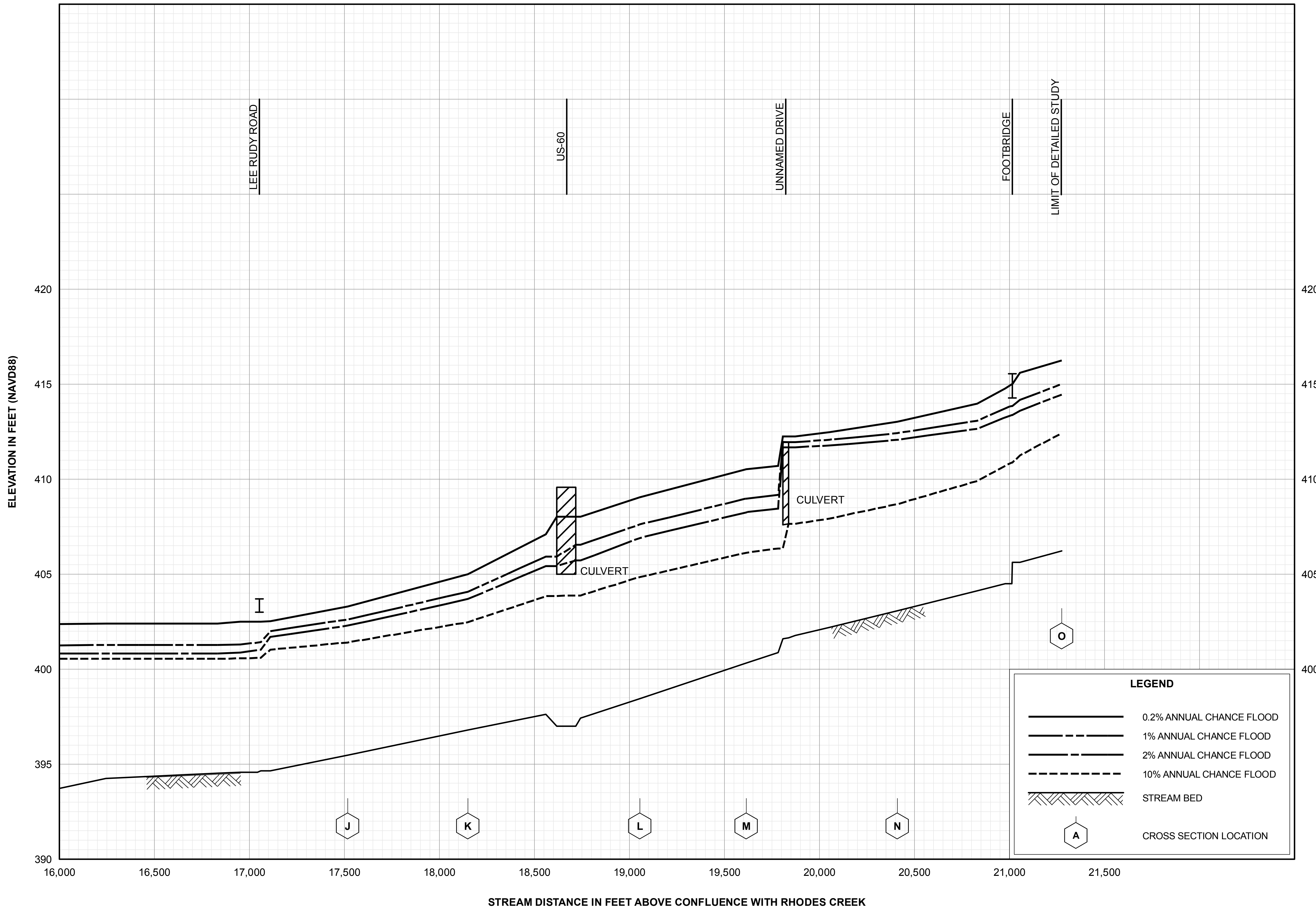


FLOOD PROFILES

GILLES DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS

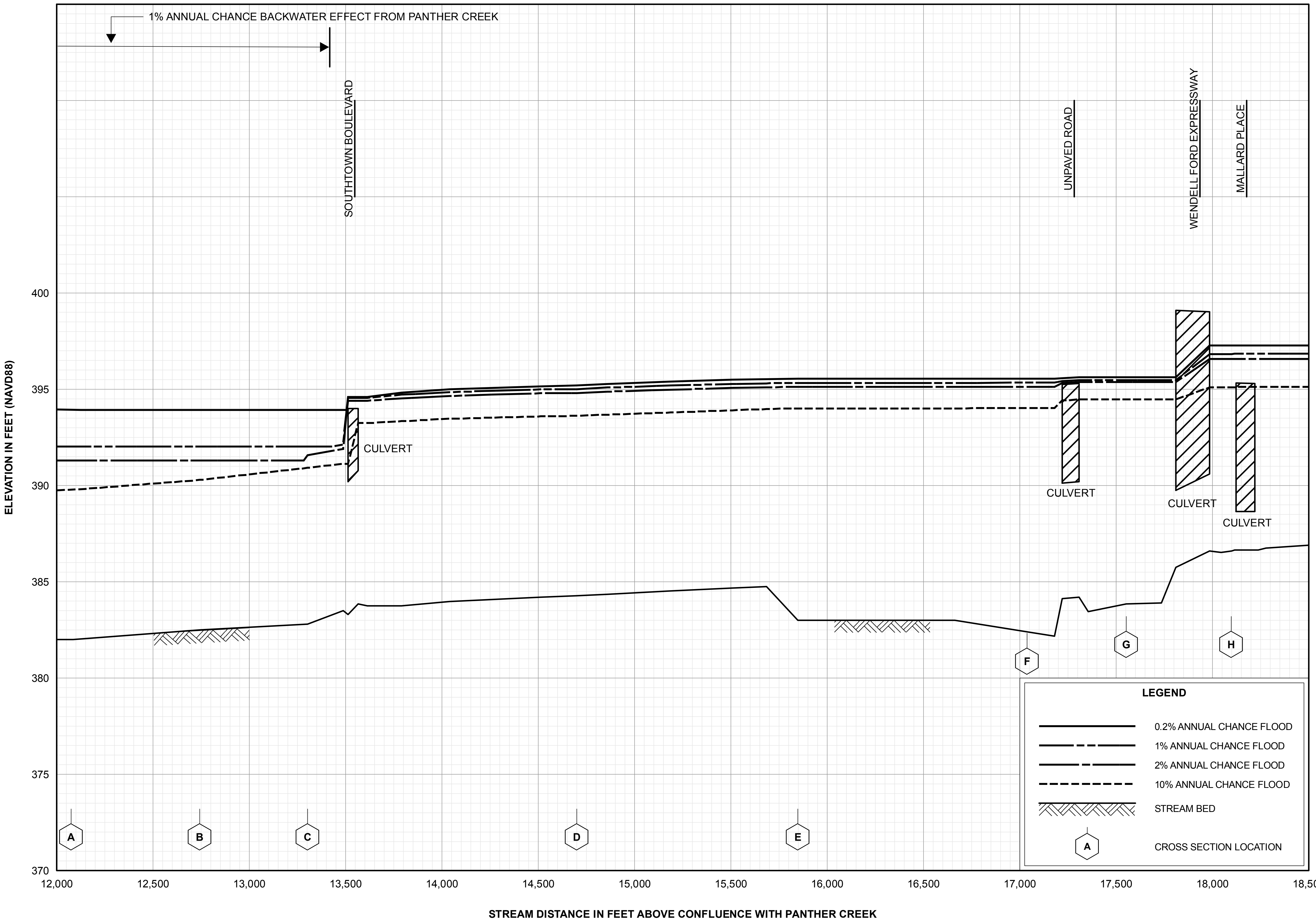


FLOOD PROFILES

GILLES DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS



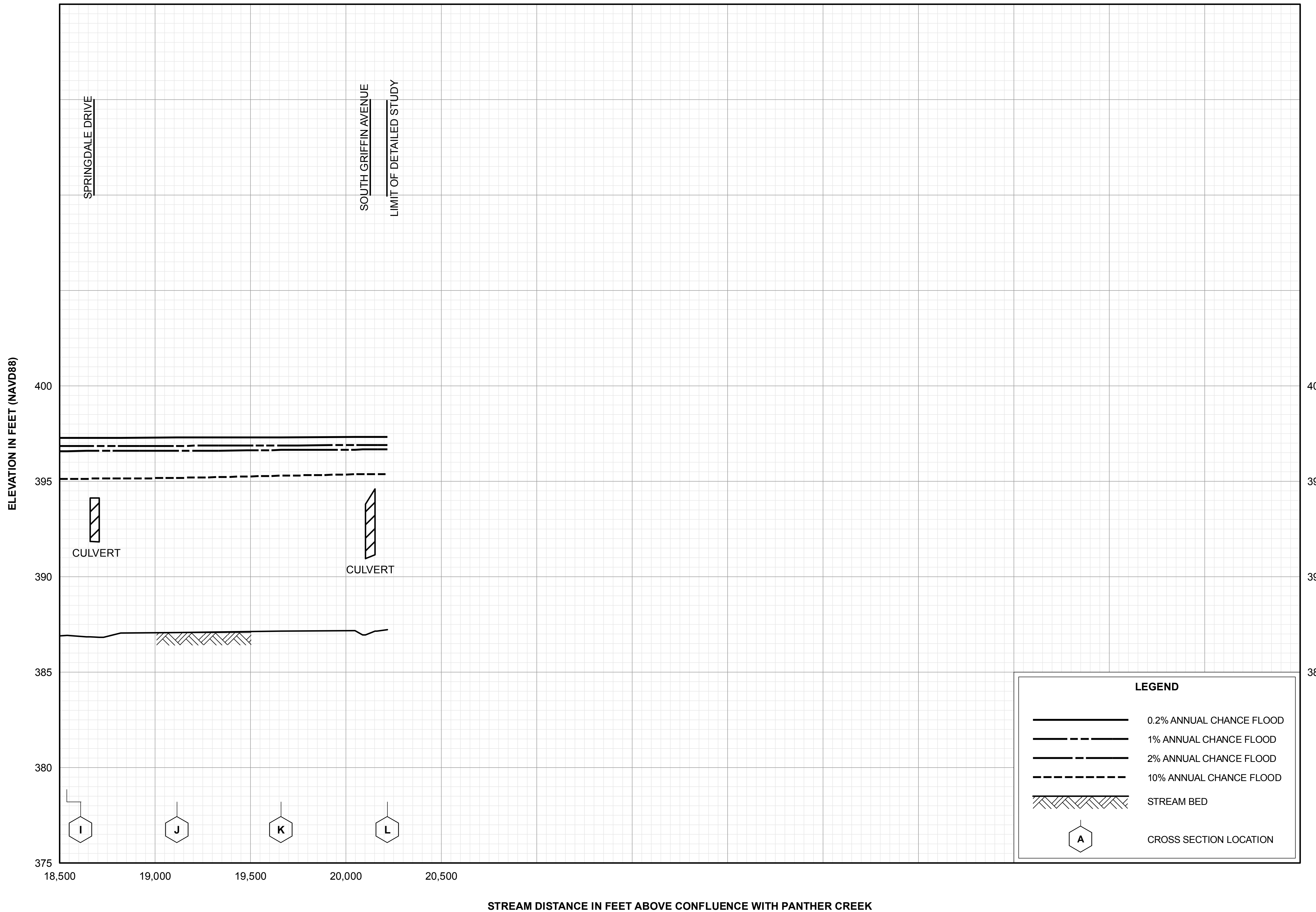
FLOOD PROFILES

GOETZ DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS

08P



FLOOD PROFILES

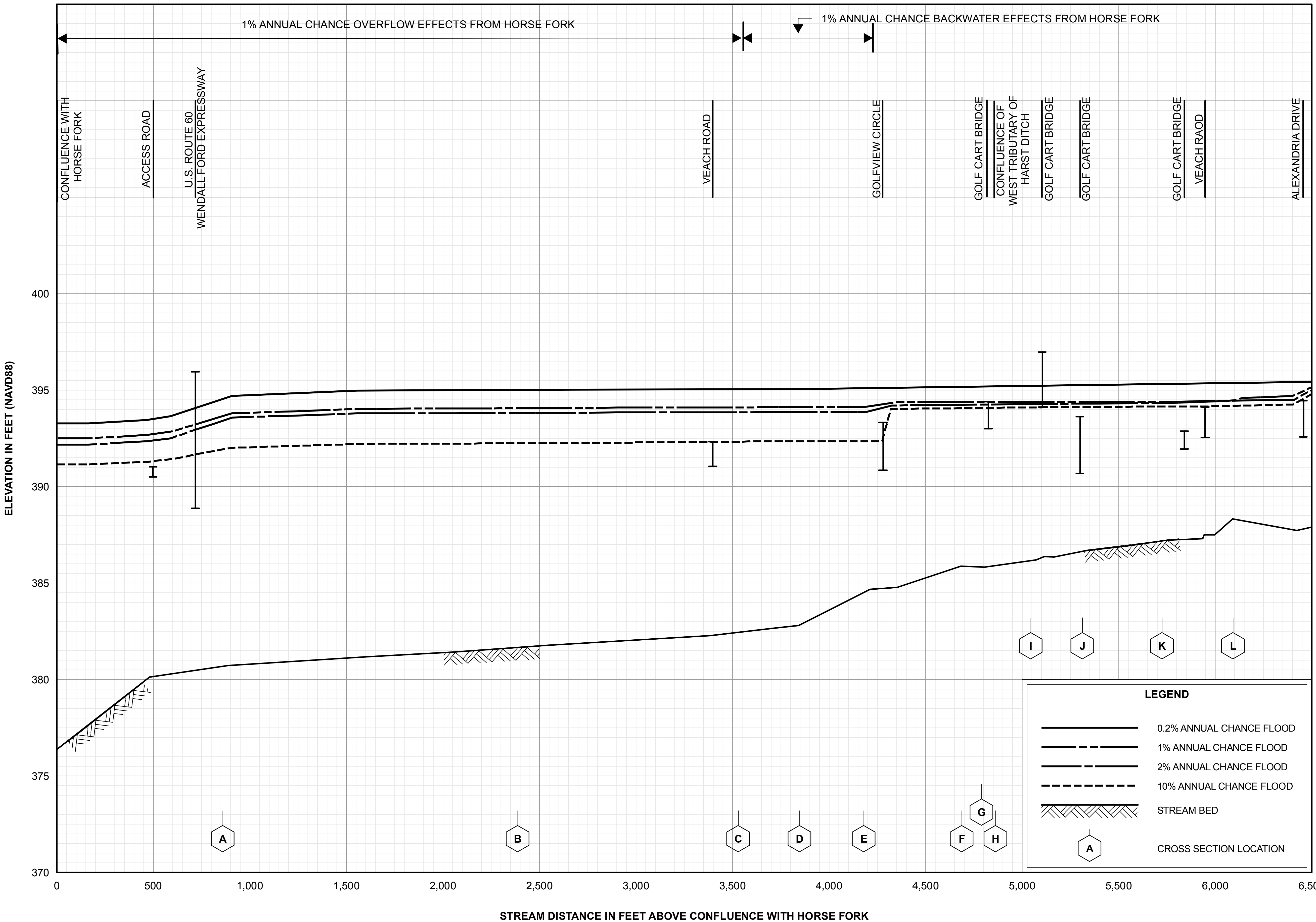
GOETZ DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY

AND INCORPORATED AREAS

09P



FLOOD PROFILES

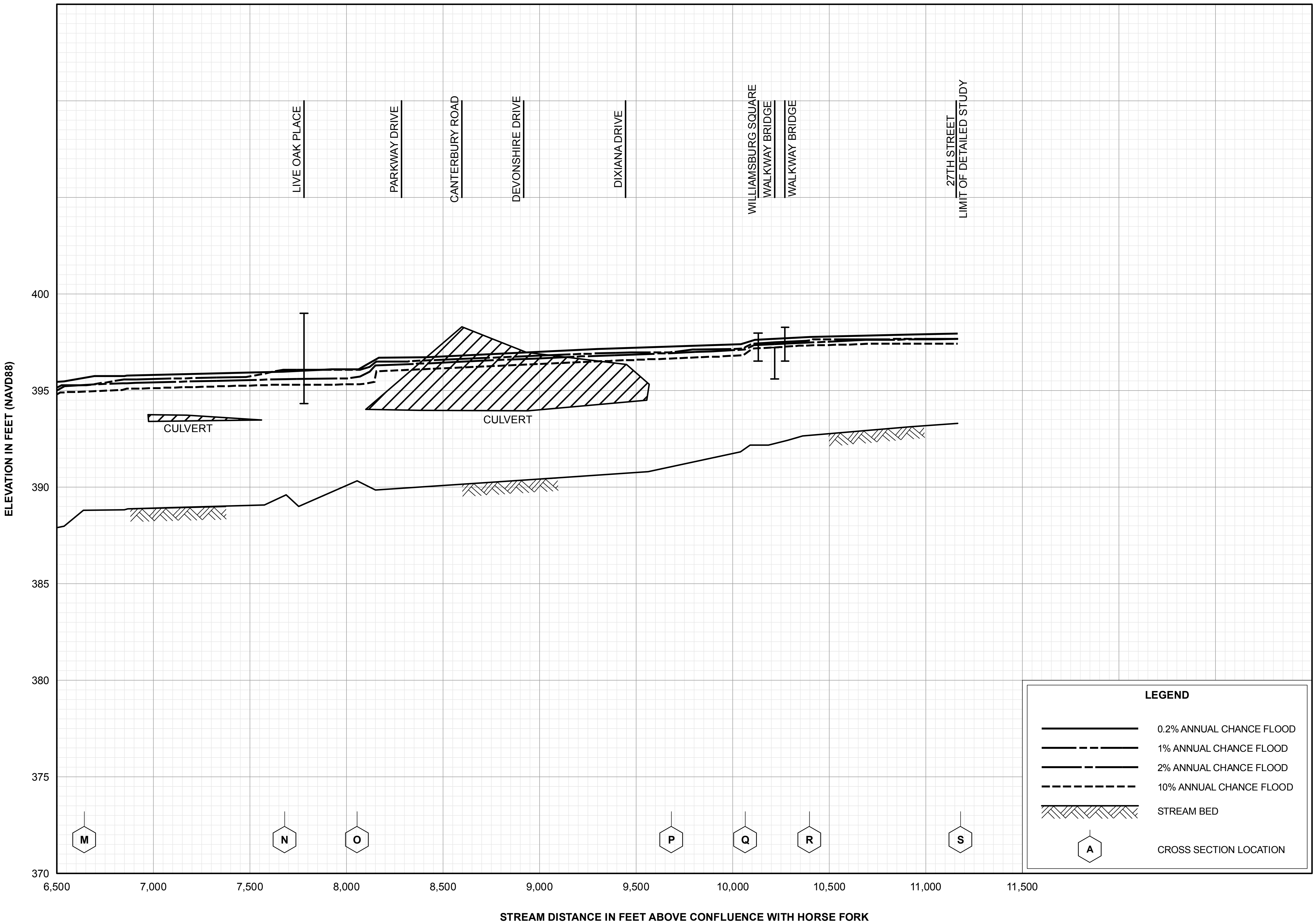
HARSH DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY

AND INCORPORATED AREAS

10P



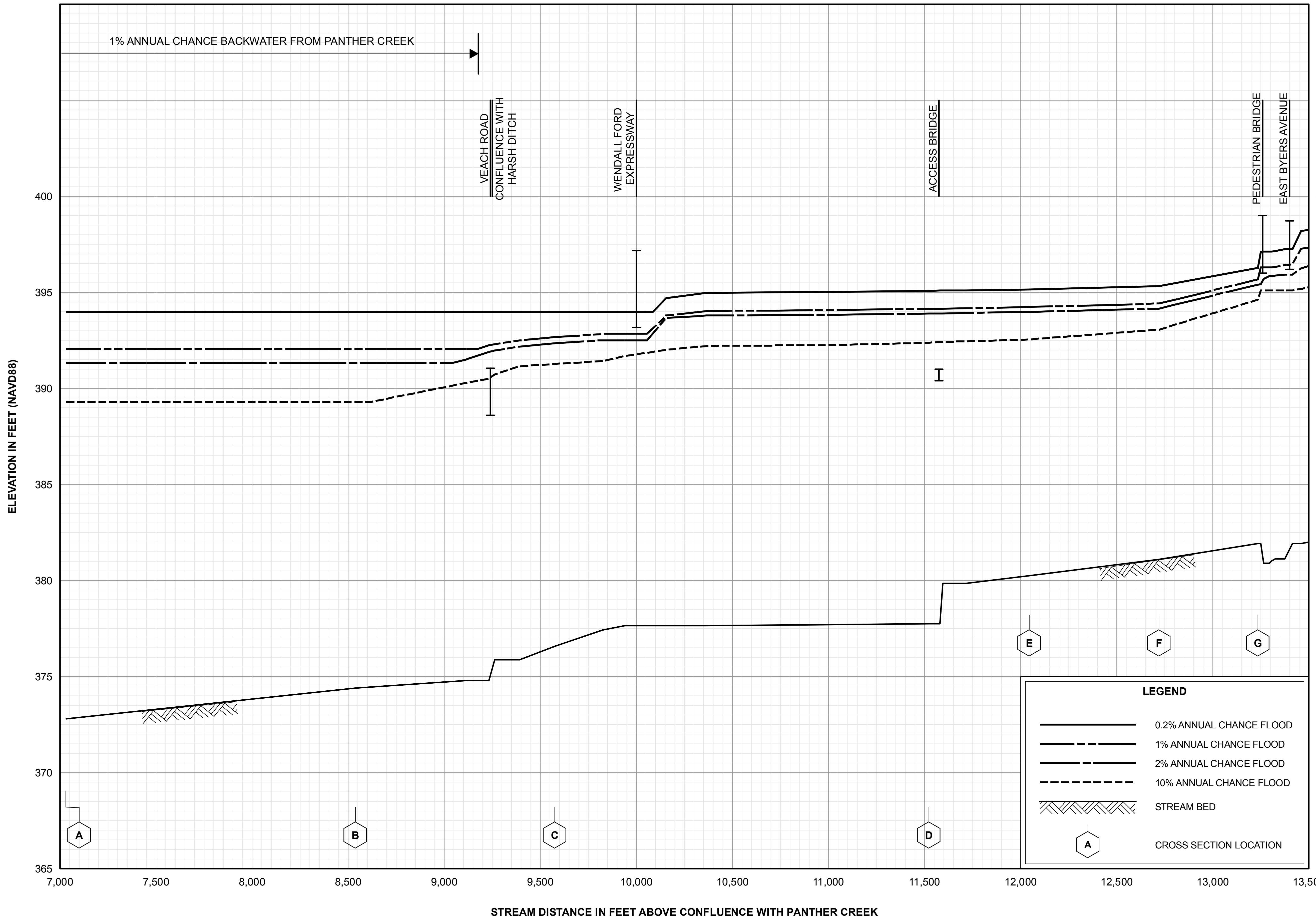
FLOOD PROFILES

HARSH DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY

AND INCORPORATED AREAS



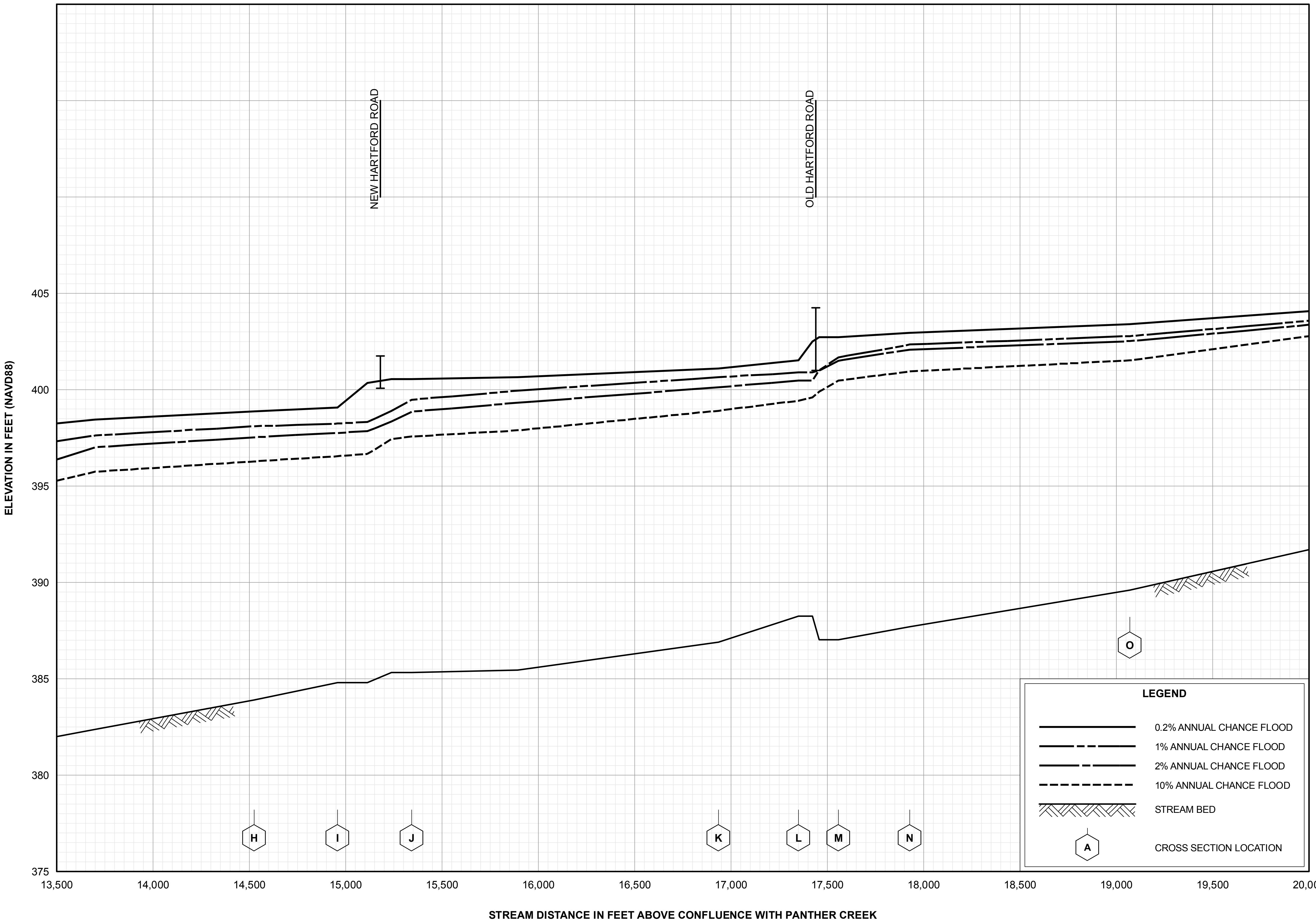
FLOOD PROFILES

HORSE FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS

12P

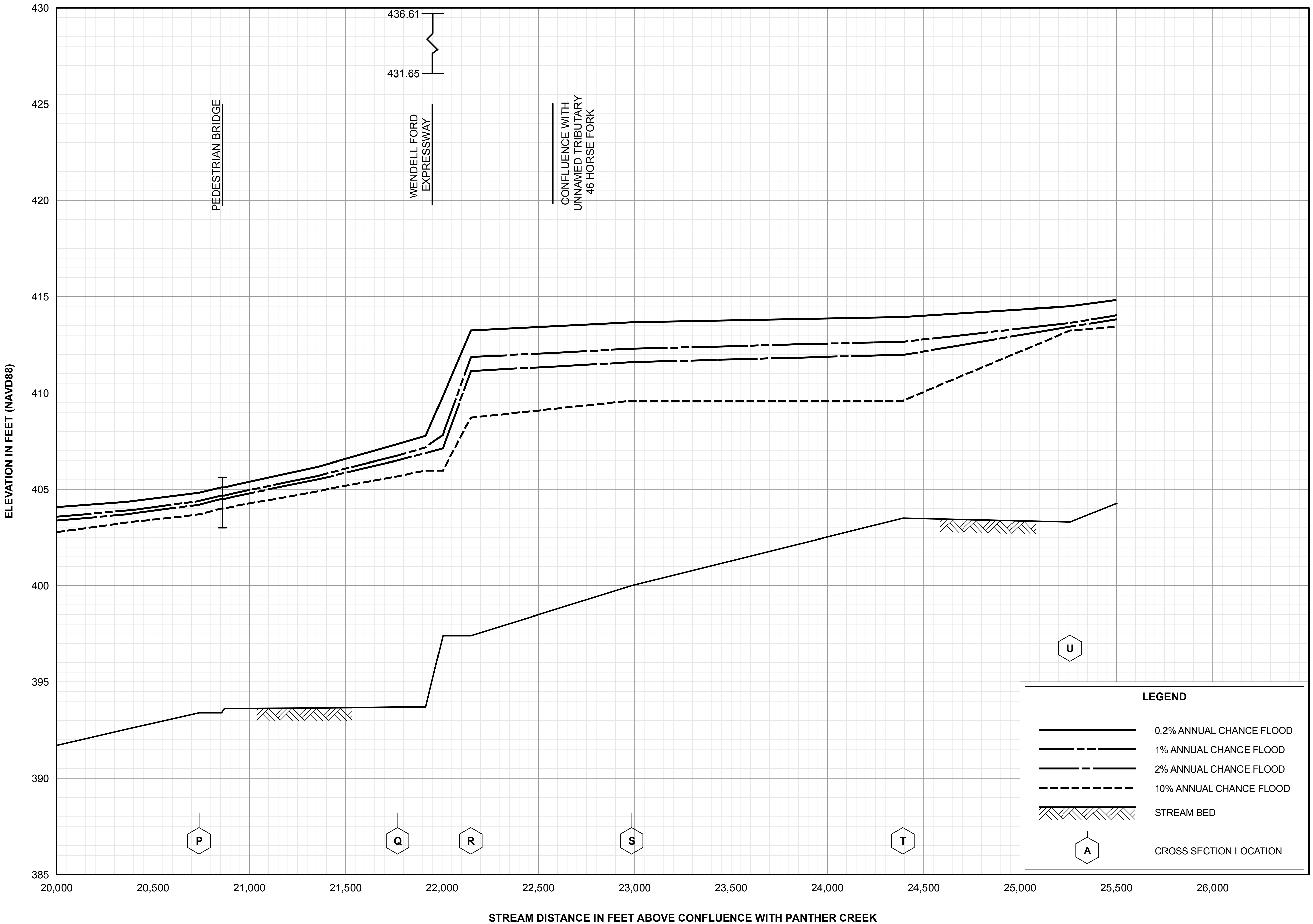


FLOOD PROFILES

HORSE FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS



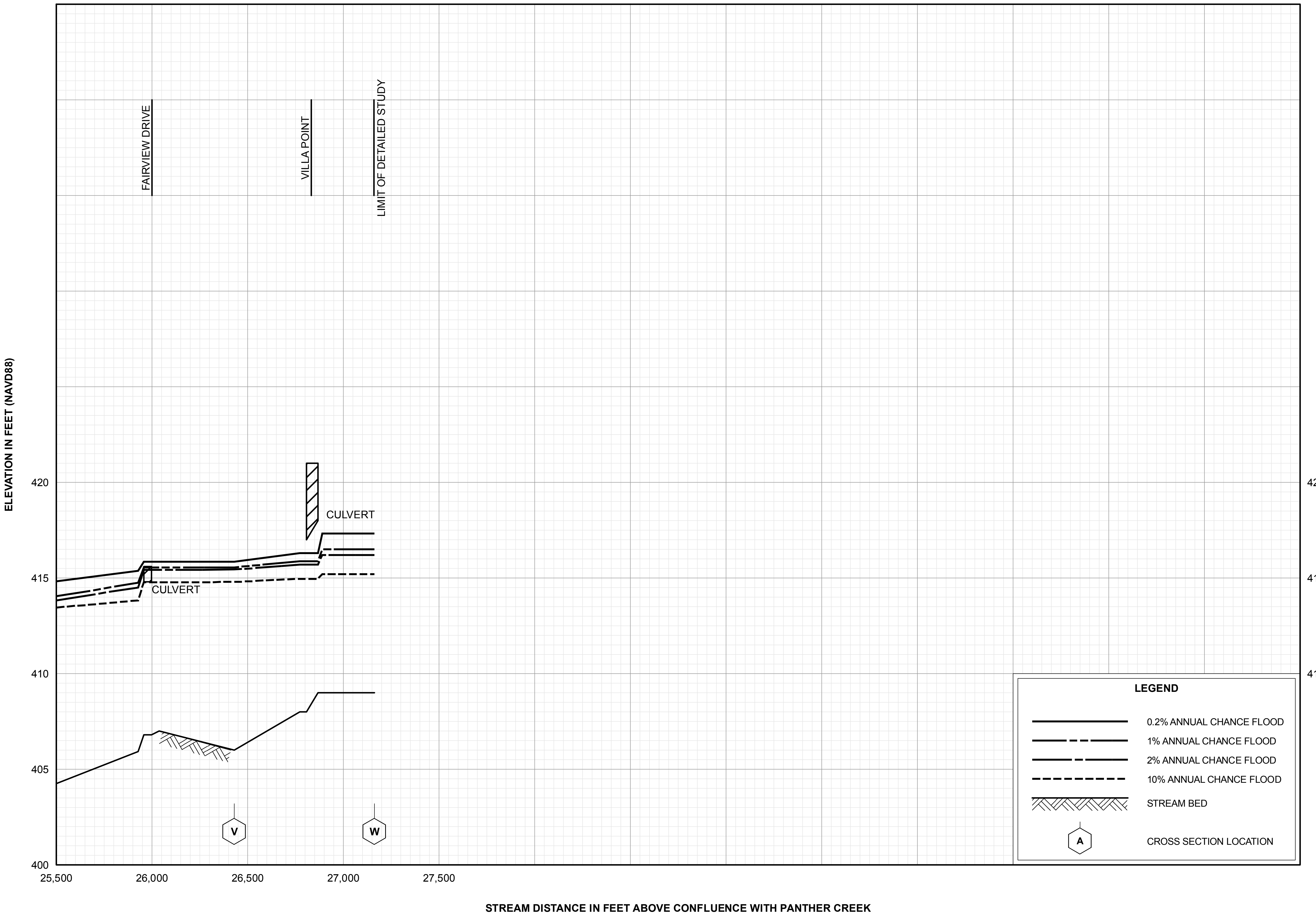
FLOOD PROFILES

HORSE FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS

14P

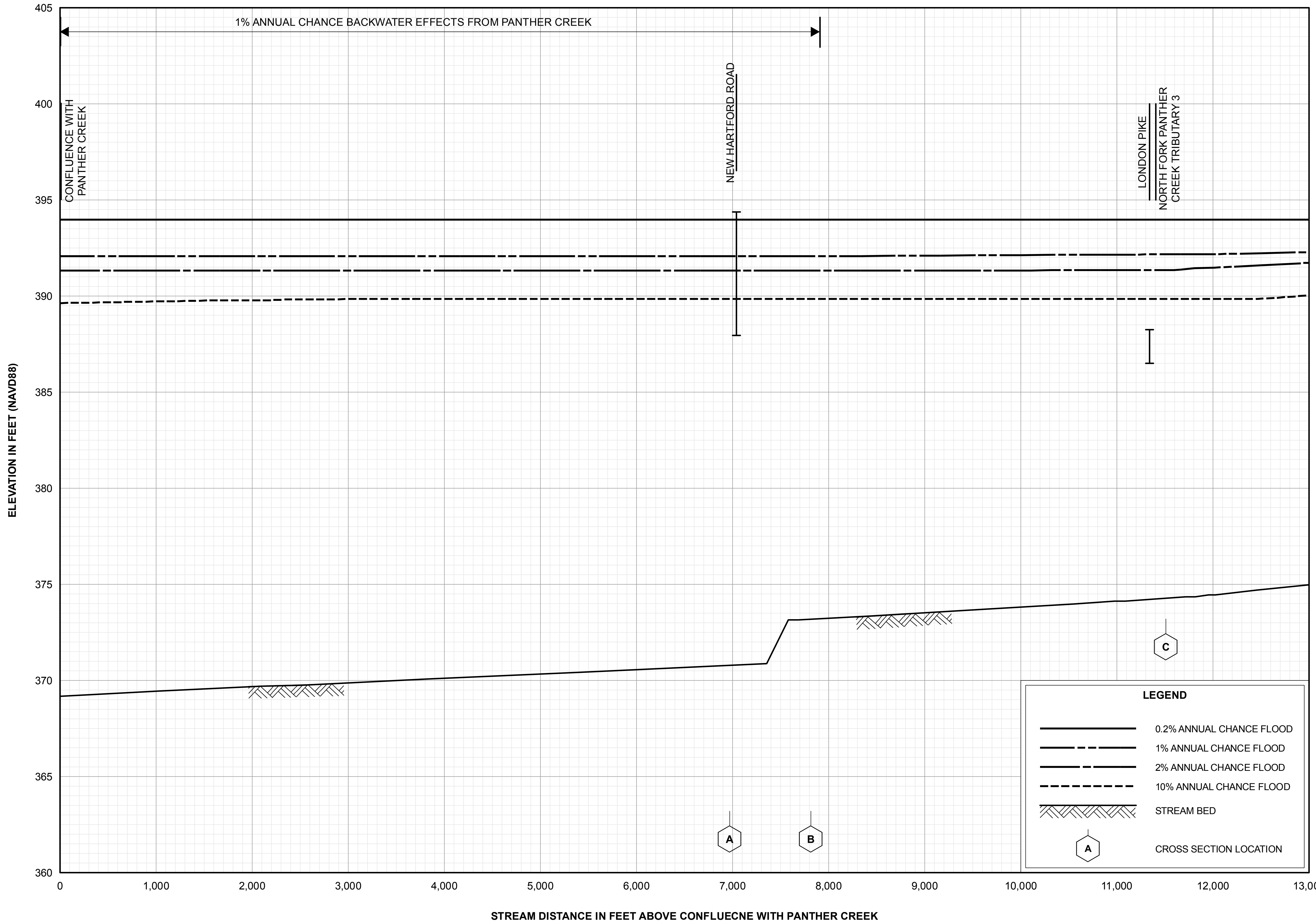


FLOOD PROFILES

HORSE FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS



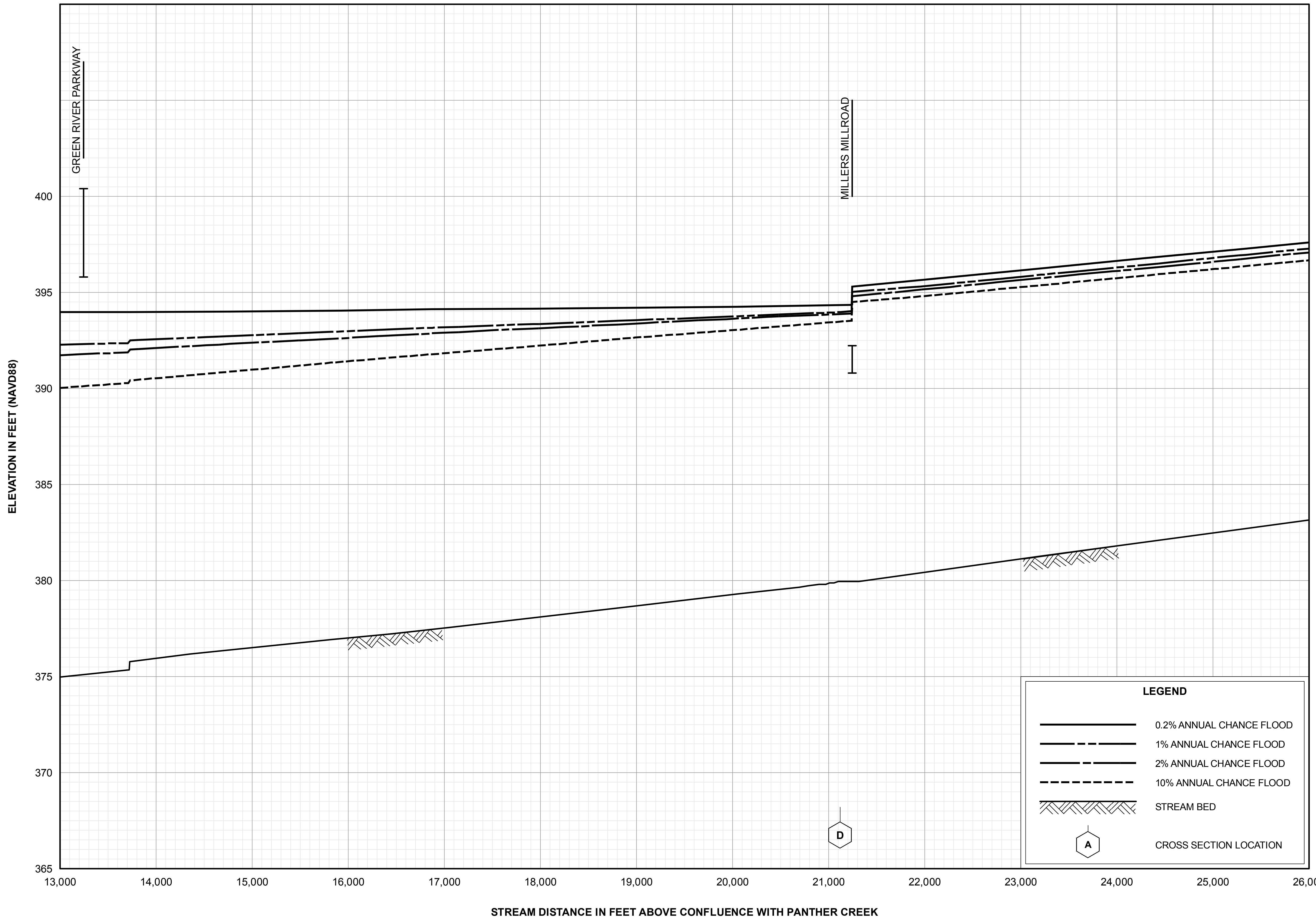
FLOOD PROFILES

NORTH FORK PANTHER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY

AND INCORPORATED AREAS



FLOOD PROFILES

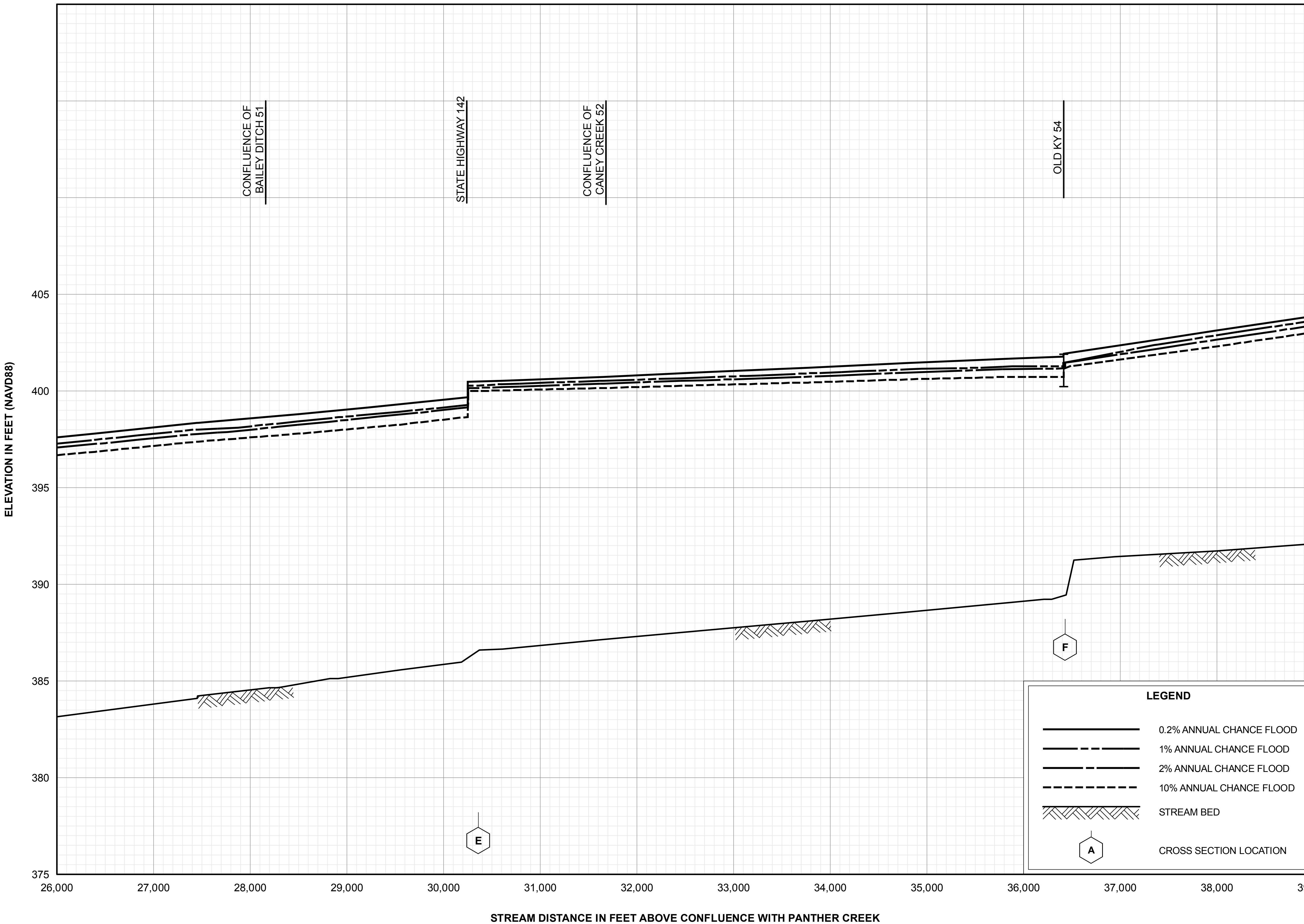
NORTH FORK PANTHER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY

AND INCORPORATED AREAS

17P

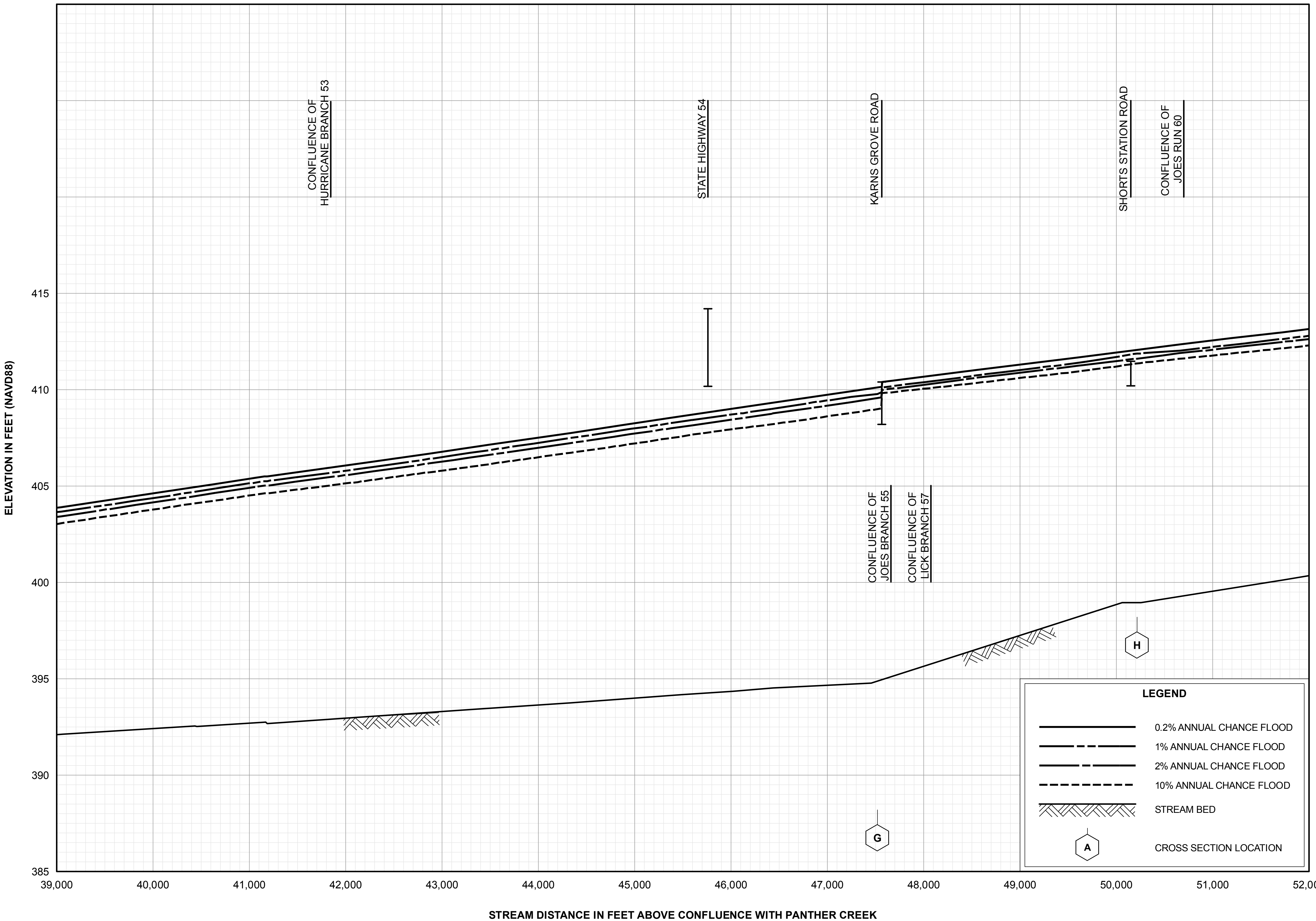


FLOOD PROFILES

NORTH FORK PANTHER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS



FLOOD PROFILES

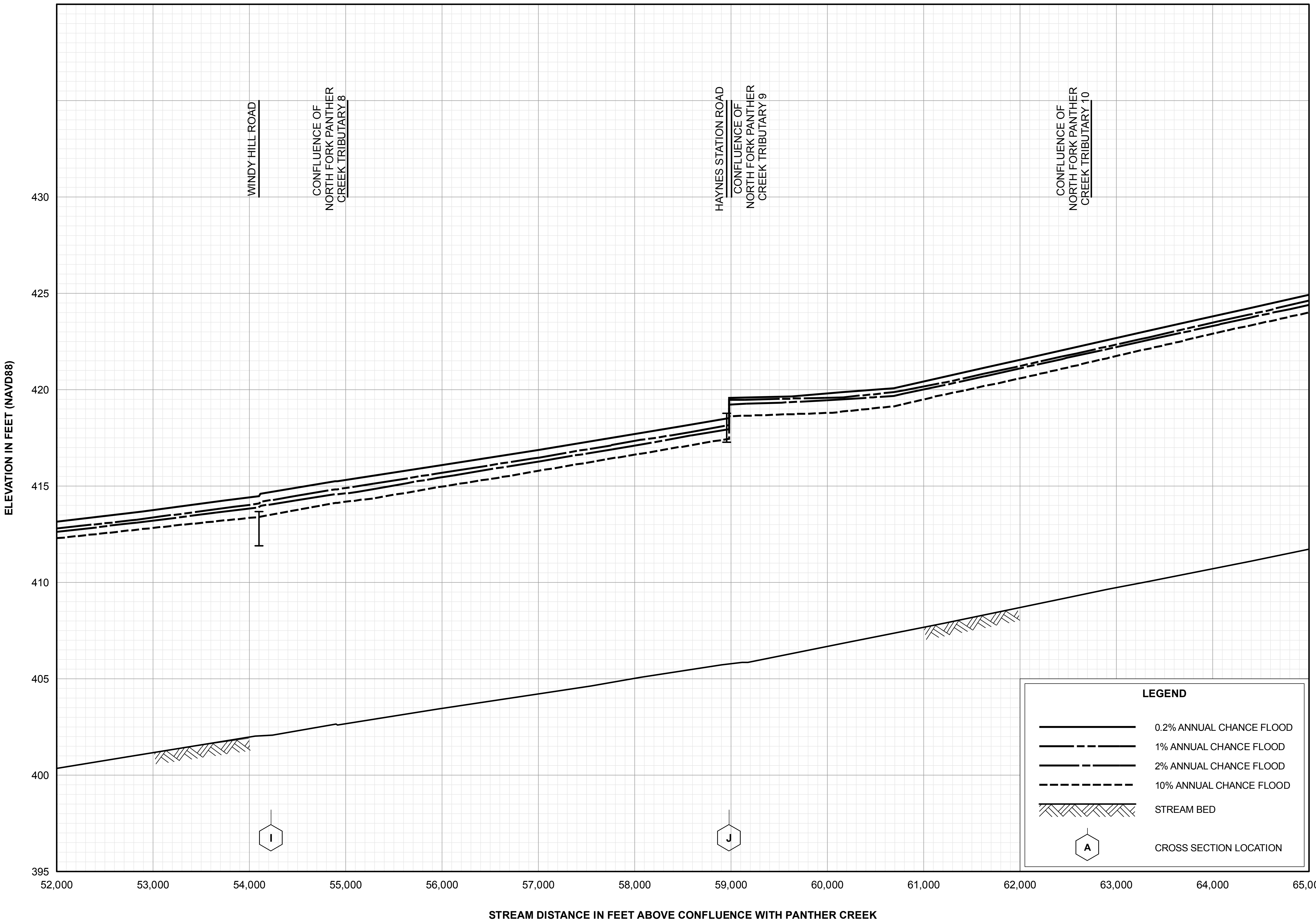
NORTH FORK PANTHER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY

AND INCORPORATED AREAS

19P

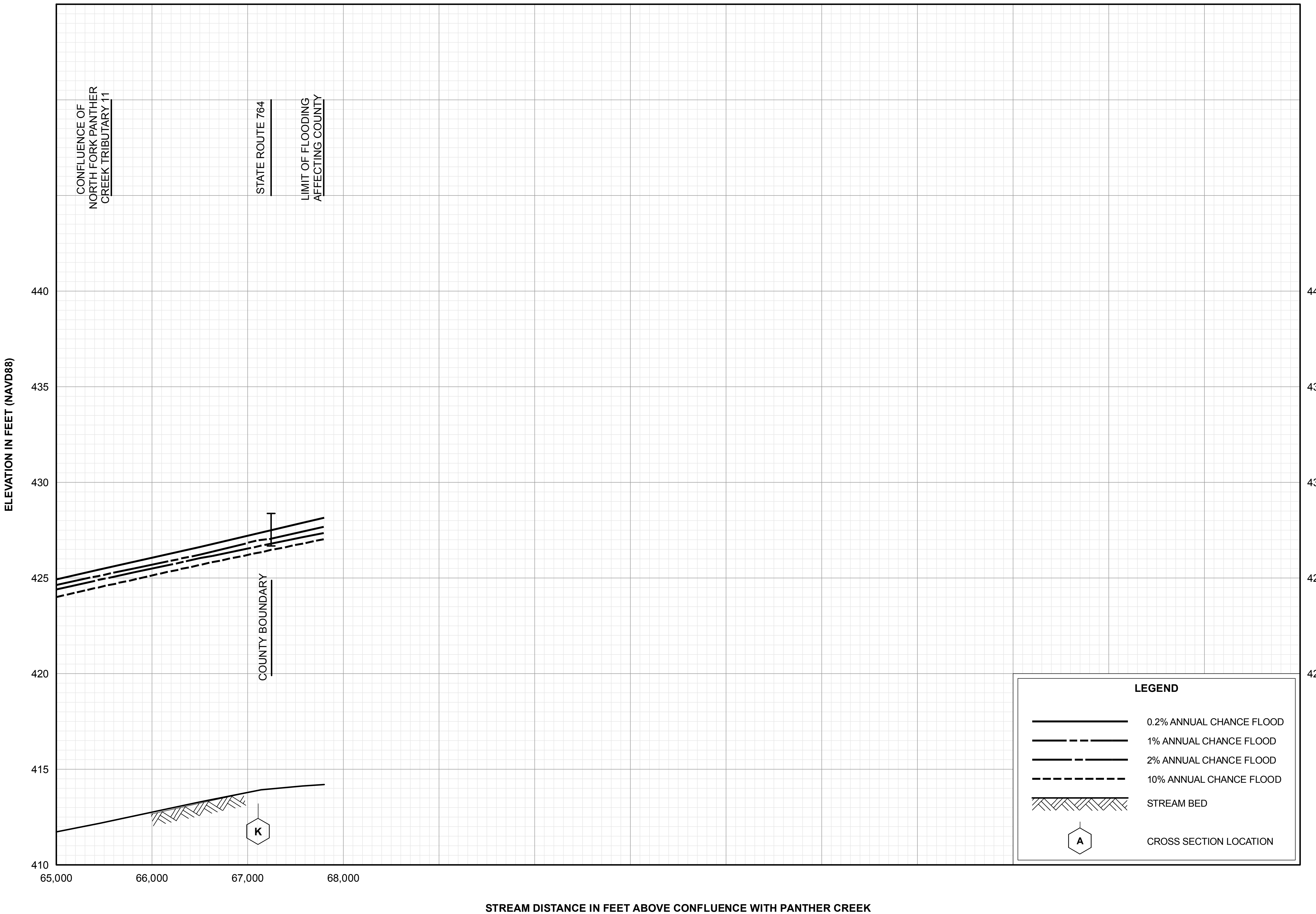


FLOOD PROFILES

NORTH FORK PANTHER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY AND INCORPORATED AREAS

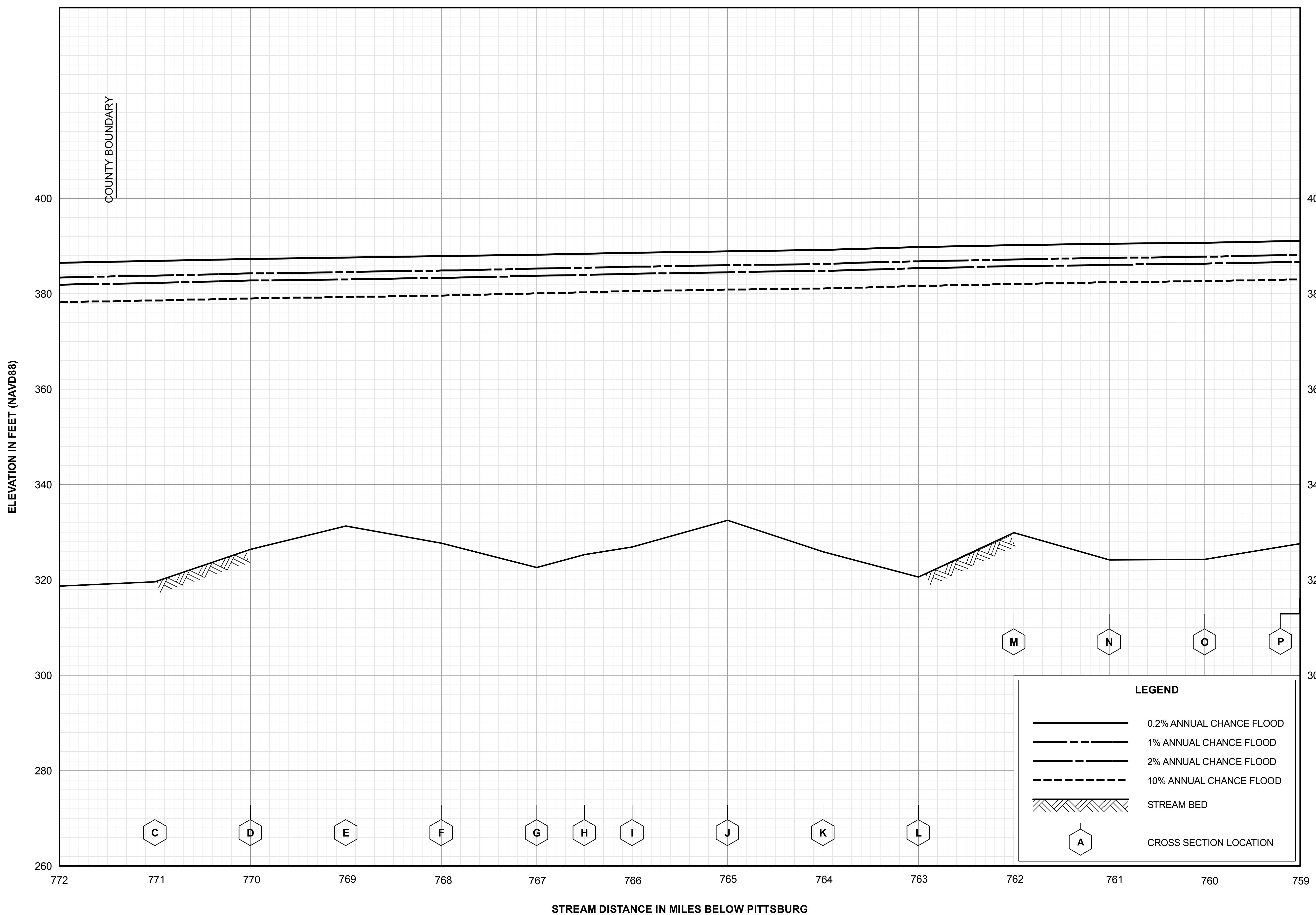


FLOOD PROFILES

NORTH FORK PANTHER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS



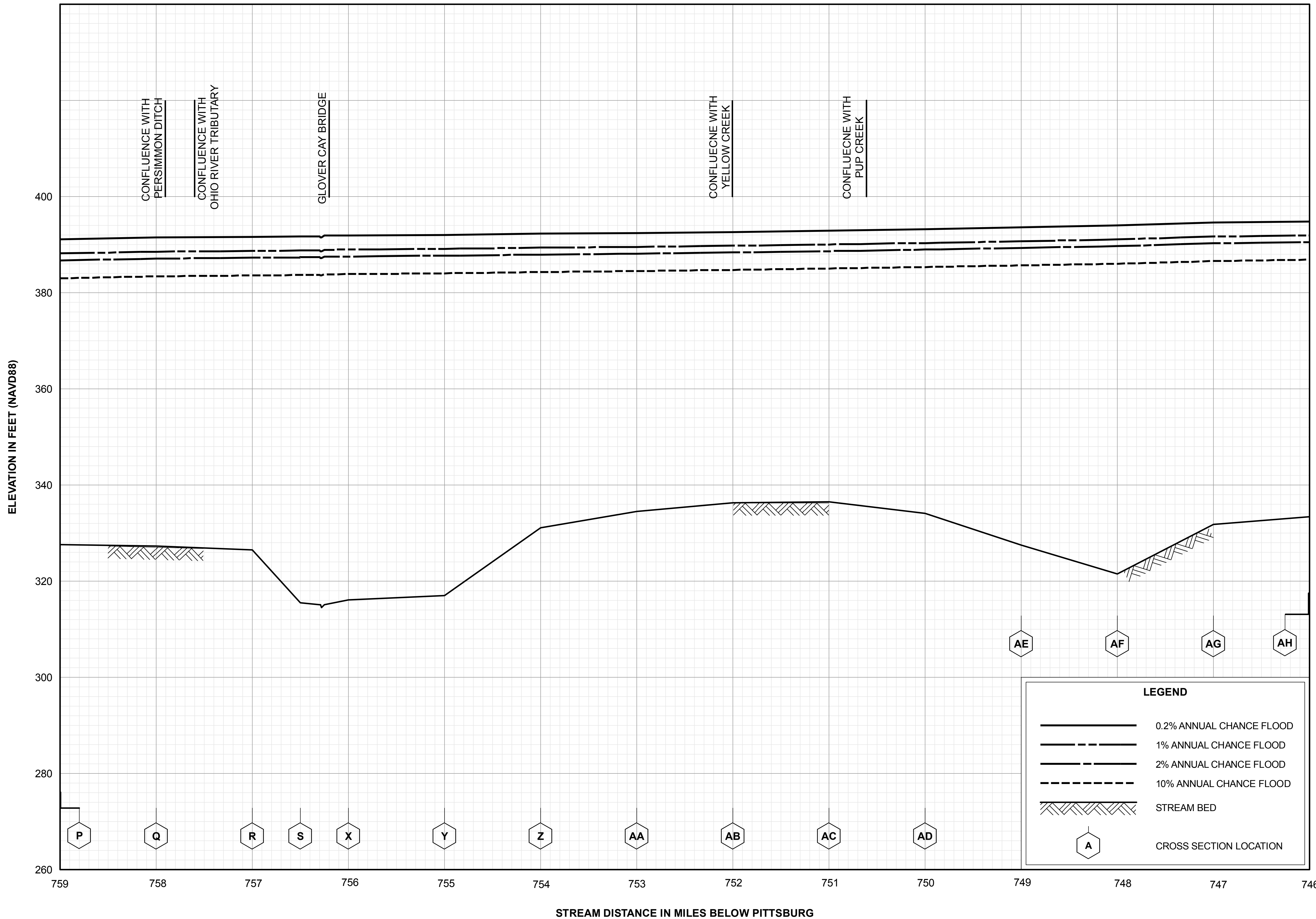
FLOOD PROFILES

OHIO RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIES COUNTY, KY
AND INCORPORATED AREAS

22P

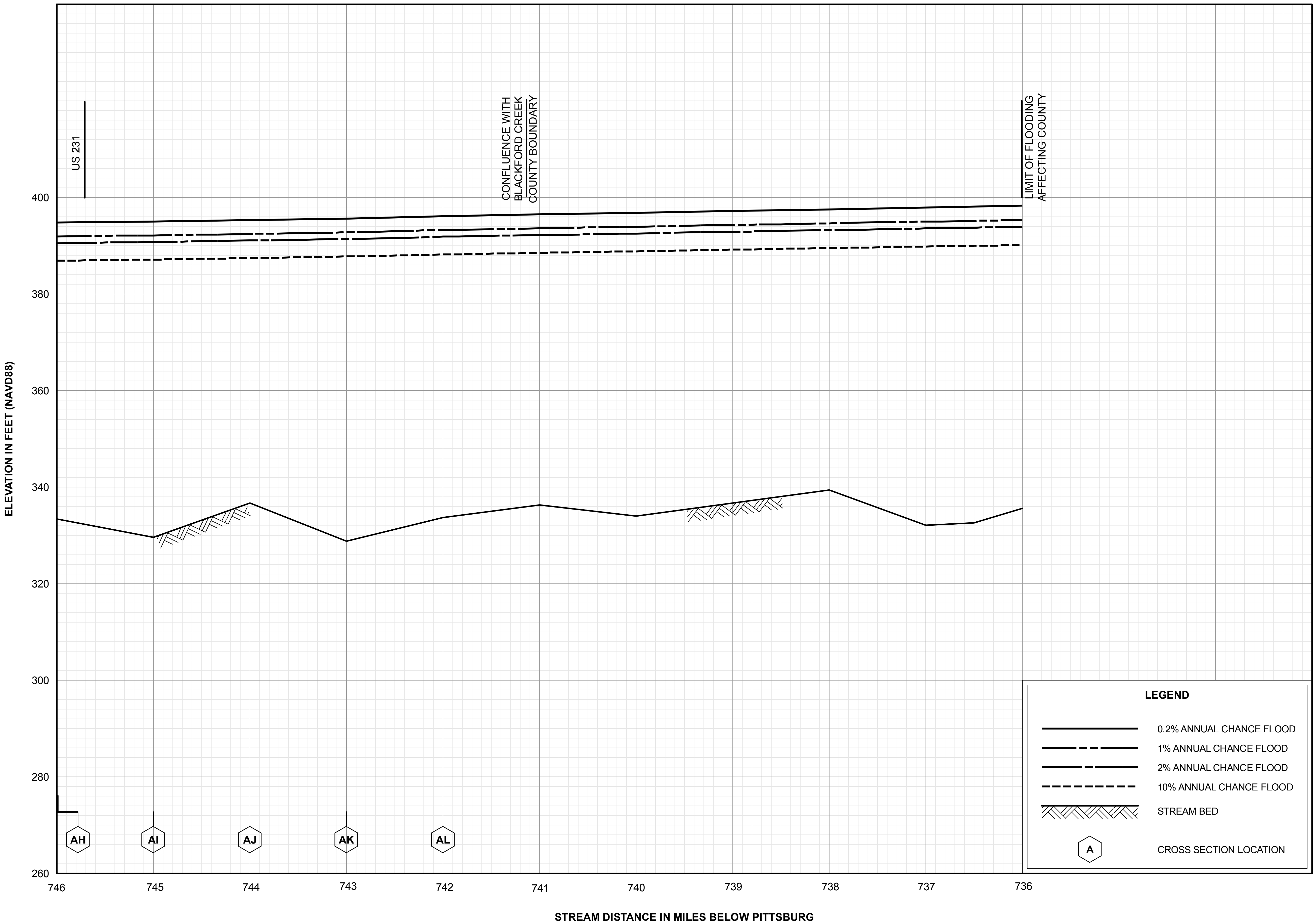


FLOOD PROFILES

OHIO RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS



FLOOD PROFILES

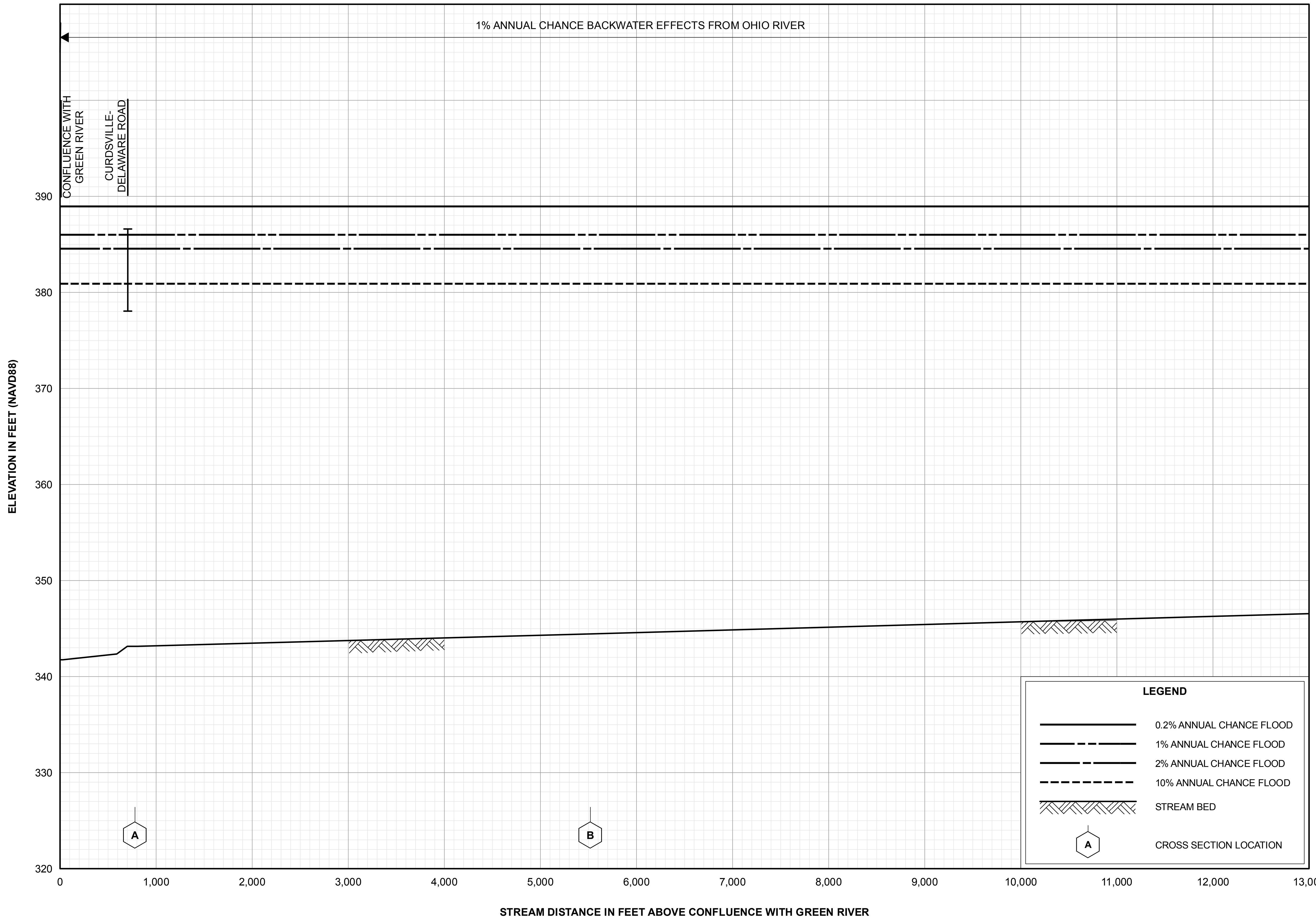
OHIO RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIES COUNTY, KY

AND INCORPORATED AREAS

24P



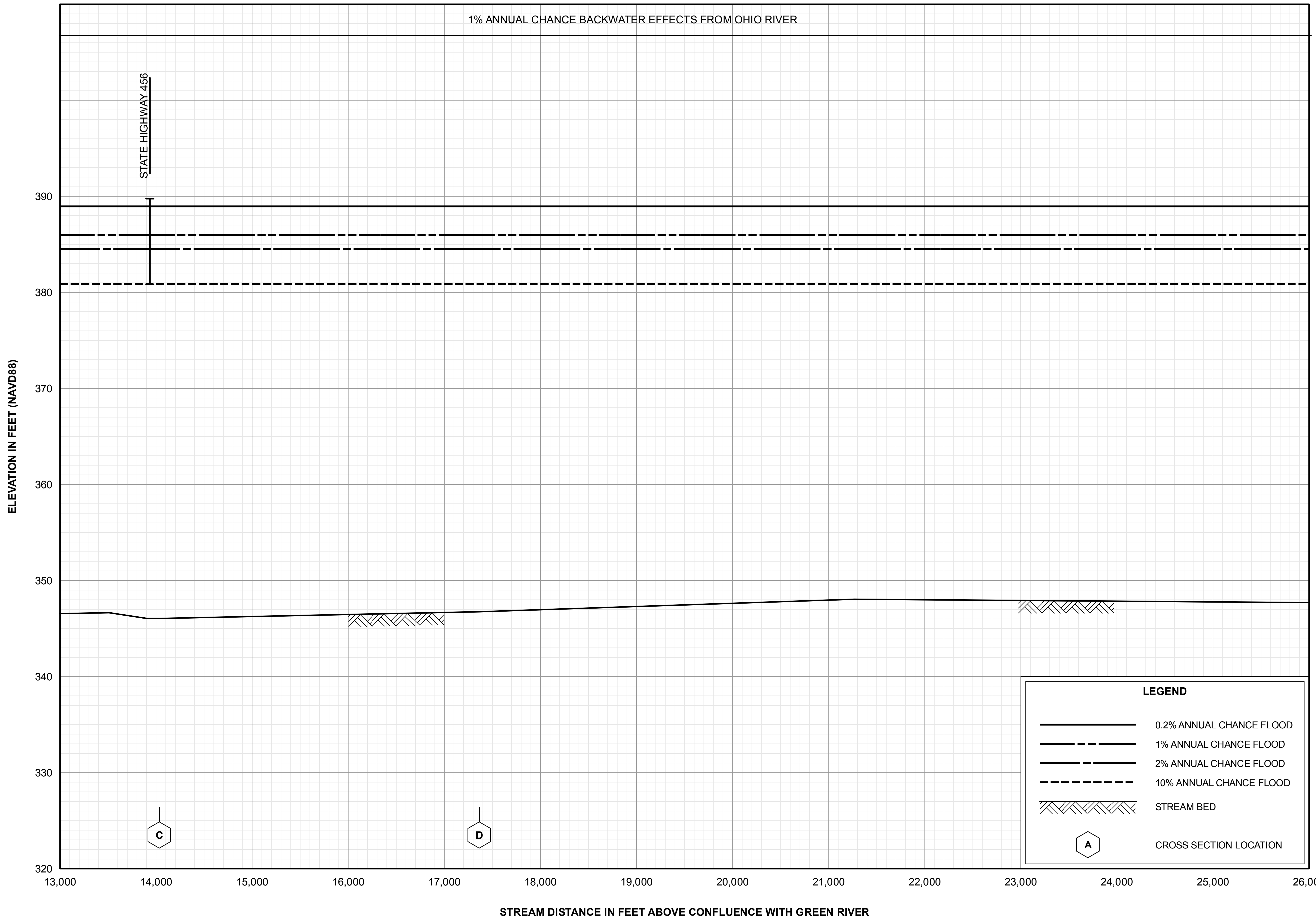
FLOOD PROFILES

PANTHER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS

25P



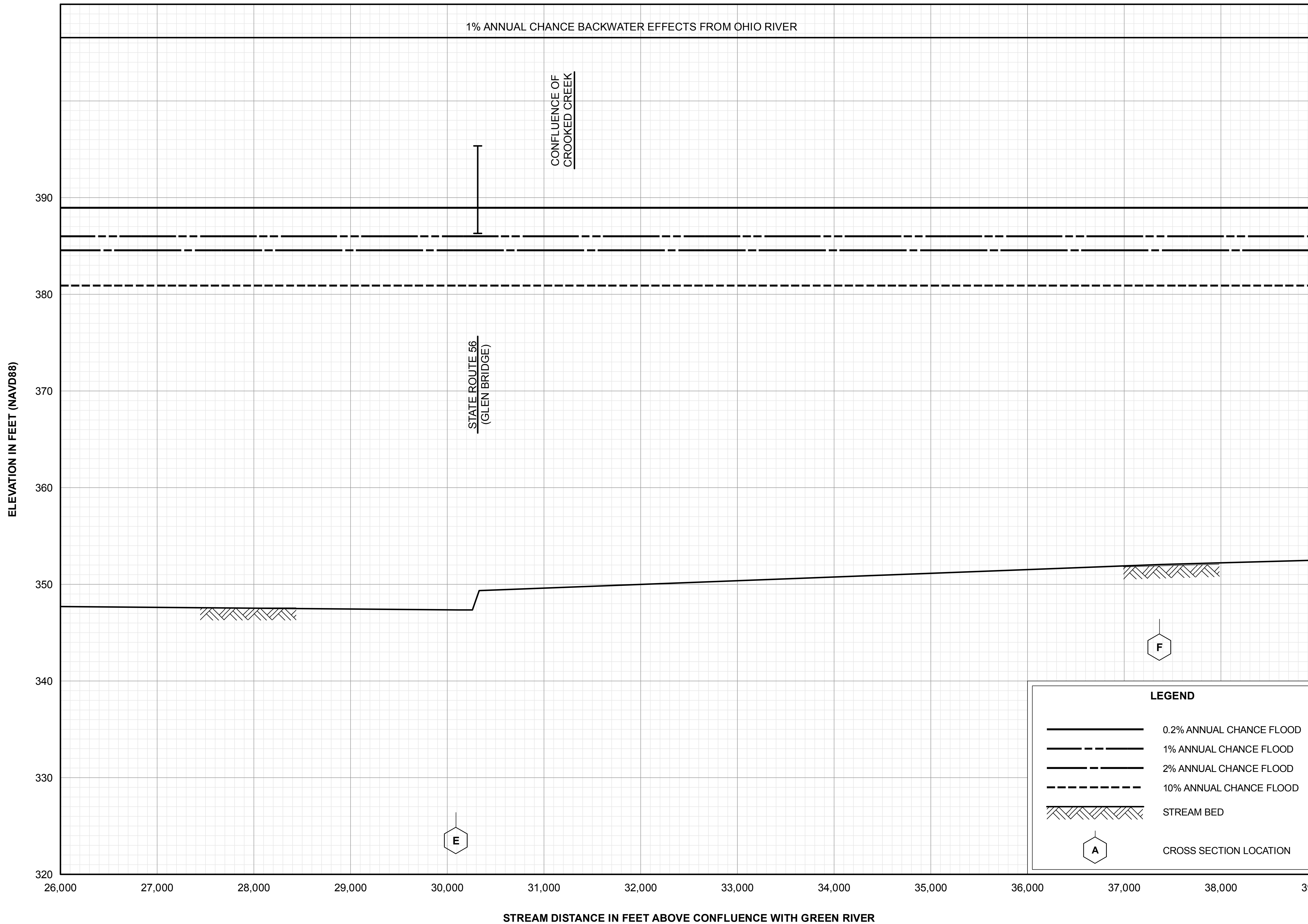
FLOOD PROFILES

PANTHER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS

26P

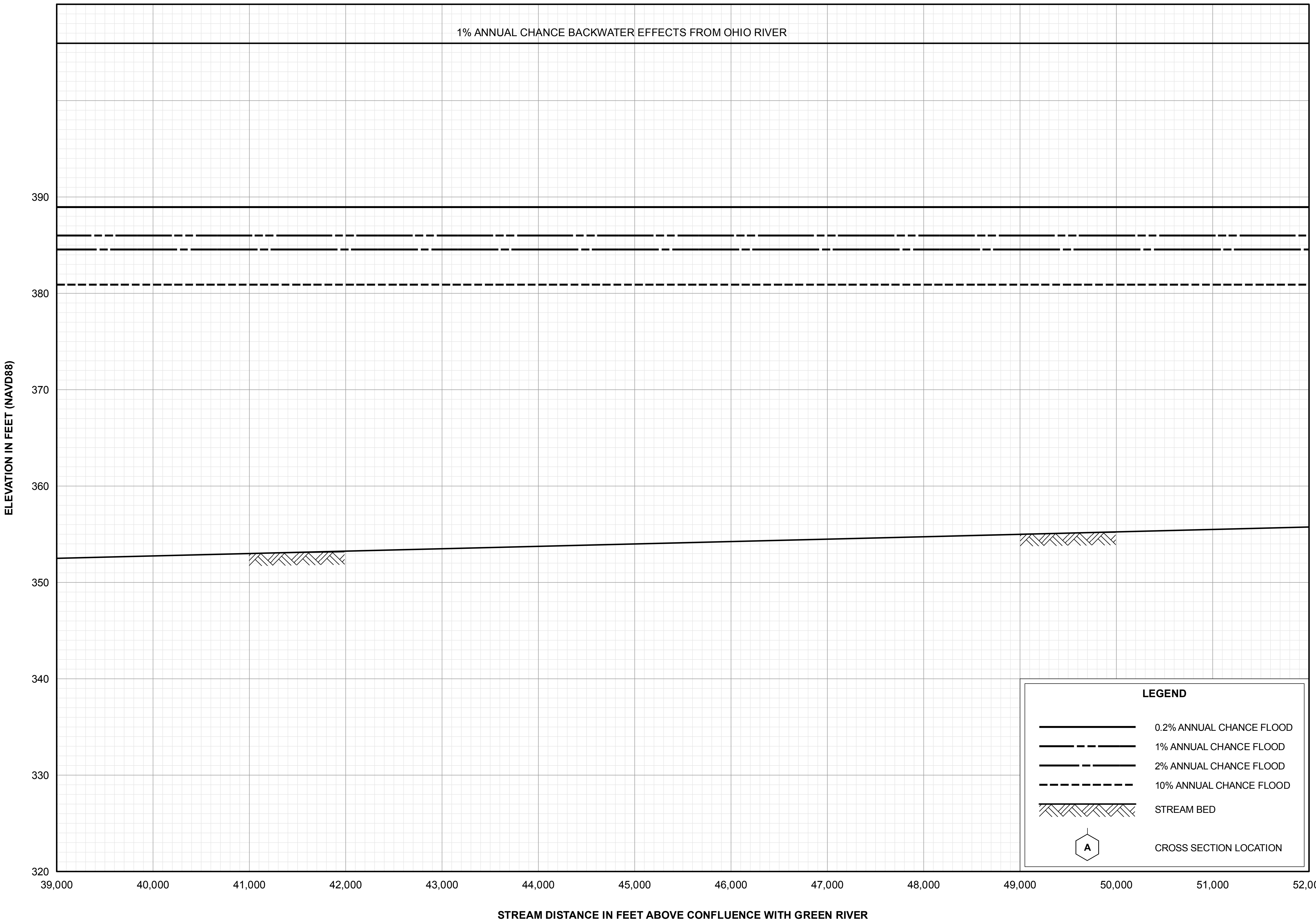


FLOOD PROFILES

PANTHER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS



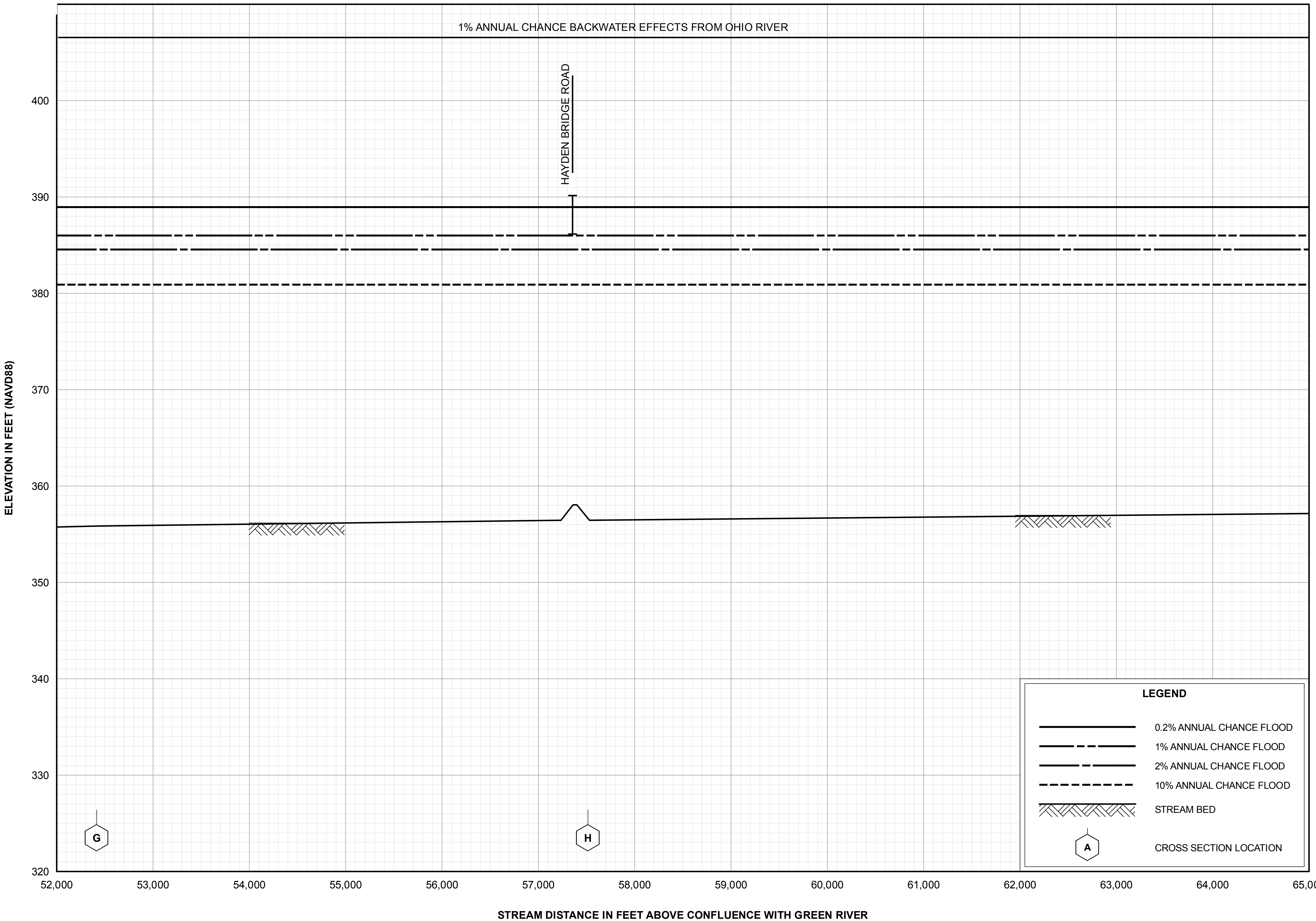
FLOOD PROFILES

PANTHER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY

AND INCORPORATED AREAS



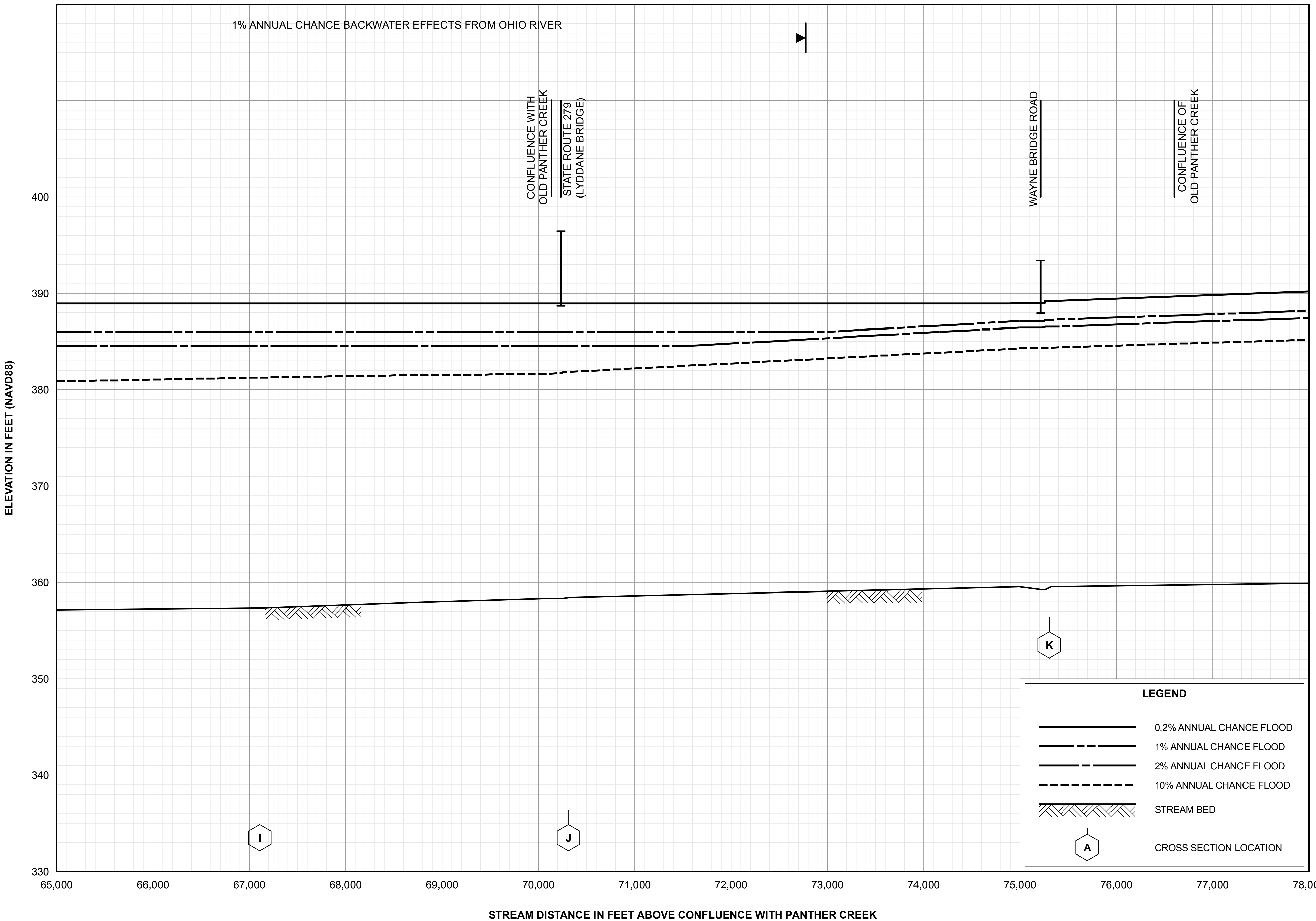
FLOOD PROFILES

PANTHER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY

AND INCORPORATED AREAS

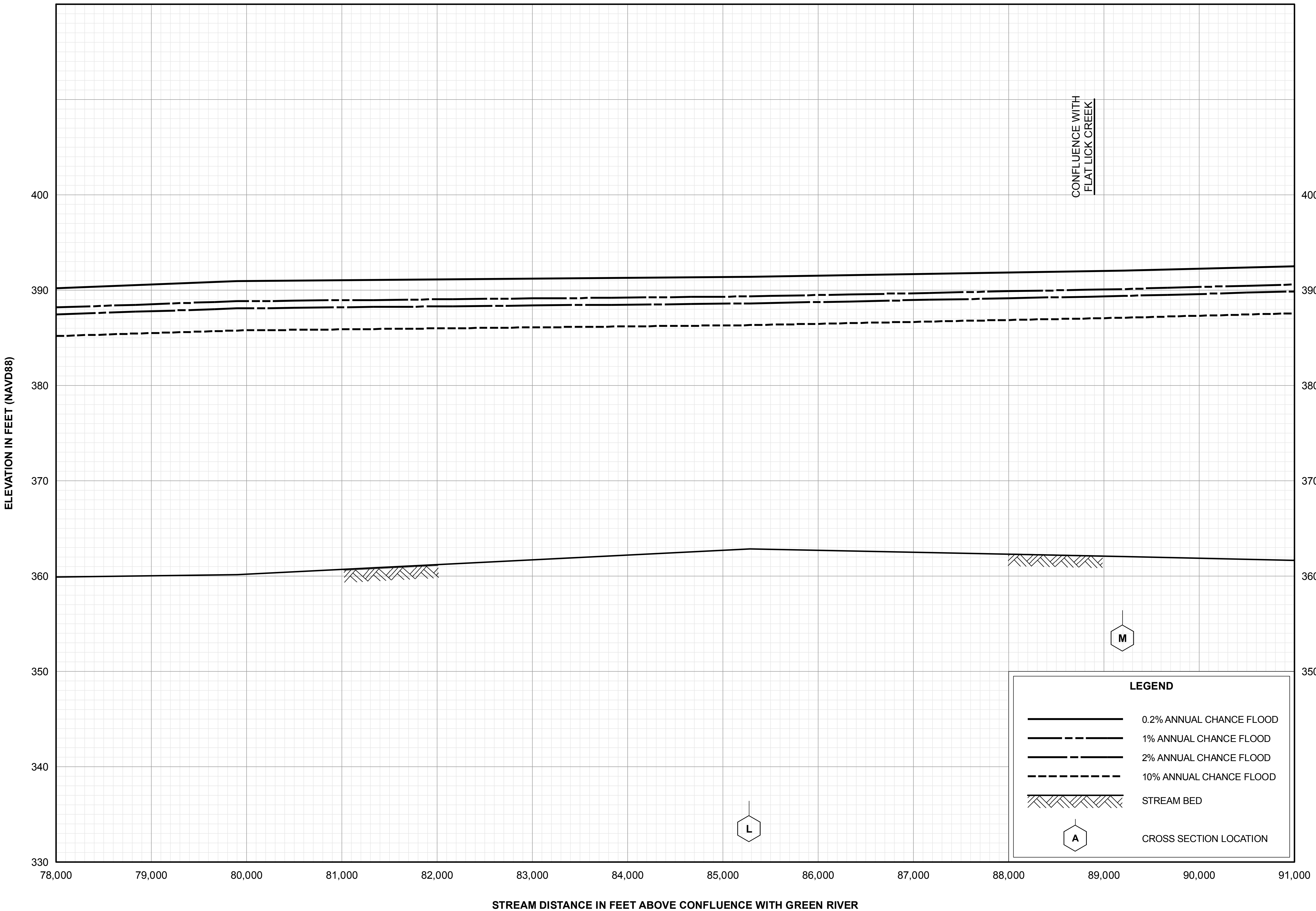


FLOOD PROFILES

PANTHER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS

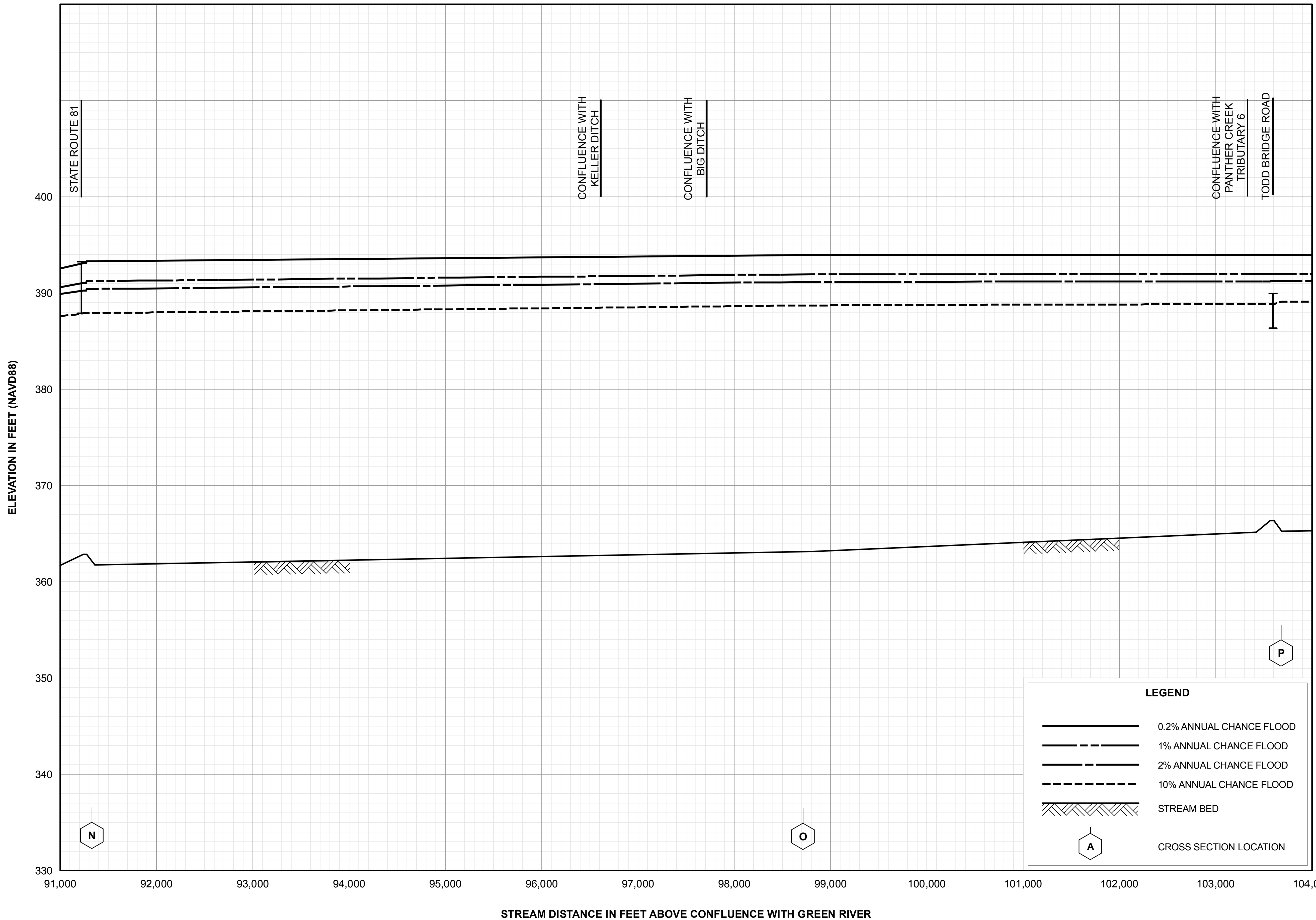


FLOOD PROFILES

PANTHER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS

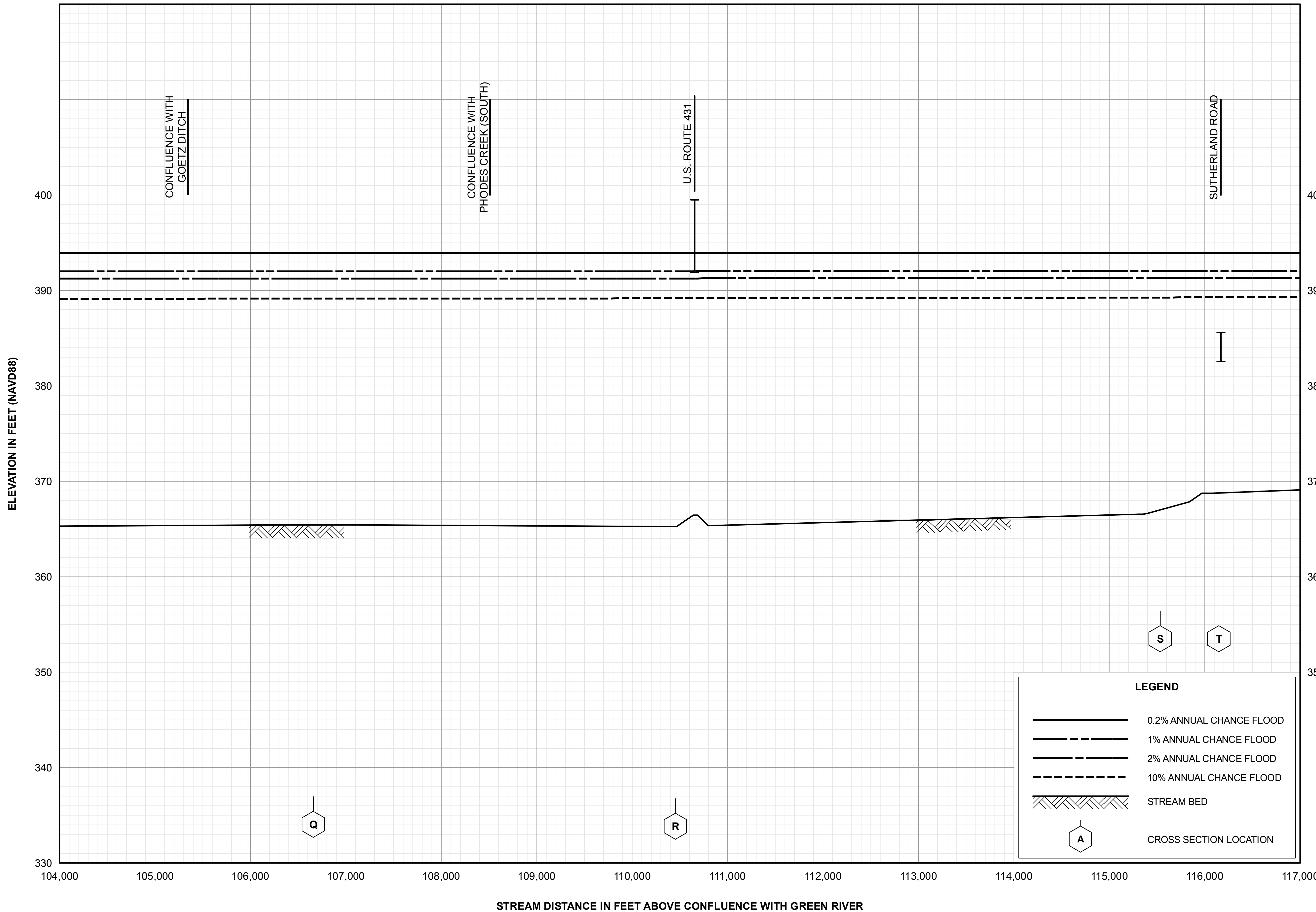


FLOOD PROFILES

PANTHER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS



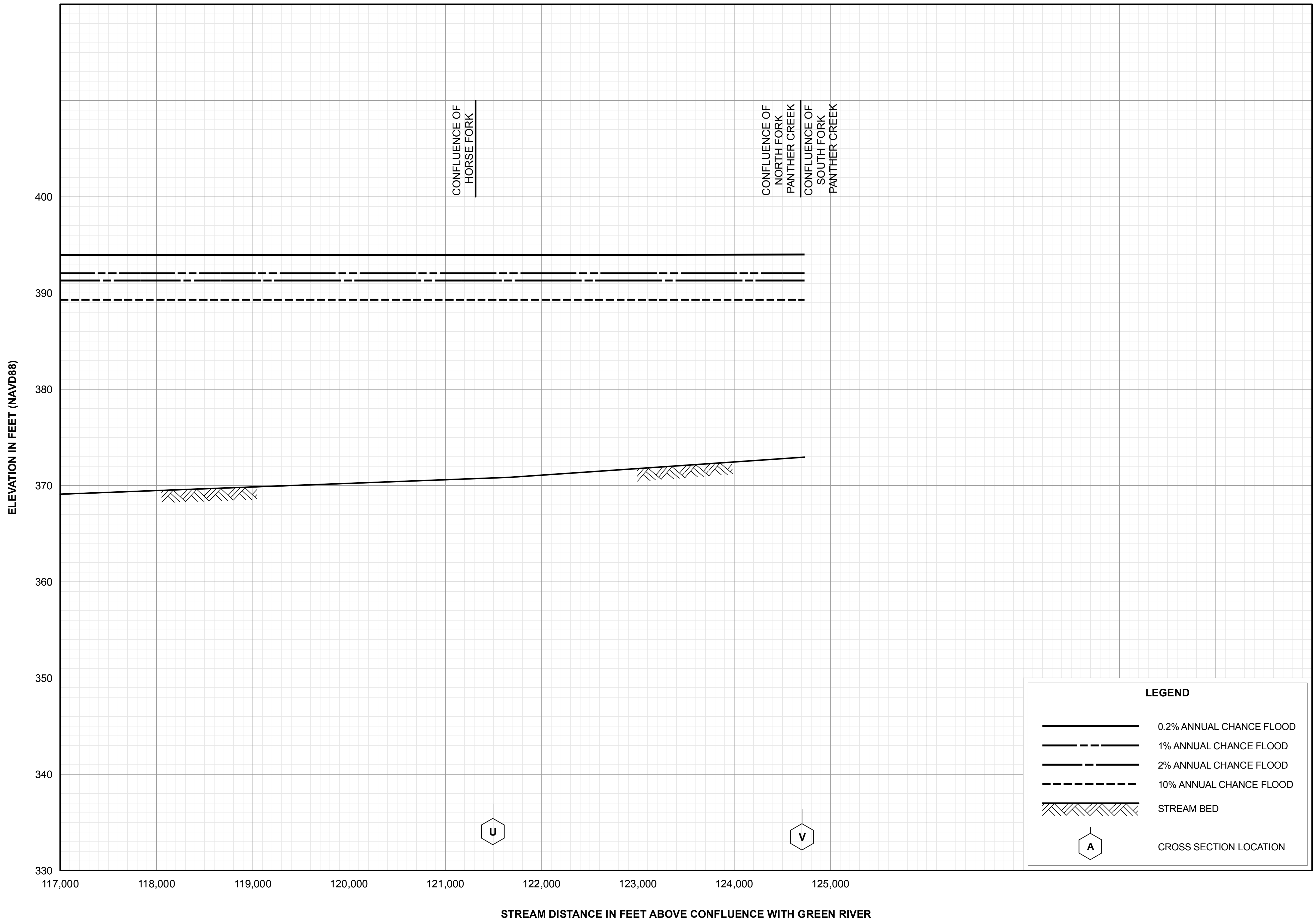
FLOOD PROFILES

PANTHER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS

33P

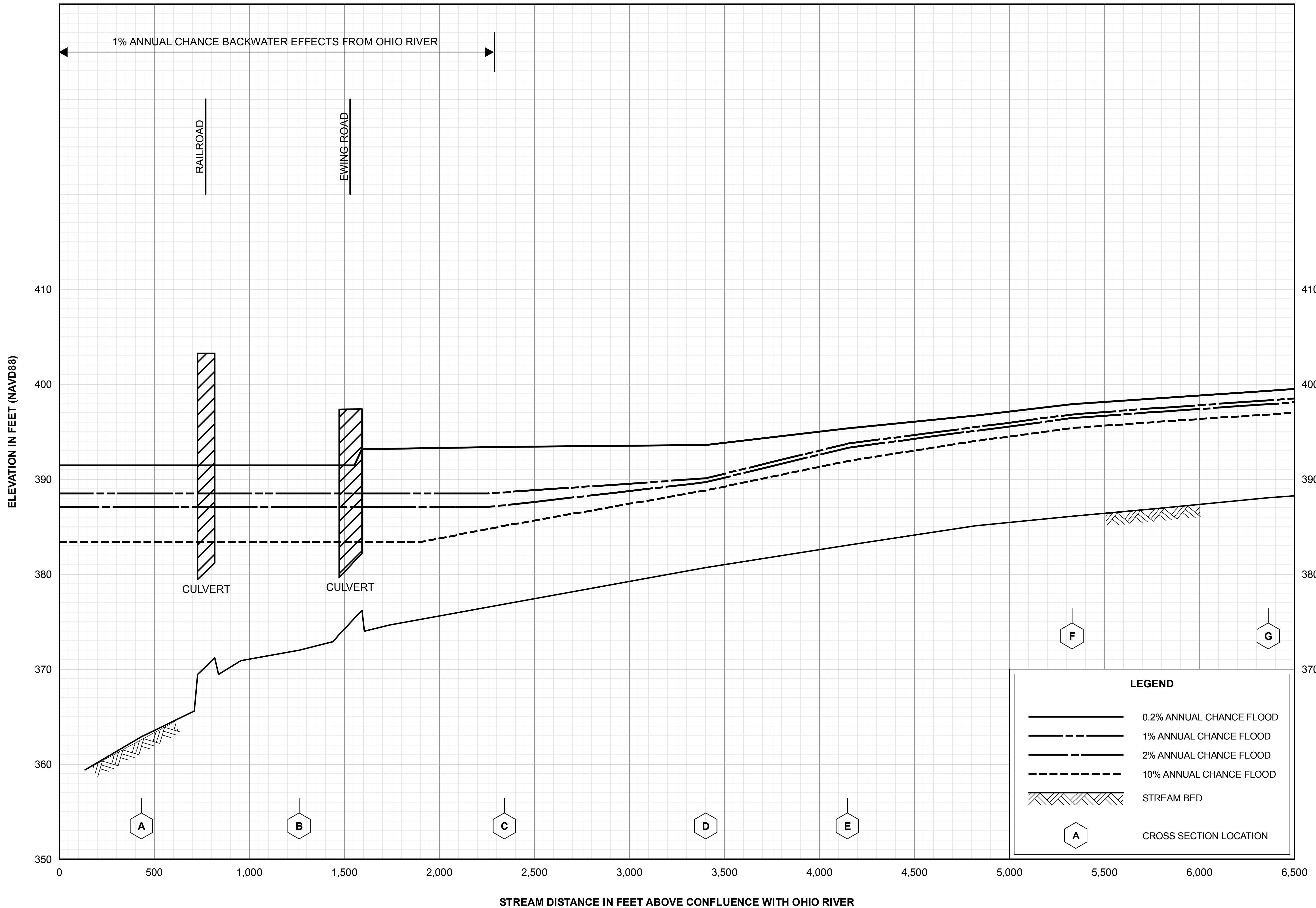


FLOOD PROFILES

PANTHER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS



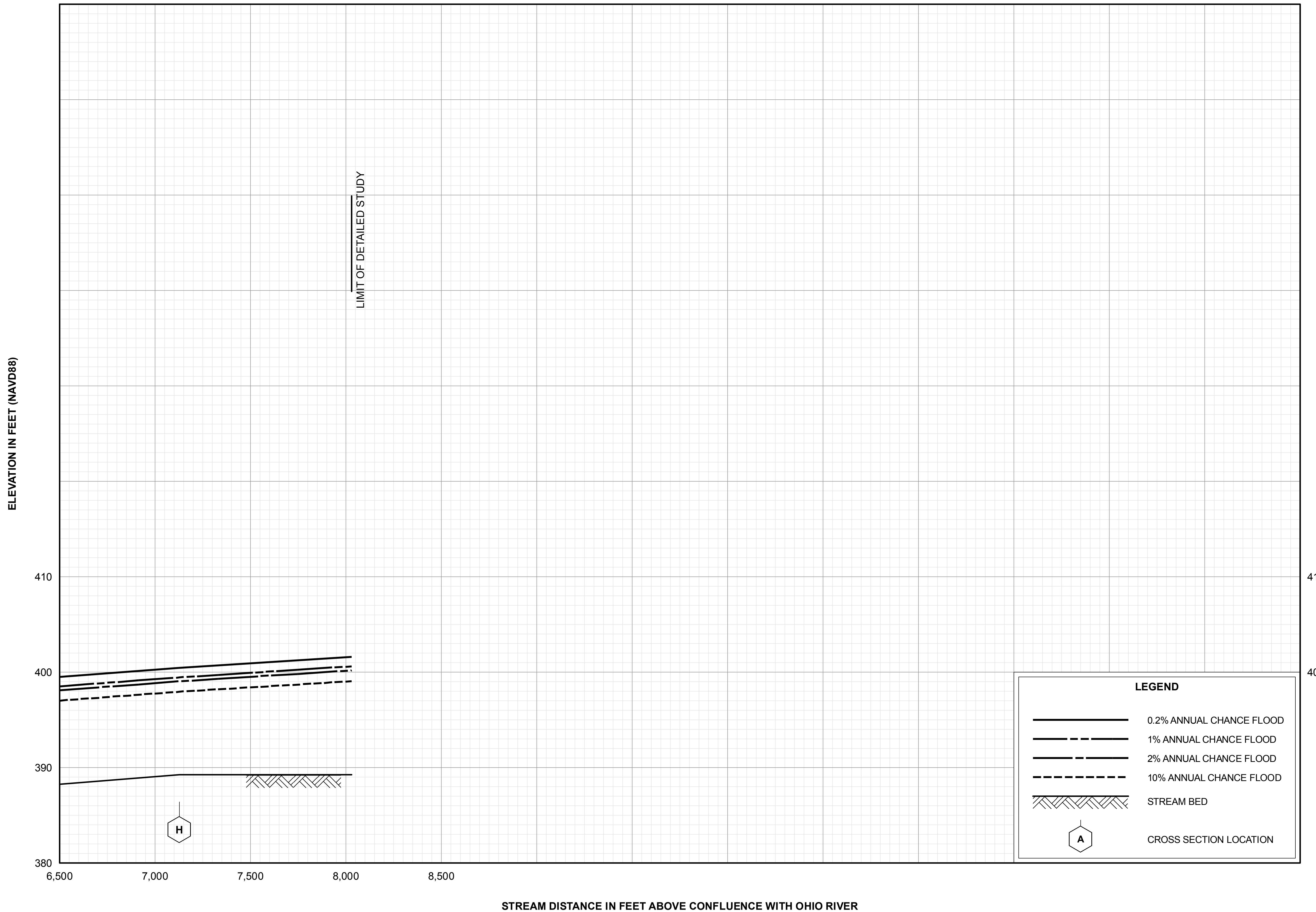
FLOOD PROFILES

PERSIMMON DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY

AND INCORPORATED AREAS



FLOOD PROFILES

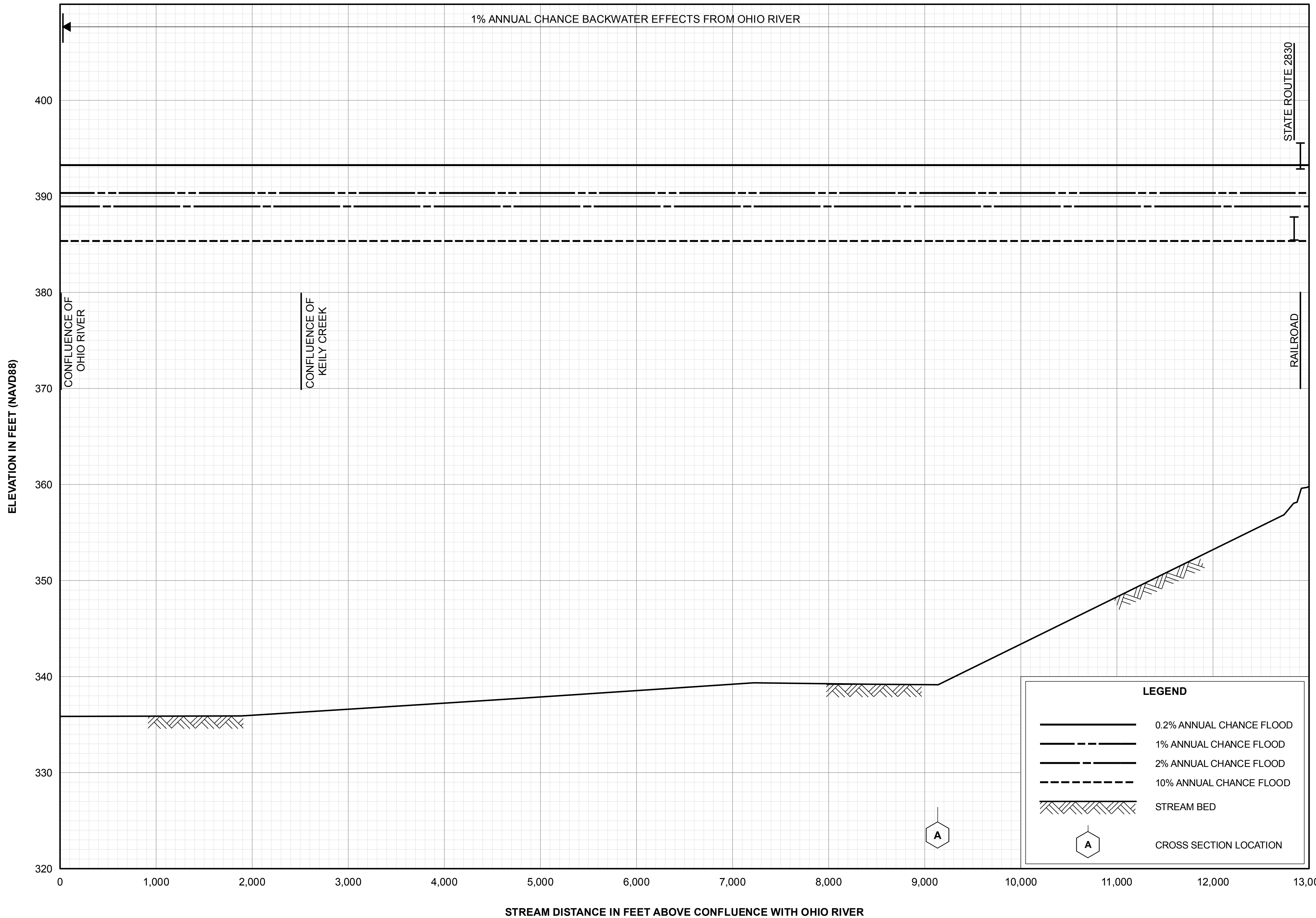
PERSIMMON DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY

AND INCORPORATED AREAS

36P

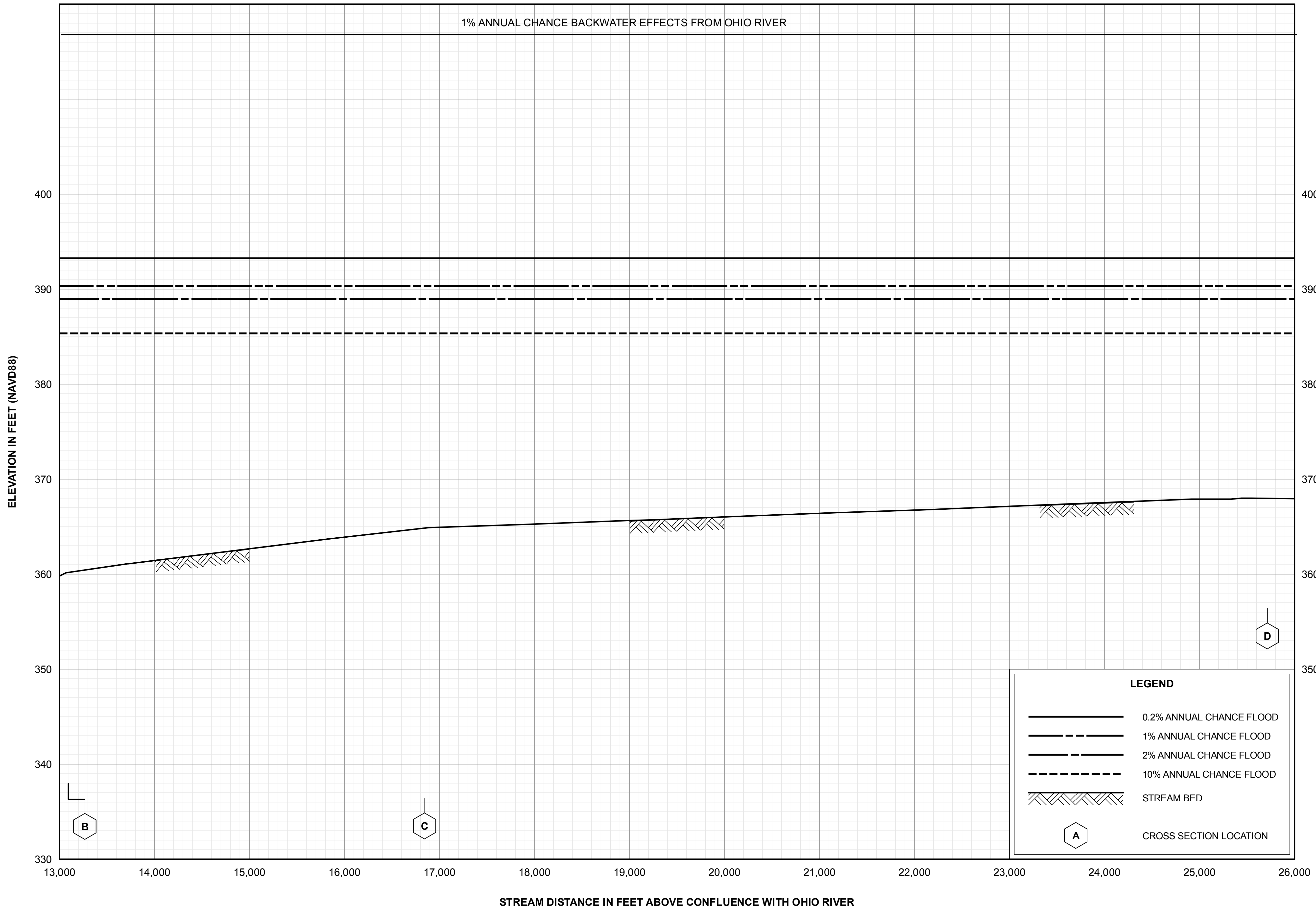


FLOOD PROFILES

PUP CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS



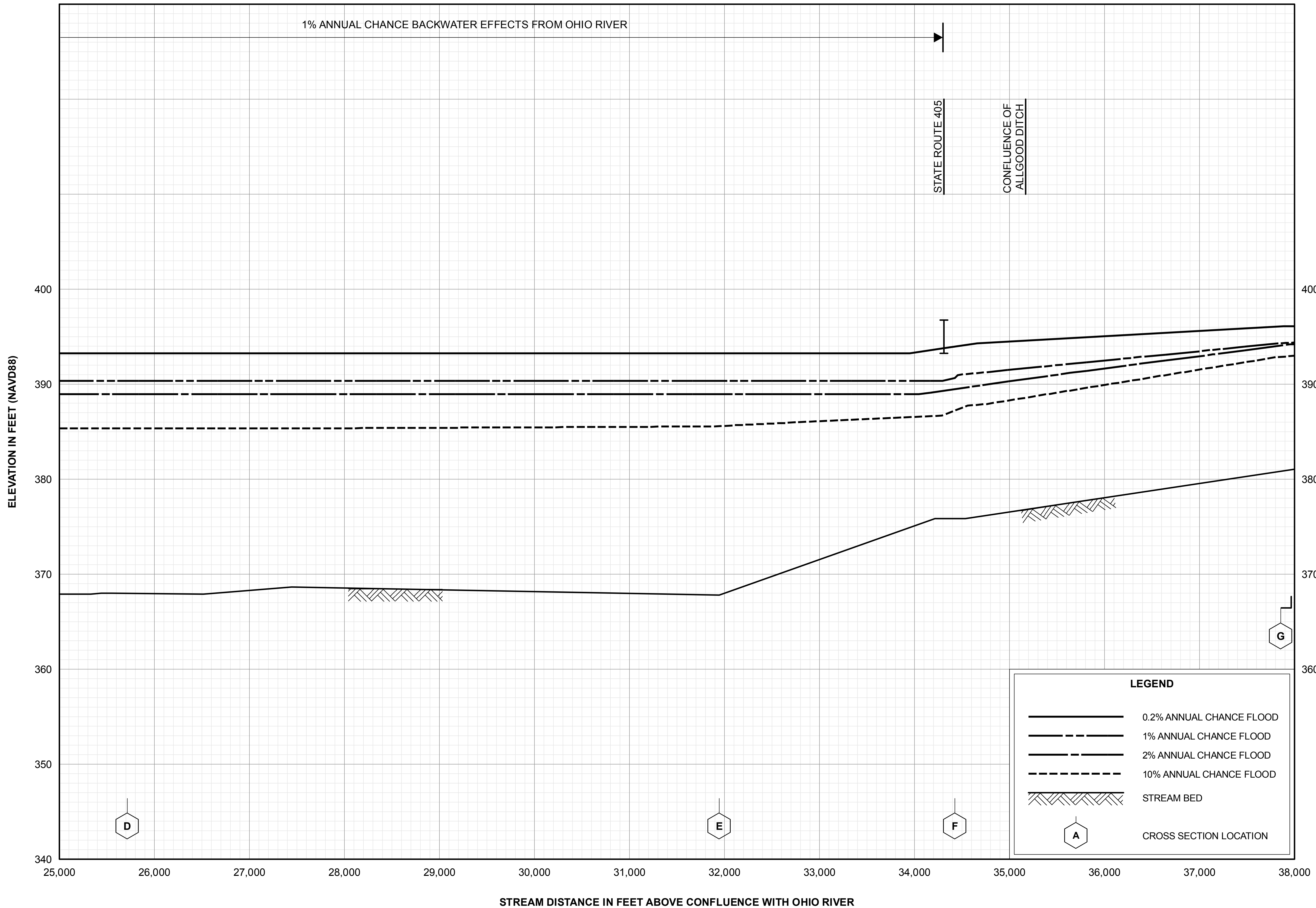
FLOOD PROFILES

PUP CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY

AND INCORPORATED AREAS



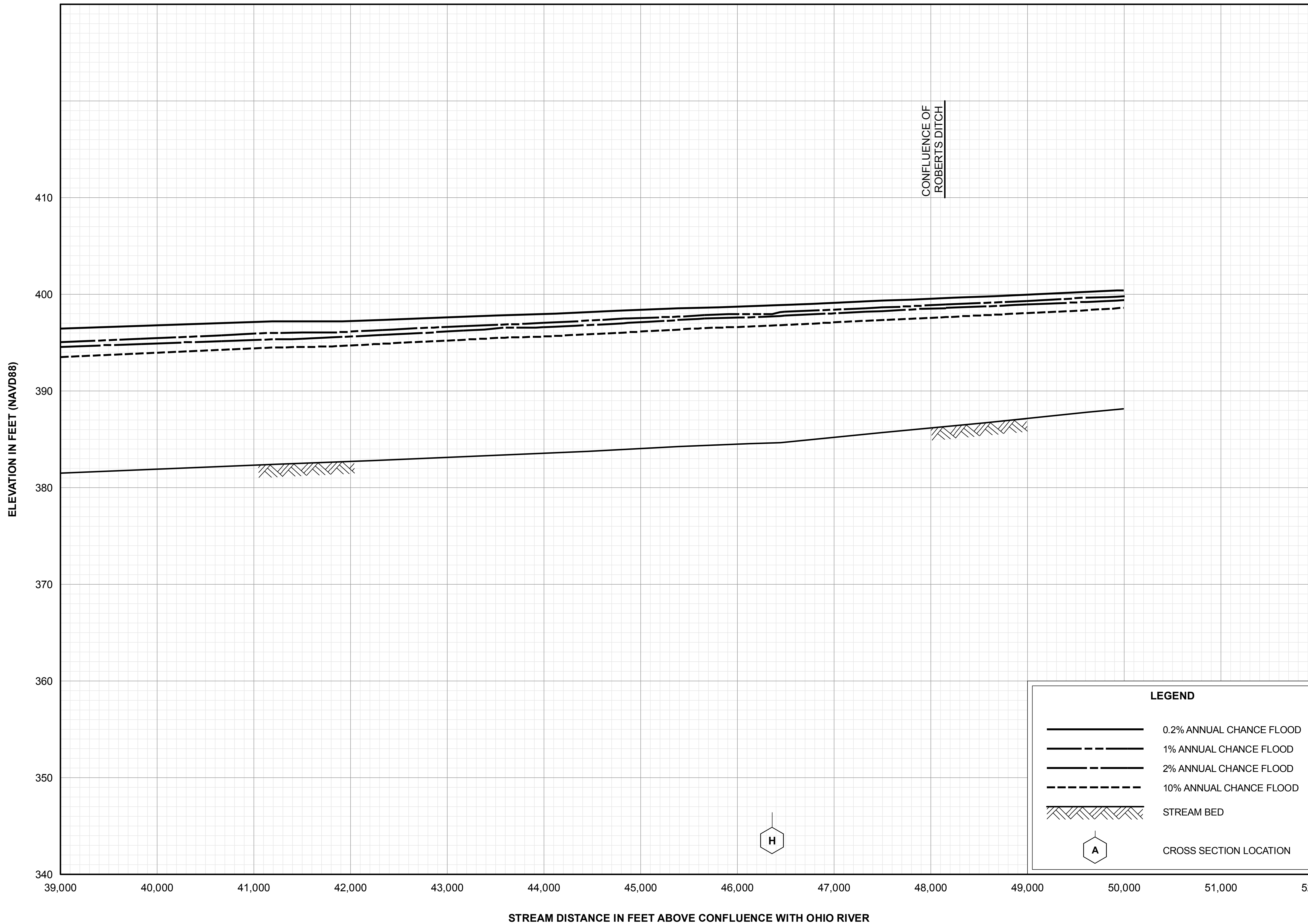
FLOOD PROFILES

PUP CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY

AND INCORPORATED AREAS



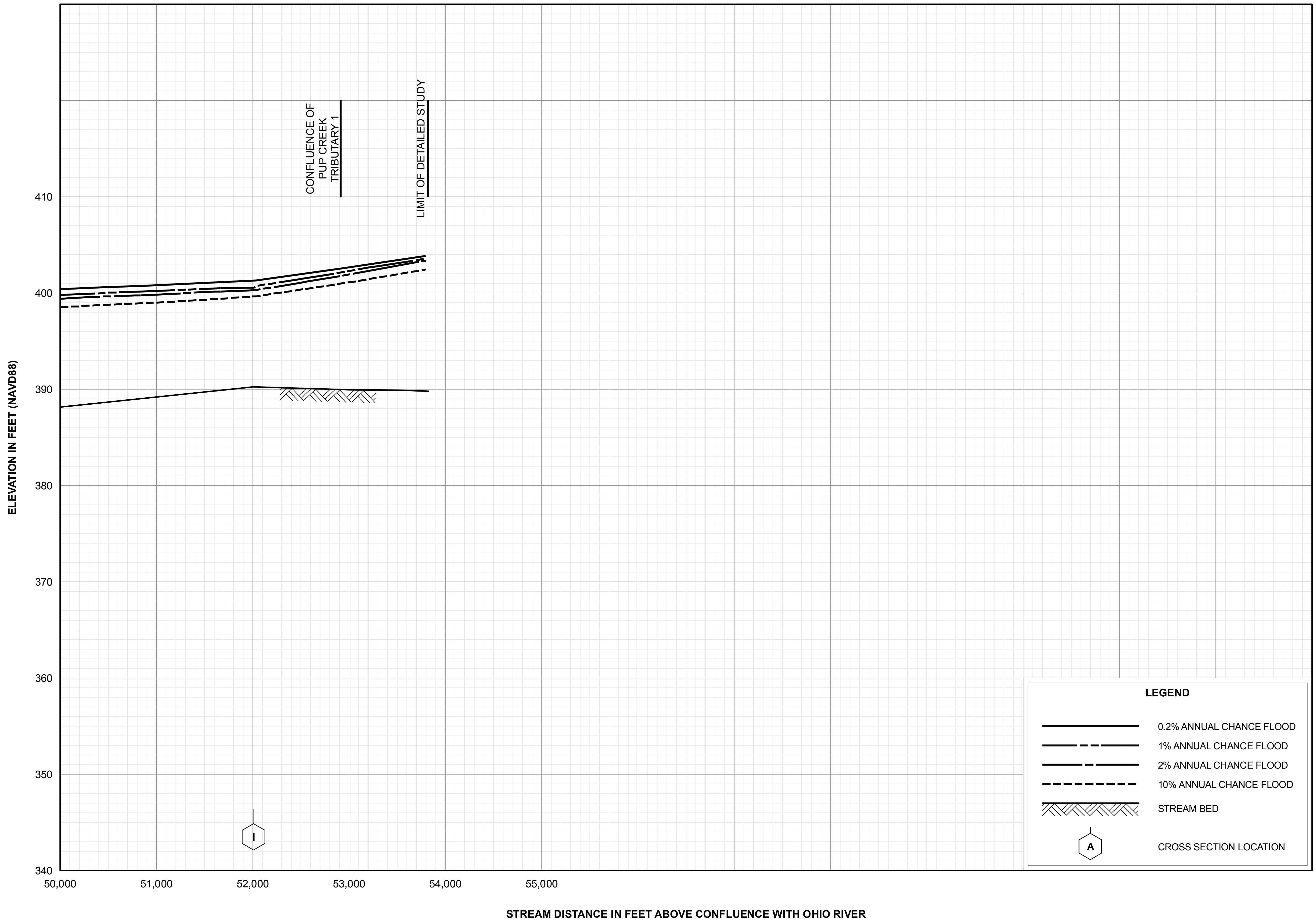
FLOOD PROFILES

PUP CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY

AND INCORPORATED AREAS

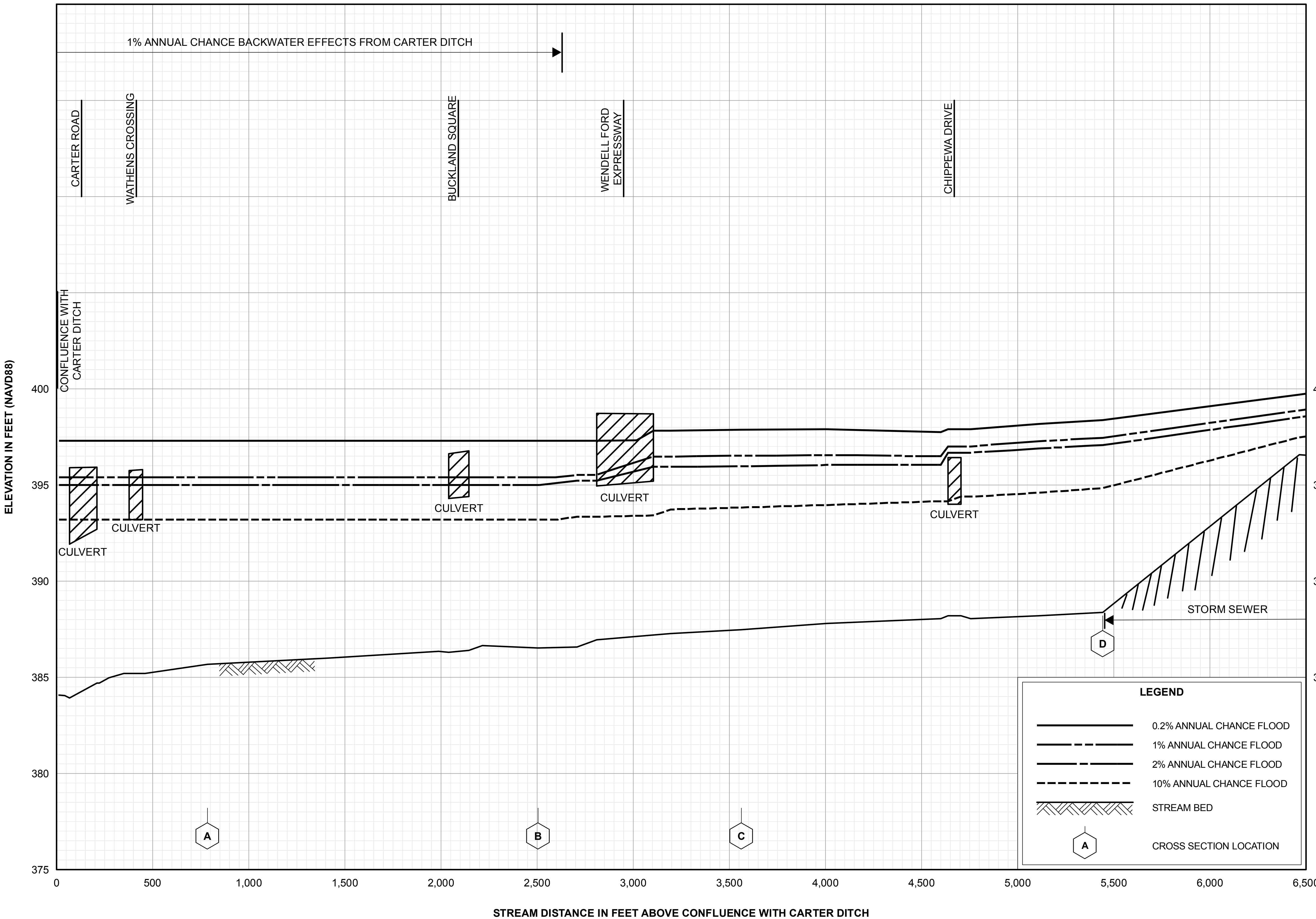


FLOOD PROFILES

PUP CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS



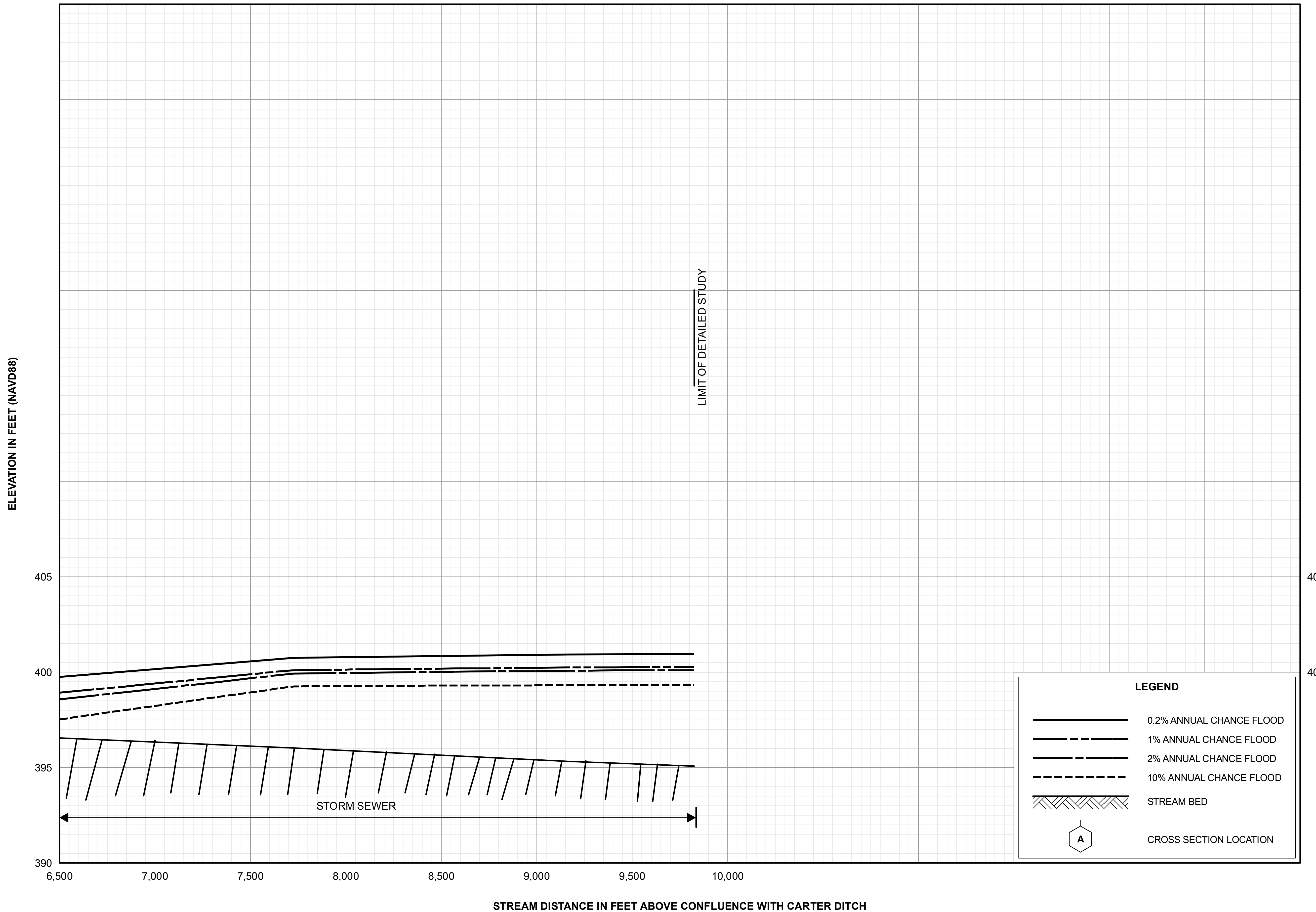
FLOOD PROFILES

SCHERM DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY

AND INCORPORATED AREAS



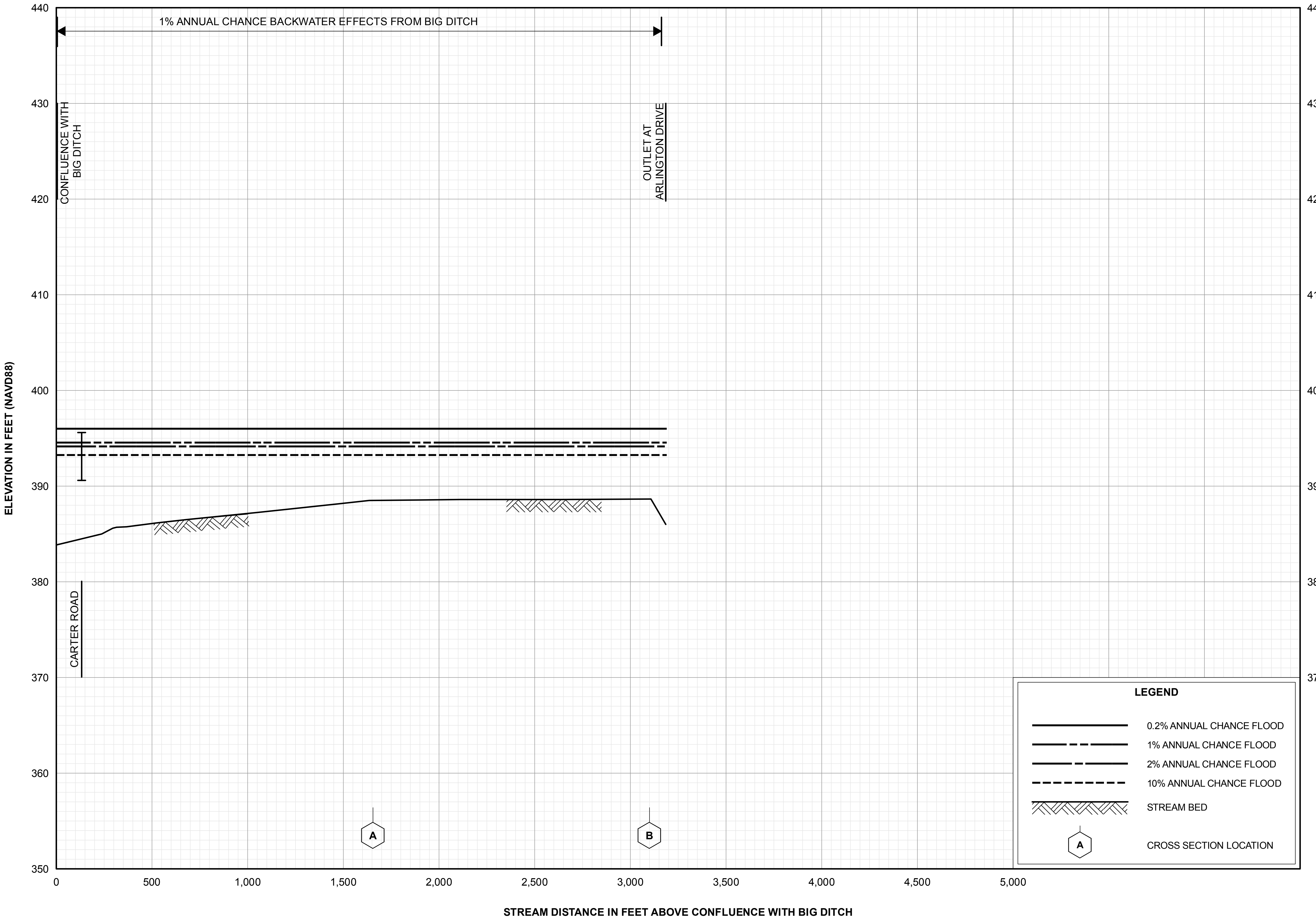
FLOOD PROFILES

SCHERM DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS

43P



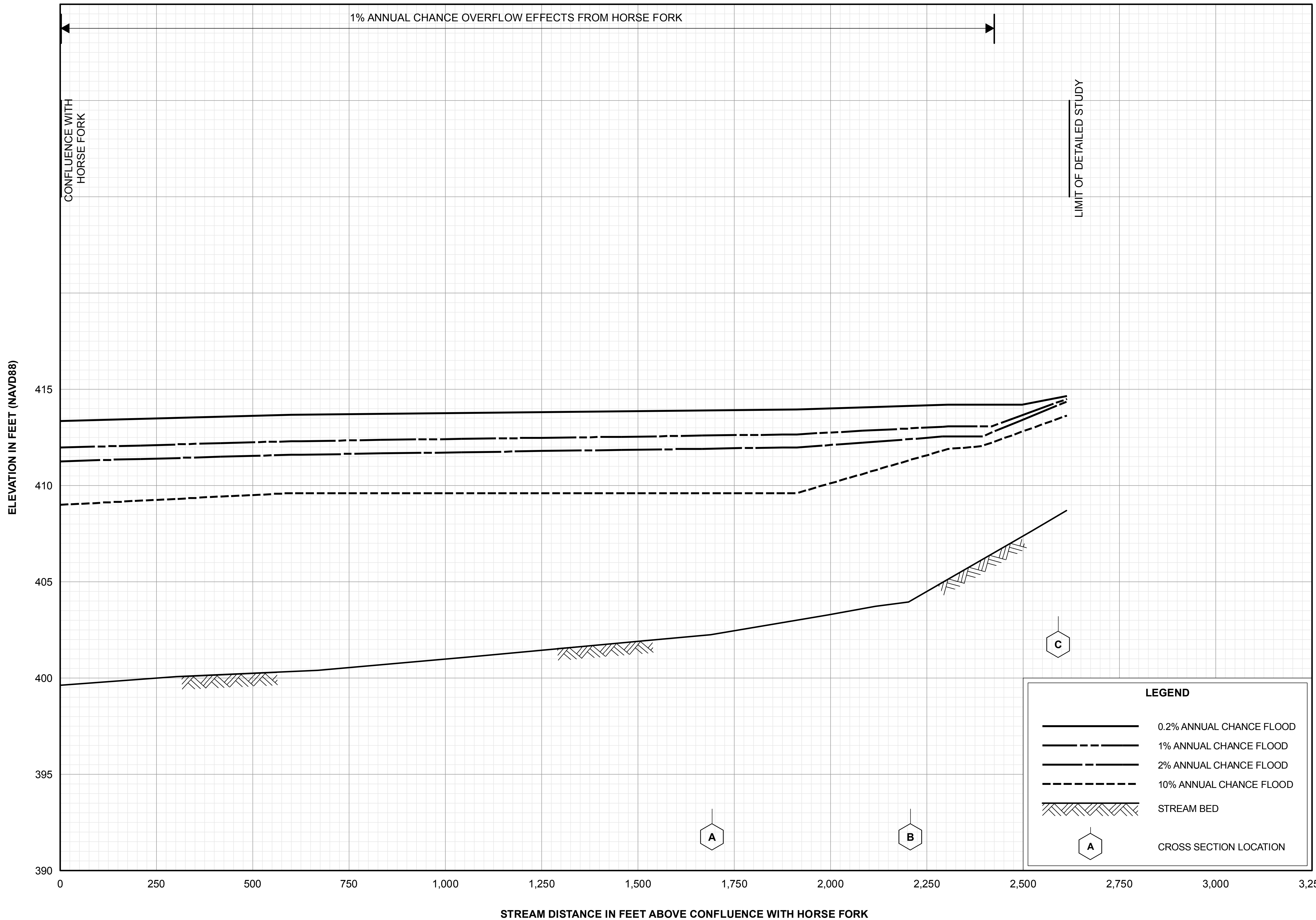
FLOOD PROFILES

TAMARACK DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY

AND INCORPORATED AREAS



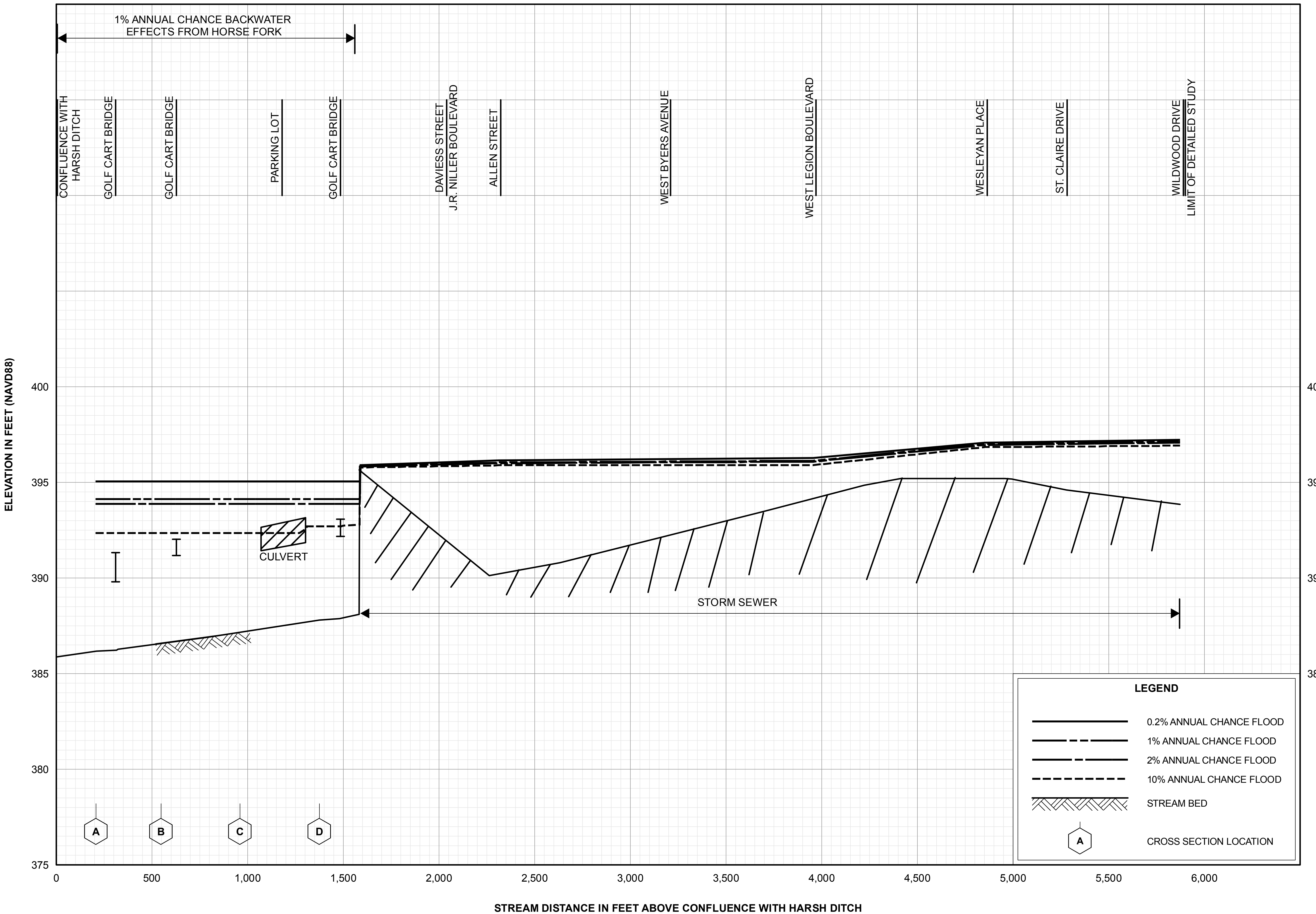
FLOOD PROFILES

UNNAMED TRIBUTARY 46 HORSE FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY

AND INCORPORATED AREAS



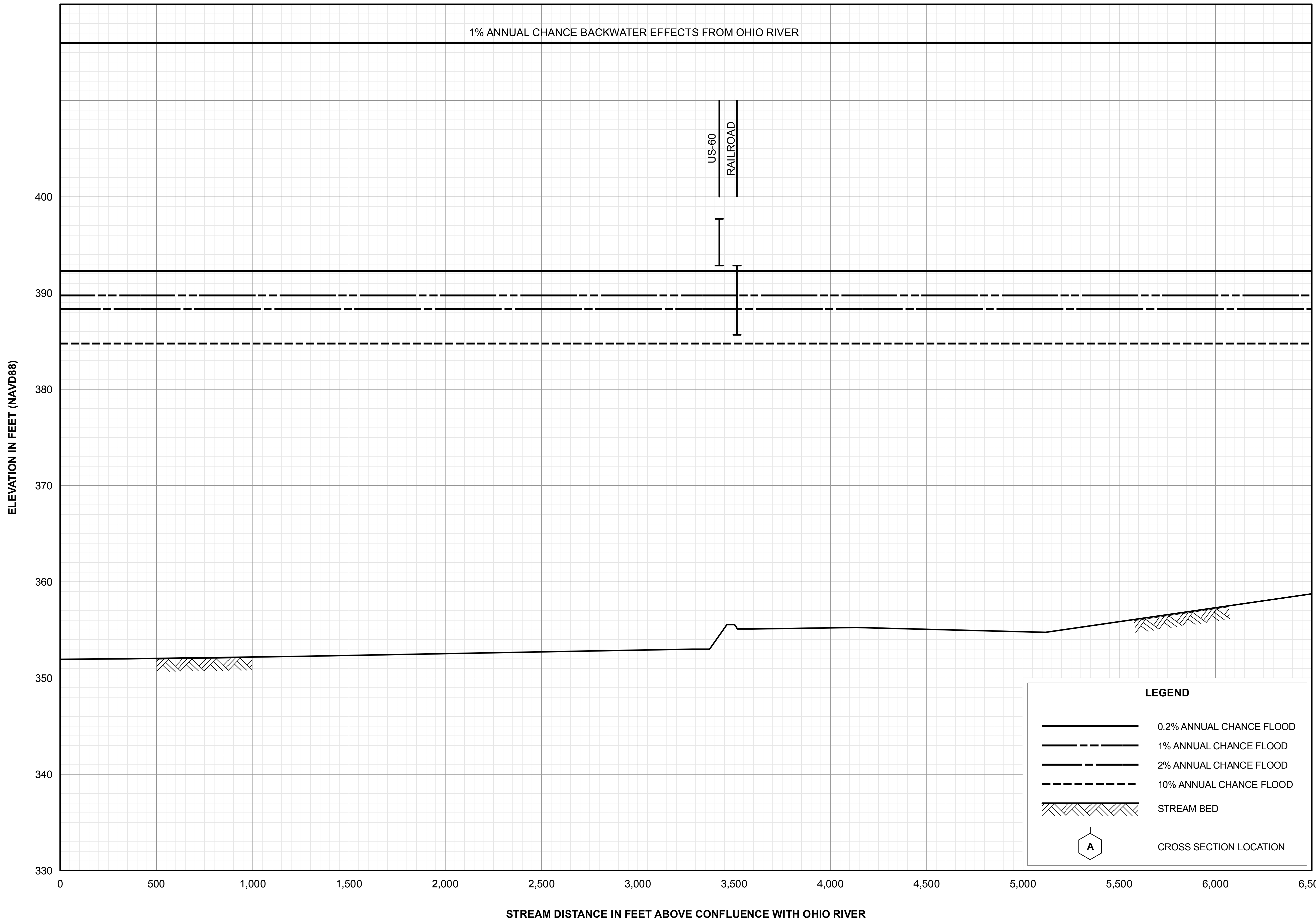
FLOOD PROFILES

WEST TRIBUTARY HARSH DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY

AND INCORPORATED AREAS



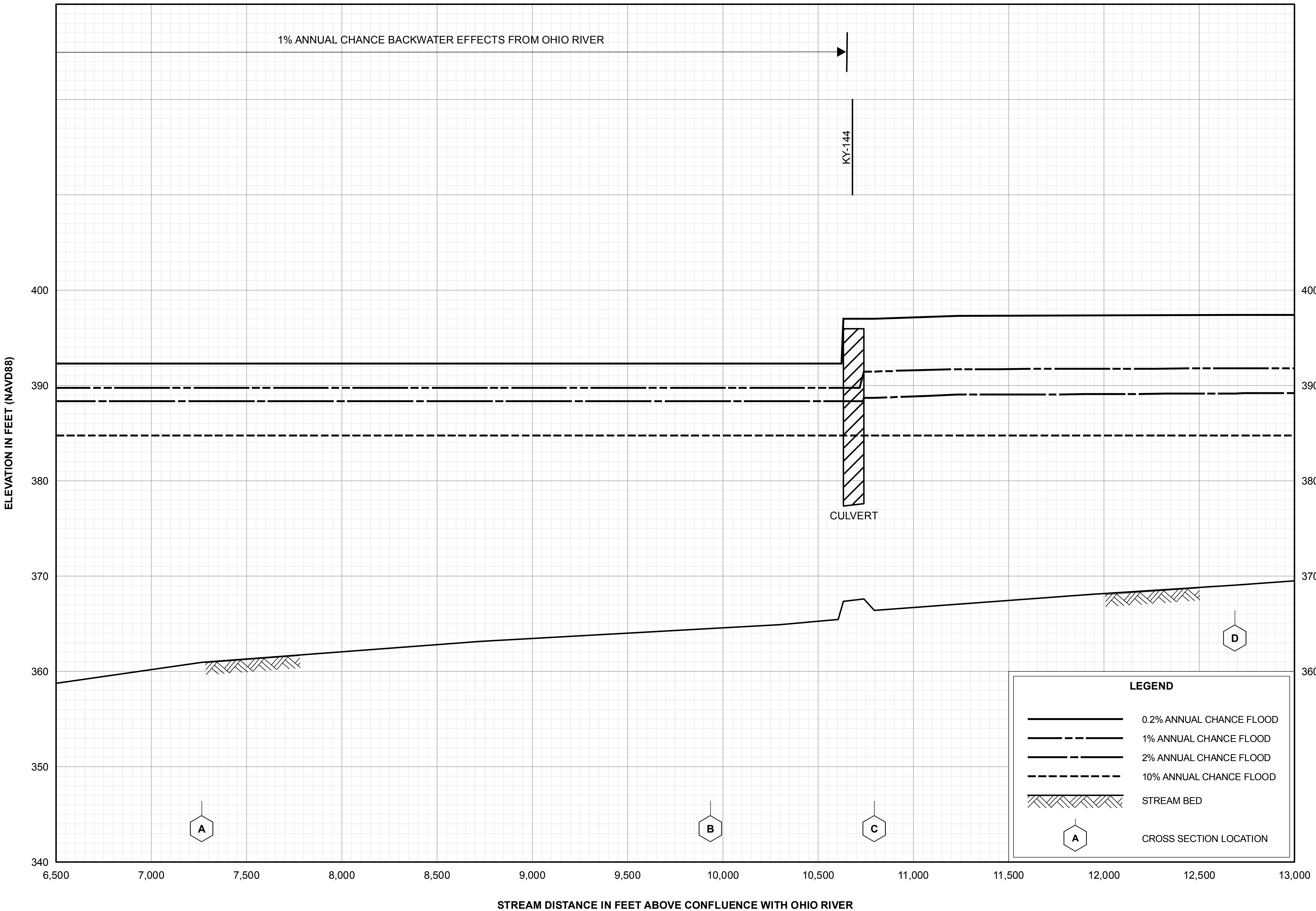
FLOOD PROFILES

YELLOW CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS

47P



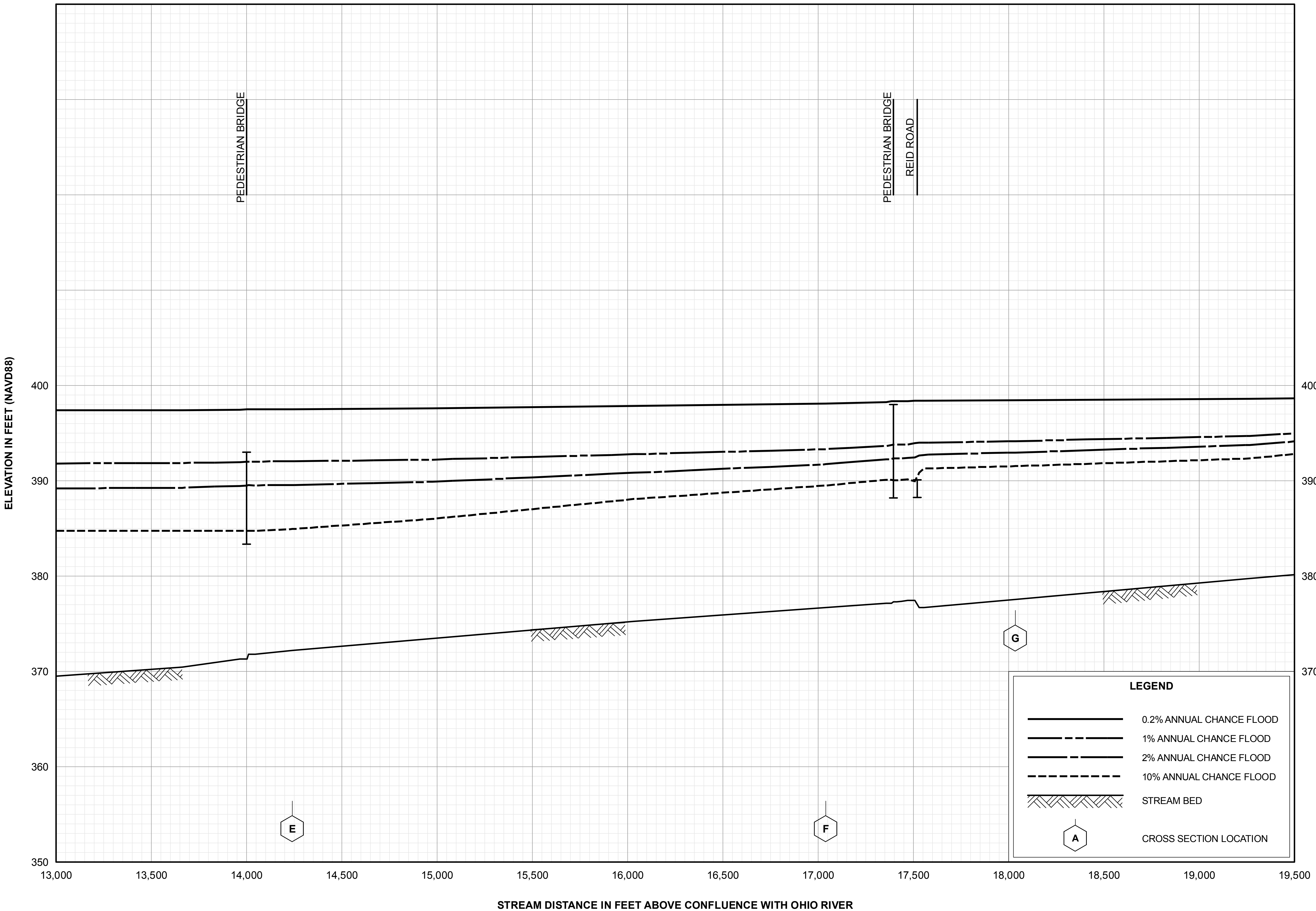
FLOOD PROFILES

YELLOW CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
AND INCORPORATED AREAS

48P



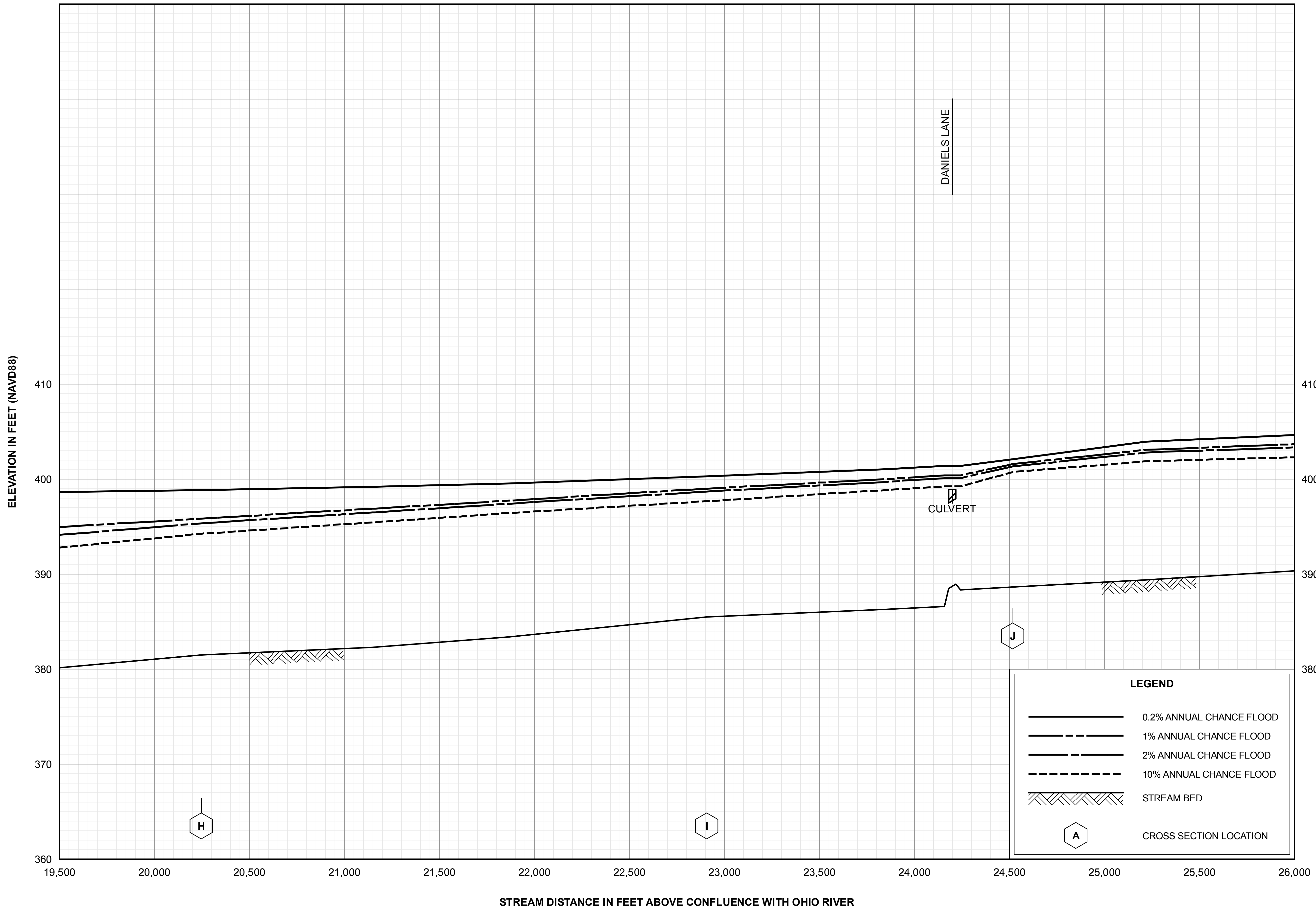
FLOOD PROFILES

YELLOW CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY, KY

AND INCORPORATED AREAS



FLOOD PROFILES

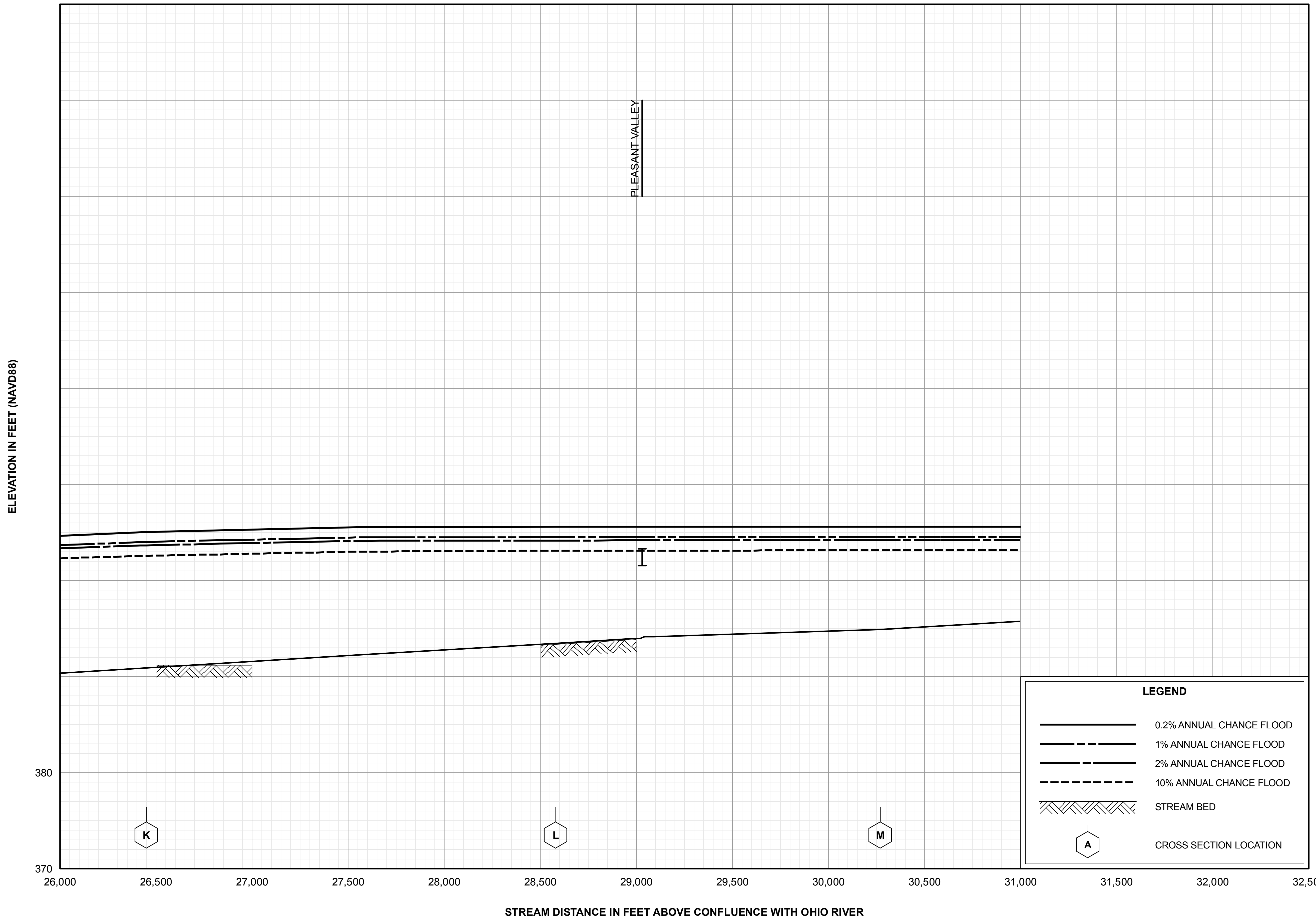
YELLOW CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY

DAVIESS COUNTY

50P



FLOOD PROFILES

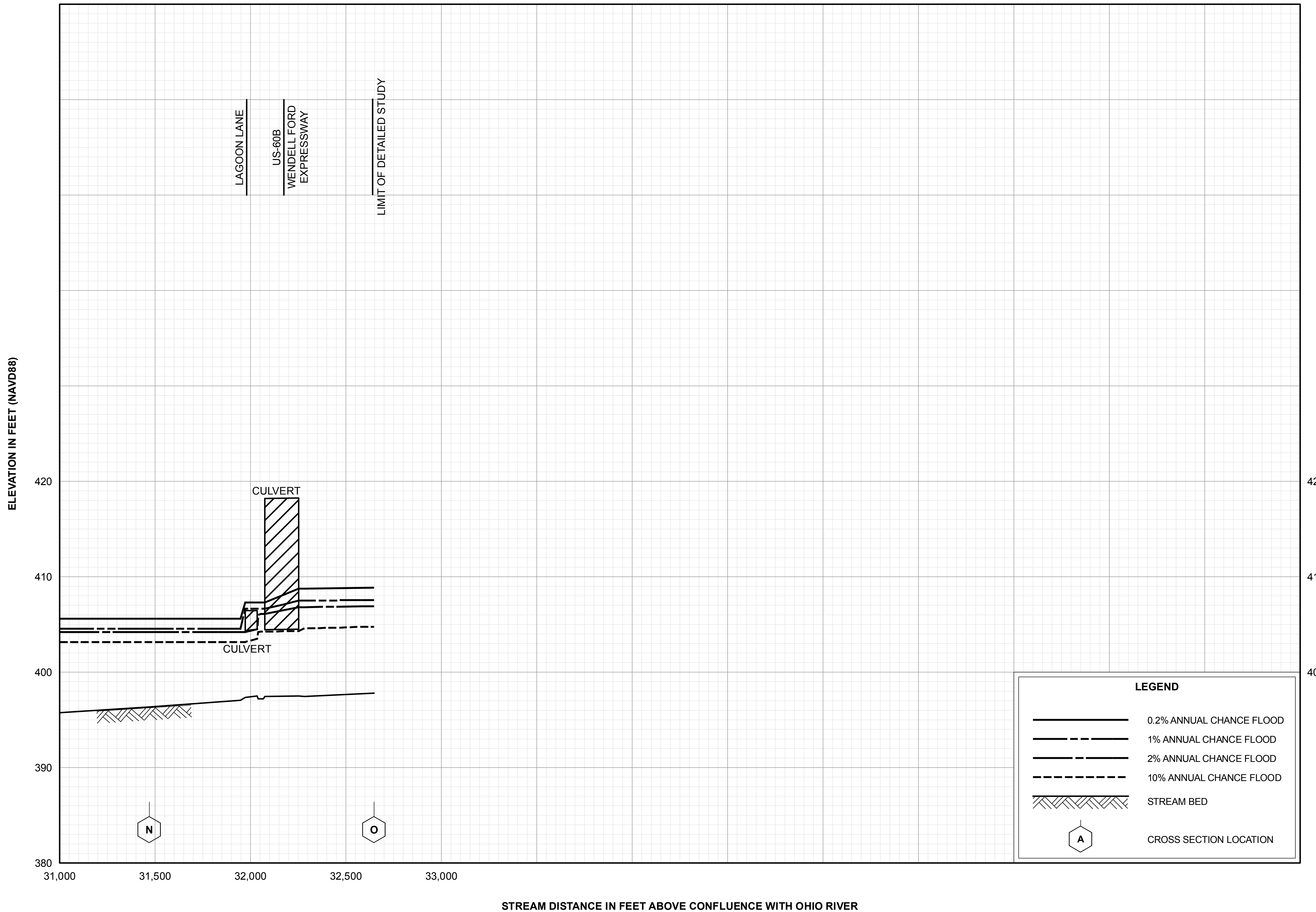
YELLOW CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY

DAVIESS COUNTY

51P



FLOOD PROFILES

YELLOW CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DAVIESS COUNTY, KY
DAVIESS COUNTY