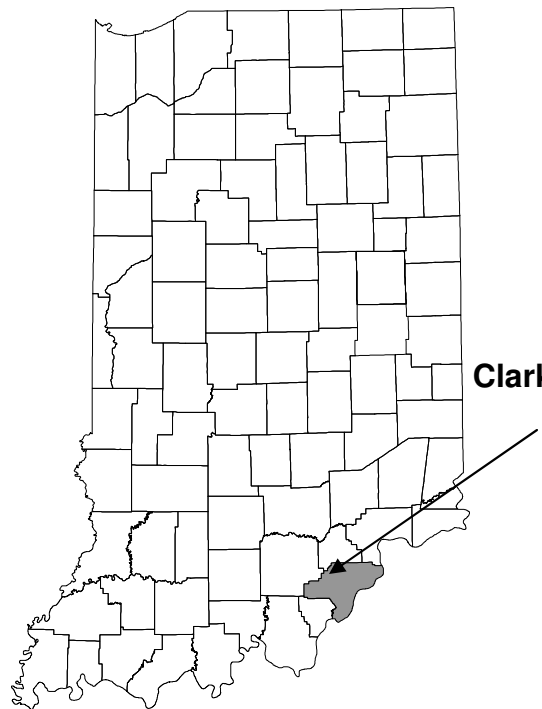


# FLOOD INSURANCE STUDY



## CLARK COUNTY, INDIANA AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
BORDEN/ NEW PROVIDENCE, TOWN OF	180464
CHARLESTOWN, CITY OF	180025
CLARK COUNTY, UNINCORPORATED AREAS	180426
CLARKSVILLE, TOWN OF	180026
JEFFERSONVILLE, CITY OF	180027
SELLERSBURG, TOWN OF	180028
UTICA, TOWN OF	180487



Clark County

PRELIMINARY:



Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER  
18019CV000A

## **NOTICE TO FLOOD INSURANCE STUDY USERS**

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

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

**Effective Date:**

**Revised Dates:**

## TABLE OF CONTENTS

	<b>Page</b>
<b>1.0 <u>INTRODUCTION</u></b>	1
1.1 Purpose of Study	1
1.2 Authority and Acknowledgments	1
1.3 Coordination	2
<b>2.0 <u>AREA STUDIED</u></b>	3
2.1 Scope of Study	3
2.2 Community Description	5
2.3 Principal Flood Problems	5
2.4 Flood Protection Measures	6
<b>3.0 <u>ENGINEERING METHODS</u></b>	6
3.1 Hydrologic Analyses	7
3.2 Hydraulic Analyses	8
3.3 Vertical Datum	9
<b>4.0 <u>FLOODPLAIN MANAGEMENT APPLICATIONS</u></b>	10
4.1 Floodplain Boundaries	10
4.2 Floodways	11
<b>5.0 <u>INSURANCE APPLICATION</u></b>	14
<b>6.0 <u>FLOOD INSURANCE RATE MAP</u></b>	16
<b>7.0 <u>OTHER STUDIES</u></b>	18
<b>8.0 <u>LOCATION OF DATA</u></b>	18
<b>9.0 <u>BIBLIOGRAPHY AND REFERENCES</u></b>	18
 <b><u>FIGURES</u></b>  	
Figure 1 - Floodway Schematic	12
 <b><u>TABLES</u></b>  	
Table 1 – CCO Meeting Dates for Pre-Countywide FIS	3
Table 2 – Streams Studied by Detailed Methods	4
Table 3 – Streams Studied by Approximate Methods	4
Table 4 – Scope of Work	4
Table 5 - Summary of Discharges	7

<b>Table 6 – Channel and Overbank Roughness Factors</b>	9
<b>Table 7 – Floodway Data</b>	13
<b>Table 8 – Community Map History</b>	17

EXHIBITS

Exhibit 1 - Flood Profiles	
Greenbriar Tributary	Panel 1P
Hamburg Pike Tributary	Panel 2P
Lancassange Creek	Panels 3P-4P
Lick Run	Panels 5P-7P
Mill Creek	Panel 8P
Muddy Fork	Panels 9P-12P
Ohio River	Panels 13P-15P
Pleasant Run	Panel 16
Plum Run	Panels 17P-20P
Silver Creek	Panels 21P-26P
Woodland Court Tributary	Panel 27P
Exhibit 2 - Flood Insurance Rate Map Index	

**Flood Insurance Rate Map**

**FLOOD INSURANCE STUDY**  
**CLARK COUNTY, INDIANA AND INCORPORATED AREAS**

**1.0 INTRODUCTION**

**1.1 Purpose of Study**

This Flood Insurance Study (FIS) revises and supercedes the FIS reports and Flood Insurance Rate Maps (FIRMs) in the geographic area of Clark County, Indiana, including the Cities of Charlestown and Jeffersonville, the Towns of Borden, Clarksville, Sellersburg and Utica, and the unincorporated areas of Clark County (hereinafter referred to collectively as Clark County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. This information will also be used by Clark County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP) and by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

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

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

**1.2 Authority and Acknowledgments**

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

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

- Town of Borden: There are no previous FIS reports completed for the Town of Borden/ New Providence.
- City of Charleston: The previously effective FIS for the City of Charleston is dated November 5, 1986. The hydrologic and hydraulic analyses for this study were performed by the U.S. Army Corps of Engineers, Louisville District, Louisville, Kentucky, for the Federal Insurance Administration, under Inter-Agency Agreement No. IAA-H-7-76. This study was completed in August 1977.
- Town of Clarksville: The previously effective FIS for the Town of Clarksville is dated February 3, 1981. The hydrologic and hydraulic analyses for this study were performed by the U.S. Army Corps of Engineers, Louisville District, Louisville, Kentucky, for the Federal Insurance Administration, under Inter-Agency Agreement No. IAA-H-15-72. This study was completed in September 1979.
- Clark County  
(Unincorporated Areas): The previously effective FIS for the County of Clark is dated March 1980. Hydrologic and hydraulic analyses for this study were performed by Cole Associates, Inc. for the Federal Insurance Administration, under Contract No. H-4023. This study was completed on August 28, 1979
- City of Jeffersonville: The previously effective FIS for the City of Jeffersonville is dated July 16, 1990. The hydrologic and hydraulic analyses for this study were performed by the U.S. Army Corps of Engineers, Louisville District, for the Federal Insurance Administration, under Inter-Agency Agreement No. (IAA)-H-7-76, Project Order No. 25. This study was completed in December 1977.
- Town of Sellersburg: The previously effective FIS for the Town of Sellersburg is dated February 1980. The hydrologic and hydraulic analyses for this study were coordinated by Cole Associates, Inc. for the Federal Insurance Administration, under contract No. H-4023. This study was completed in May 1978.

Town of Utica                      The previously effective FIS for the Town of Utica is dated March 19, 1984. The hydrologic and hydraulic analyses for this study were obtained from the Flood Insurance Study for Clark County, Unincorporated Areas, Indiana (Reference 1). This study was completed in October 3, 1983.

New Studies:                      The hydrologic and hydraulic analysis for approximate stream reaches of Clark County were performed by Christopher B. Burke Engineering, Ltd., on behalf of the Indiana Department of Natural Resources, under Indiana Public Works Project Number E400203. The Indiana Department of Natural Resources managed the production of this study as part of their Cooperating Technical Partner agreement with the Federal Emergency Management Agency dated April 29, 2004, which was defined by the Indiana DNR Mapping Activity Statement 05-02 dated June 23, 2005 and funded under agreement number EMC-2005-GR-7022.

Redelineation of the previously effective flood hazard information for this FIS report was performed by Christopher B. Burke Engineering, Ltd., on behalf of the Indiana Department of Natural Resources, under Indiana Public Works Project Number E400203. Correction to the North American Vertical Datum of 1988 and conversion of the unincorporated and incorporated areas of Clark County into the countywide format was performed by the Indiana Department of Natural Resources.

The coordinate system used for the production of the digital FIRMs is the Transverse Mercator projection, Indiana State Plane coordinate system, West Zone, referenced to the North American Datum of 1983 and the GRS 1980 spheroid.

### **1.3 Coordination**

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

Table 1: CCO Meeting Dates for Pre-Countywide FIS

<u>Community Name</u>	<u>Initial CCO Date</u>	<u>Final CCO Date</u>
Charlestown, City of Clark County, Unincorporated	February 1976 March 1976	May 6, 1976 August 28, 1979
Clarksville, Town of Jeffersonville, City of Sellersburg, Town of Utica, Town of	February 1976 March 1976	April 17, 1980 September 12, 1978 June 26, 1979 October 3, 1983

For this countywide FIS, an initial CCO meeting was held on January 19, 2005 and was attended by IDNR, and representatives from the Cities of Jeffersonville and Charlestown, the Towns of Borden and Attica, and Clark County.

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

## 2.0 AREA STUDIED

### 2.1 **Scope of Study**

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

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

Approximate methods of analysis were used to study those areas having a low development potential or minimal flood hazards as identified during the initial CCO meeting. For this study, no new stream reaches were studied using approximate methods. The scope and methods of new approximate studies were proposed and agreed upon by FEMA, the IDNR, and Clark County.

For the county-wide study, Lancassange Creek, Lick Run and Muddy Fork were studied by detailed methods. Leveraged detailed studies for the Ohio River and Plum Run were also included. The previous detailed study for Silver Creek was redelineated based on topography provided by the communities in Clark County.

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

TABLE 2 – STREAMS STUDIED BY DETAILED METHODS

Greenbriar Tributary	Ohio River
Hamburg Pike Tributary	Pleasant Run
Lancassange Creek	Plum Run
Lick Run	Silver Creek
Mill Creek	Woodland Court Tributary
Muddy Fork	

TABLE 3 – STREAMS STUDIED BY APPROXIMATE METHODS

Cane Run	North Branch Tributary
Fourteen Mile Creek	Penn Central Tributary
Golf Course Tributary	Wilson School Tributary
Hamburg Pike Tributary	Woodland Court Tributary
Lick Run	
Mill Creek	

TABLE 4 – SCOPE OF STUDY

<u>Stream</u>	<u>Limits of Detailed Study</u>
Lancassange Creek	Mouth at Ohio River to 4.36 miles upstream of mouth
Lick Creek	Mouth to county road 2.35 miles upstream of mouth
Muddy Fork	Mouth at Silver Creek to 2.1 miles upstream of St. Rd. 60
<u>Stream</u>	<u>Limits of Leverage Study</u>
Ohio River	County Line to County Line
Plum Run	Mouth to State Road 311
<u>Stream</u>	<u>Limits of Redelineation</u>
Silver Creek	Mouth to US 31

## 2.2 Community Description

Clark County, located on the Ohio River in Southern Indiana, is less than one mile north of Louisville, Kentucky. According to STATS Indiana, the population of Clark

County was 103,569 in 2006. Clark County is bordered on the northeast by Jefferson County, on the north by Scott County, and on the west and southwest by Floyd County, all in Indiana. The county is bordered on the south by the Ohio River. The three largest cities and town in Clark County include the following: Jeffersonville, located in the southernmost tip of the county, and across the Ohio River from Louisville, Kentucky; Clarksville, which is immediately west of Jeffersonville; and Charlestown, situated in the central part of the county.

The climate is typical of the Midwest with hot, humid summers and cold winters. According to the National Oceanic and Atmospheric Administration (NOAA), temperatures average 74 degrees Fahrenheit (F) from June to August and 35 degrees Fahrenheit (F) from December to February. For the period of record between 1971 and 2000, annual average precipitation was approximately 45.6 inches.

The majority of Clark County is situated on gently rolling hills, which rise moderately from the normal pool elevation of the Ohio River. However, sharp elevation differences near the streams that were studied, including the Ohio River, cause runoff in all tributary streams to be quite rapid. The soils in the study areas consist of shallow clays underlain by bedrock in the form of fissured limestone (Reference 7).

The Town of Borden is located in northwestern Clark County, off of State Road 60. Until 1994, the town was known as New Providence. According to STATS Indiana, the 2005 population of Borden was 832.

The Town of Charlestown is located in the flat to rolling upland portion of Clark County, near the Ohio River in southeastern Indiana. It is 13 miles from Louisville, Kentucky; 126 miles from Indianapolis, Indiana; 97 miles from Cincinnati, Ohio; 277 miles from St. Louis, Missouri; and 311 miles from Chicago, Illinois. According to STATS Indiana, the 2005 population of Charlestown was 8052.

The Town of Clarksville is located in the south central corner of Clark County in southeastern Indiana. It lies on the broad, relatively flat, Ohio River flood plain, directly across the river from Louisville, Kentucky. According to STATS Indiana, the 2005 population of Clarksville was 21,060.

The City of Jeffersonville is located in southern Clark County in southern Indiana. Jeffersonville is surrounded on the east and south by Louisville, Kentucky, and on the north and west by Clark County. Jeffersonville, the county seat of Clark County, is located on the Ohio River at the focal point of water, highway, rail, and air transportation networks in southern Indiana. Louisville, Kentucky, is south and directly opposite Jeffersonville. Indianapolis, Indiana, to the north, and Cincinnati, Ohio, to the northeast, are just over 100 miles distant via Interstate highways. Chicago, Illinois, and St. Louis, Missouri, are both within 300 miles. According to STATS Indiana, Jeffersonville had a population of 28,621 in 2005.

The Town of Sellersburg, located in southeastern Indiana in the southern third of Clark County on the U.S. Highway 31 and Interstate highway 65, is six miles north of Jeffersonville. Other towns nearby include Charlestown, 6.6 miles to the northeast, and Memphis, 6.6 miles to the north. The Town of Sellersburg is surrounded by unincorporated areas of Clark County on the south, west, and east, and is situated primarily on gently sloping upland areas west of Silver Creek and south of Muddy Fork at elevations of 50 to 60 feet above these streams. Because of the sharp elevation differences outside the study area, runoff in all tributaries to Muddy Fork and Silver Creek, near Sellersburg, is quite rapid. According to STATS Indiana, Sellersburg had a population of 6028 in 2005.

The Town of Utica is located in southeastern Clark County in southern Indiana. Utica is 7 river miles north of Louisville, Kentucky on the Ohio River. It is surrounded on 3 sides by unincorporated areas of Clark County and its eastern boundary is the Indiana/Kentucky boundary on the Ohio River. Located mostly in the gently sloping Ohio River valley, Utica is surrounded by steeped slopes which rise to the rolling hills to west. Sharp elevation differences near the Ohio River cause runoff in all tributary streams to be quite rapid. According to STATS Indiana, the population of Utica was 637 in 2005.

### **2.3 Principal Flood Problems**

Areas along the Ohio River, including the towns and cities of Clarksville, Jeffersonville, Oak Park, Utica, Owen, and Bethlehem, are subject to flooding caused by the overflow of the Ohio River. The most noted floods of the Ohio River occurred in 1832, 1847, 1867, 1883, 1884, 1913, 1937, 1948, 1964 and 1997. The flood of 1937 is the worst on record and is considered to be greater than a 500-year frequency flood. The river reached a crest in the Jefferson-Louisville area of 457.4 feet- 10.7 feet higher than the recorded crest of the 1884 flood (Reference 8) (NGVD 29). There were no monetary estimates of damage located in available sources.

Also, areas along Silver Creek, Muddy Fork, and Lancassange Creek are subject to flooding caused by the overflows of these streams. Cities and towns bordering these waterways include Clarksville, Cementville, Sellersburg, and Memphis along Silver Creek; Borden and Sellersburg along Muddy Fork; and Oak Park along Lancassange Creek. The most noted floods on record in the Silver Creek-Muddy Fork basin are those of 1959 and 1964. The 1959 flood was an approximately 21-year frequency flood. The flood closed many schools in the area and made most major roads inaccessible (Reference 9).

Town of Charlestown: Low-lying areas of Charlestown are subject to periodic flooding caused by overflow of Pleasant Run. The most severe flooding usually occurs in late winter or early spring as a result of heavy general rains.

Town of Clarksville: The 1937 flood on the on the Ohio River was the greatest and most destructive flood in the history of Clarksville. On January 27, 1937, the river crested at an elevation of 458.6 (NGVD 29) at the lower gage. Flooding completely disrupted the life of the community, inundating practically the whole city. Long before the crest was reached, schools, churches, businesses and industrial plants were closed. Flood damage ran into the millions of dollars.

City of Jeffersonville: Because the core area of Jeffersonville is protected from major Ohio River flooding by a levee and floodwall system, the resultant principal flood problem is to development outside the protection works and some flooding from interior damage.

Town of Sellersburg: A major portion of Sellersburg is subject to flooding caused by the overflows of Muddy Fork and Silver Creek. Floods causing major damage occurred in 1937, 1945, and 1959. These floods were coincidental with high flows of the Ohio River. However, due to the topographical characteristics of the areas surrounding Muddy Fork and Silver Creek, flood causing at least moderate damage have occurred frequently. Since 1954, when the U.S. Geological Survey (USGS) gage on Silver Creek at Sellersburg was installed, a gage height of 16.0 feet has been exceeded more than 15 times (overbanks flooding occurs at a gage height of 10.0 feet). The most notable of these floods occurred in 1959 (30.98 feet), 1960 (28,1 feet), and 1964 (30.4 feet). More recently, the Sellersburg gage reached 24.46 feet in 2004 and 17 feet in 2001 and 1995.

Town of Utica: The Town of Utica, located on the Ohio River, has been flooded by the major Ohio River floods, such as 1937,1964 and 1997.

## **2.4 Flood Protection Measures**

The principal structural method for flood control in Clark County is the floodwall and levee system that protects an area of 4, 190 acres, including most of the downtown portion of Jeffersonville. The system is comprised of 5.1 miles of earth levee, 1.8 miles of concrete floodwall, 10 pumping plants for the removal of interior drainage during high river stages, and other necessary appurtenances. The project was completed in 1949. The system provides protection against floods greater than 100-year frequency levels. The levees and floodwalls are designed to be a minimum of 3 feet higher than the natural 1937 disaster.

The system of upstream tributary reservoirs that affects flood heights on the Ohio River at Jeffersonville was taken into consideration for this study.

### 3.0 ENGINEERING METHODS

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

#### 3.1 Hydrologic Analysis

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied by detailed methods affecting Clark County.

Table 2 contains a summary of peak discharges for the 10, 50, 100 and 500-year floods, where applicable, for each flooding source studied in detail in Clark County.

Table 5. Summary of Discharges

Flooding Source <u>And Location</u>	Drainage Area <u>(Square Miles)</u>	Peak Discharge (CFS)			
		<u>10-Year</u>	<u>50-Year</u>	<u>100-Year</u>	<u>500-Year</u>
<b>GREENBRIAR TRIBUTARY</b>					
At Mouth (drop inlet)	0.9	390	530	570	680
Reeds Land	0.8	370	510	540	650
Highway 62	0.7	355	480	515	615
<b>HAMBURG PIKE TRIBUTARY</b>					
At Mouth	1.5	690	960	1,090	1,410
Hamburg Pike	0.5	365	520	590	770

Table 5. Summary of Discharges (cont'd)

Flooding Source And Location	Drainage Area (Square Miles)	Peak Discharge (CFS)			
		10-Year	50-Year	100-Year	500-Year
<b>LANCASSANGE CREEK</b>					
At Utica Pike	6.72	2,180	3,030	3,420	4,350
At Lancassange Drive	5.65	2,000	2,725	3,100	3,900
At Middle Road	4.22	1,680	2,340	2,680	3,225
At Allison Lane	3.28	1,450	2,020	2,300	2,930
At Capitol Hills Drive	1.93	1,050	1,450	1,670	2,130
<b>MILL CREEK</b>					
Randolph Avenue	5.1	1,240	1,550	1,700	2,010
Conrail Complex	4.4	1,310	1,700	1,850	2,170
At Hamburg Pike Trib.	2.4	910	1,170	1,270	1,490
<b>MUDDY FORK</b>					
At mouth	66.5	8,330	11,700	13,100	16,800
Above Big Run	38.9	6,000	8,500	9,600	12,300
Above Dry Fork	17.9	3,850	5,400	6,000	7,600
<b>OHIO RIVER</b>					
At McAlpine Dam	91,170	600,000	750,000	812,000	952,000
<b>PLEASANT RUN</b>					
Spring Street	1.28	850	1,200	1,350	1,690
Reed Avenue	0.97	720	1,020	1,140	1,420
State Road 3	0.90	690	970	1,090	1,360
Monroe Street	0.61	540	770	860	1,070
Glendale Avenue	0.27	335	480	535	610
<b>SILVER CREEK</b>					
5.1 miles below					
confluence of Muddy Fork	165.0	14,600	20,800	23,200	29,800
Blackiston Mill Dam	209	16,250	23,000	25,500	33,000
Above Jacobs Creek	206	16,000	22,850	25,400	32,500
Above Lick Run	191	15,400	21,800	24,000	31,000
Above Pleasant Run	176	14,600	20,800	23,200	29,800
Above Muddy Fork	98.7	10,600	14,800	16,500	21,000
Above Sinking Fork	68.8	8,400	12,000	13,400	17,500
Above Blue Lick Creek	43.7	6,500	9,200	10,200	13,200
Above Miller Creek	24.9	4,700	6,550	7,300	9,300
<b>WOODLAND COURT TRIBUTARY</b>					
At Mouth	0.81	625	870	995	1260
Woodland Court	0.54	490	680	780	1,000
Highway 62	0.24	310	440	510	630
Thompson Road	0.15	230	330	380	500

Standard and accepted hydrologic methods were used to develop discharge data on the study streams in Clark County.

The principal gaging station on the Ohio River used in defining the discharge-frequency, drainage-area relationships for this report was the McAlpine Dam and Locks Station in Louisville, Kentucky. The drainage area for the station is 91,170 square miles (U.S. Geological Survey, [www.usgs.gov](http://www.usgs.gov)). Historical records at the McAlpine Station date from 1832 to the present.

A gaging station on Silver Creek, south of Sellersburg, was the source of data for defining discharge-frequency, drainage-area relationships for the creek. The station is at river mile 12.2, has a drainage area of 189 square miles, and has been in operation since October 1954 (U.S. Geological Survey, [www.usgs.gov](http://www.usgs.gov)).

Since streamflow records were not available for Muddy Fork and Fourteen Mile Creek, regional analyses were performed by the Indiana Department of Natural Resources to establish the peak discharges for floods of the selected recurrence intervals (References 12, 13, and 14). HEC-HMS modeling was used to determine the peak discharges for floods for Lancassange Creek.

The Colorado Urban Hydrograph Procedure (CUHP) developed the discharge data for Mill Creek, Hamburg Pike Tributary, and Woodland Court Tributary for the City of Jeffersonville, Indiana, Flood Insurance Study (Reference 15 and 16). The discharge of Pleasant Run was also developed using the Colorado Urban Hydrograph Procedure.

## **3.2 Hydraulic Analysis**

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

Cross section data for Silver Creek and Muddy Fork were obtained from aerial photographs enlarged to 1:4800 and USGS quadrangle maps with 10-foot contour intervals enlarged to a scale of 1:6000 (References 17 and 18). Below-water sections were obtained by field measurements. Elevations and structural data for bridges were obtained from Indiana State Highway Bridge Plans or by direct field measurement.

Cross section data for Greenbriar Tributary, Hamburg Pike Tributary, Mill Creek, and Woodland Court Tributary were based on 1:24000 quadrangle maps with a contour interval of 10 feet (Reference 28) and on field reconnaissance. Lancassange Creek and Plum Run cross sections were obtained from 2-foot maps compiled by photogrammetric methods for the March 1980 study for Clark County and USGS quadrangle map data. Cross section data for Pleasant Run were field surveyed. Cross section data for the Ohio River was obtained from aerial photographs enlarged to a scale of 1:4800 (Reference 27) and USGS quadrangle maps.

The starting water-surface elevations for Silver Creek and Muddy Fork were computed from the measured high water marks of historical floods. The starting elevations for Lancassange Creek were computed from Manning's equation, assuming uniform flow close to the mouth and not considering backwater from the Ohio River. The starting elevations for the Ohio River were computed from records at the McAlpine Dam and Locks. Starting water-surface elevations for Mill Creek and Pleasant Run were developed by the slope-area method. Starting water-surface elevations for Woodland Court Tributary and Hamburg Pike Tributary were obtained from the profiles of Mill Creek at the confluence points. The starting water-surface elevations of Greenbriar Tributary were obtained from headwater determinations due to a drop inlet at the mouth. Elevations for Plum Run were computed using the slope-area method.

Previously published water surface profiles were developed using a HEC-2 computer standard step-backwater model (Reference 16). Profiles were then determined for the 10%-, 2%-, 1%- and 0.2%-annual-chance floods and were drawn showing computed water-surface elevations to an accuracy of 0.5 feet (Exhibit 1). New studies were developed using HEC-RAS computer model.

Flood profiles were prepared for all streams studied by detailed methods and show computed water-surface elevations for floods of the selected recurrence intervals. For this countywide FIS, flood profiles and approved LOMRs have been consolidated into continuous stream reaches and adjusted to reflect the current vertical datum as described in Section 3.3. In cases where the 2%- and 1%-annual-chance flood elevations are close together, due to limitations of the profile scale, only the 1%-annual-chance profile has been shown.

Channel and overbank roughness factors (Manning's "n" values) used in the hydraulic computations were chosen by engineering judgment and were based on field observations of the stream and floodplain areas. Channel and overbank roughness factors used in the detailed studies are summarized by stream in Table 6.

Table 6. Channel and Overbank Roughness Factors

<u>Stream</u>	Roughness Coefficients	
	<u>Main Channel</u>	<u>Overbanks</u>
Greenbriar Tributary	0.055	0.100
Hamburg Pike Tributary	0.055	0.060
Lancassange Creek	0.06 – 0.10	0.08 – 0.15
Mill Creek	0.050	0.075
Muddy Fork	0.12	0.14
Ohio River	0.02 – 0.033	0.029 – 0.047
Pleasant Run	0.045	0.060
Silver Creek	0.05 – 0.06	0.10 – 0.12
Woodland Court Tributary	0.060	0.075

For new approximate study areas, analyses were based on field inspection and modeling of the stream reaches using simplified HEC-RAS models. Structural measurements or field surveying was not performed. Cross section geometry was derived from USGS topographic mapping with a maximum spacing of 490 feet. Starting elevations were assumed to be normal depth.

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

### 3.3 Vertical Datum

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

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

vertical datum conversion of -0.48 foot was calculated at the centroid of the county and used to convert all elevations in Clark County from NGVD29 to NAVD88 using the National Geodetic Survey's VERTCON online utility (VERTCON, 2005).

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

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

#### **4.0 FLOODPLAIN MANAGEMENT APPLICATIONS**

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

##### **4.1 Floodplain Boundaries**

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

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

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

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

## **4.2 Floodways**

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

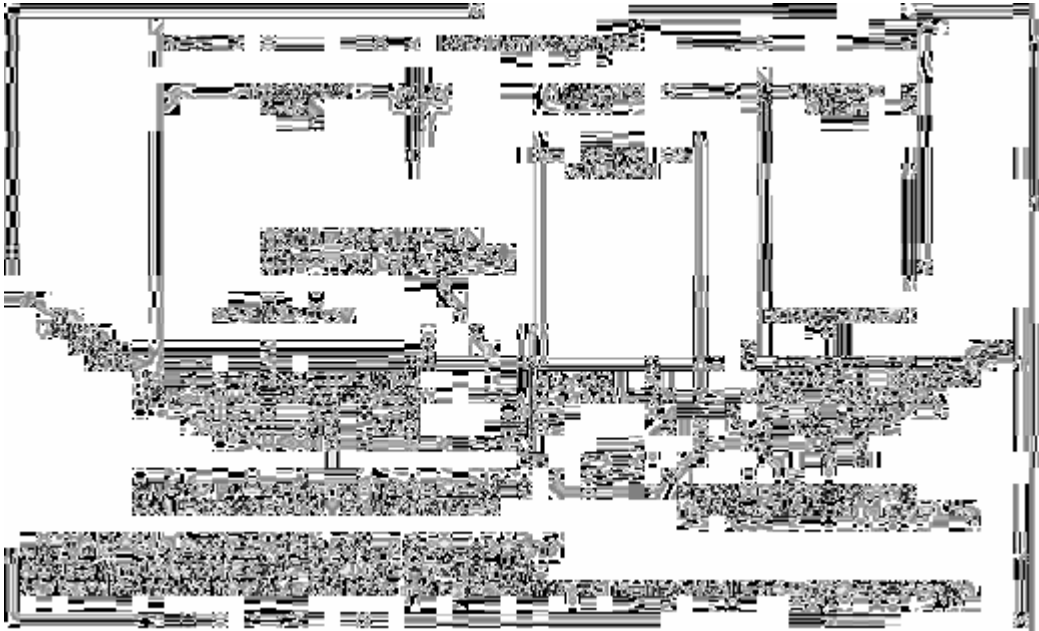
The State of Indiana, however, per Indiana Code IC 14-28-1 and Indiana Administrative Code 312 IAC 10, has designated that encroachment in the floodplain is limited to that which will cause no significant increase in flood height. As a result, floodways for this study are delineated based on a flood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

The floodways presented in this FIS report and on the FIRM were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations have been tabulated for selected cross sections (Table 4). In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent-annual-chance flood more than the allowable flood surcharge limit at any point. Typical relationships between the floodway and the

floodway fringe and their significance to floodplain development are shown in Figure 1.

**Figure 1: Floodway Schematic**



FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
<b>GREENBRIAR TRIBUTARY</b>								
A	0.020	171	592	1.0	453.02	453.0	453.1	0.1
B	0.280	247	714	0.8	453.3	453.3	453.4	0.1
C	0.320	61	275	2.0	453.4	453.4	453.5	0.1
D	0.410	41	192	2.8	453.8	453.8	453.9	0.1
E	0.450	47	192	2.8	454.8	454.8	454.9	0.1
F	0.500	42	163	3.2	455.0	455.0	455.1	0.1
G	0.565	52	178	2.9	455.5	455.5	455.6	0.1
<b>HAMBURG PIKE TRIBUTARY</b>								
A	0.04	140	247	4.4	446.8	446.8	446.9	0.1
B	0.13	155	499	2.1	449.1	449.1	449.2	0.1
C	0.17	256	953	1.1	451.0	451.0	451.0	0.0
D	0.65	101	148	5.6	454.4	454.4	454.5	0.1
E	1.14	171	397	1.5	463.5	463.5	463.6	0.1

<sup>1</sup> MILES ABOVE MOUTH

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**COUNTY OF CLARK, IN**  
**(AND INCORPORATED AREAS)**

**FLOODWAY DATA**

**GREENBRIAR TRIBUTARY - HAMBURG PIKE TRIBUTARY**

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
<b>LANCASSANGE CREEK</b>								
A	0.566	300	1069	3.2	451.1	444.6 <sup>2</sup>	444.6	0.0
B	0.880	220	2589	1.3	451.1	446.6 <sup>2</sup>	446.6	0.0
C	1.240	160	1908	1.8	451.1	448.5 <sup>2</sup>	448.6	0.1
D	1.470	230	1942	1.8	451.4	451.4	451.5	0.1
E	1.591	200	1766	1.9	455.2	455.2	455.2	0.0
F	1.760	350	2679	1.2	457.0	457.0	457.0	0.0
G	1.960	200	1720	1.8	457.9	457.9	457.9	0.0
H	2.171	360	6329	0.8	458.6	458.6	458.6	0.0
I	2.422	330	844	1.9	459.9	459.9	459.9	0.0
J	2.720	325	1621	1.4	463.3	463.3	463.4	0.1
K	2.991	100	453	5.1	465.7	465.7	465.8	0.1
L	3.222	75	471	3.5	467.7	467.7	467.8	0.1
M	3.462	220	2082	0.8	469.4	469.4	469.4	0.0
N	3.834	300	1152	1.4	471.6	471.6	471.6	0.0
O	4.122	100	1169	1.4	475.6	475.6	475.6	0.0

<sup>1</sup> MILES ABOVE MOUTH

<sup>2</sup> ELEVATIONS WITHOUT CONSIDERING BACKWATER EFFECT FROM OHIO RIVER

<b>TABLE 2</b>	FEDERAL EMERGENCY MANAGEMENT AGENCY	<b>FLOODWAY DATA</b>
	<b>COUNTY OF CLARK, IN (AND INCORPORATED AREAS)</b>	<b>LANCASSANGE CREEK</b>

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
<b>LICK RUN</b>								
A	0.076	63	503	4.7	461.2 <sup>2</sup>	443.8	443.9	0.1
B	0.333	163	1187	2	461.2 <sup>2</sup>	445.3	445.4	0.1
C	0.397	189	1429	1.7	461.2 <sup>2</sup>	445.5	445.6	0.1
D	0.439	280	2119	1.1	461.2 <sup>2</sup>	445.6	445.7	0.1
E	0.612	309	2108	1.1	461.2 <sup>2</sup>	445.8	445.9	0.1
F	0.665	336	1914	1.2	461.2 <sup>2</sup>	445.8	445.9	0.1
G	0.777	535	2802	1	461.2 <sup>2</sup>	446.0	446.1	0.1
H	0.875	448	1856	1.3	461.2 <sup>2</sup>	446.1	446.2	0.1
I	1.000	529	2425	1	461.2 <sup>2</sup>	446.4	446.5	0.1
J	1.098	755	3280	0.7	461.2 <sup>2</sup>	446.5	446.6	0.1
K	1.327	730	2816	0.9	461.2 <sup>2</sup>	446.9	447.0	0.1
L	1.478	405	1277	1.9	461.2 <sup>2</sup>	447.6	447.7	0.1
M	1.569	299	1423	1.7	461.2 <sup>2</sup>	448.2	448.3	0.1
N	1.715	280	1244	1.9	461.2 <sup>2</sup>	448.8	448.9	0.1
O	1.770	214	1087	2.2	461.2 <sup>2</sup>	449.1	449.2	0.1
P	1.934	101	493	3.2	461.2 <sup>2</sup>	450.8	450.8	0.0
Q	1.992	150	776	2	461.2 <sup>2</sup>	451.2	451.3	0.0
R	2.077	66	430	3.7	461.2 <sup>2</sup>	451.5	451.6	0.1
S	2.194	155	808	2	461.2 <sup>2</sup>	452.7	452.8	0.1
T	2.275	230	1175	1.3	461.2 <sup>2</sup>	452.9	453.0	0.1
U	2.386	238	1356	0.6	461.2 <sup>2</sup>	453.0	453.1	0.1
V	2.474	449	2380	0.3	461.2 <sup>2</sup>	453.0	453.1	0.1

<sup>1</sup> MILES ABOVE MOUTH

<sup>2</sup> SILVER CREEK BACKWATER

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

**COUNTY OF CLARK, IN  
(AND INCORPORATED AREAS)**

**FLOODWAY DATA**

**LICK RUN**

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH <sup>2</sup> (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
<b>MILL CREEK</b>								
A	1.75	288	2197	0.8	441.9	441.9	442.0	0.1
B	1.91	262	1757	1.0	442.3	442.3	442.4	0.1
C	1.98	90	813	2.1	442.8	442.8	442.9	0.1
D	2.10	159	1081	1.6	443.1	443.1	443.1	0.0
E	2.18	297	1161	1.6	443.8	443.8	443.9	0.1
F	2.31	117	837	2.2	444.0	444.0	444.1	0.1
G	2.40	136	903	2.0	444.2	444.2	444.3	0.1
H	2.66	87	654	1.9	445.0	445.0	445.1	0.1
I	2.78	53	412	3.1	445.3	445.3	445.4	0.1
J	2.90	75	570	2.2	445.9	445.9	446.0	0.1
K	3.30	38	372	2.9	447.9	447.9	448.0	0.1

<sup>1</sup> MILES ABOVE MOUTH

<b>TABLE 2</b>	FEDERAL EMERGENCY MANAGEMENT AGENCY	<b>FLOODWAY DATA</b>
	<b>COUNTY OF CLARK, IN (AND INCORPORATED AREAS)</b>	<b>MILL CREEK</b>

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH <sup>2</sup> (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
<b>MUDDY FORK</b>								
A	3.182	3592	24895	0.5	472.4	472.4	472.5	0.1
B	3.844	2830	14396	1.0	472.7	472.7	472.7	0.0
C	4.921	2685	9468	1.4	474.5	474.5	474.6	0.1
D	5.815	2633	7531	1.8	477.1	477.1	477.2	0.1
E	6.149	2177	8518	1.6	480.0	480.0	480.1	0.1
F	6.518	1673	7585	1.5	481.5	481.5	481.6	0.1
G	6.780	1696	6813	1.6	482.1	482.1	482.1	0.0
H	7.003	1534	6870	1.6	482.6	482.6	482.7	0.1
I	7.594	1524	7332	1.5	486.5	486.5	486.5	0.0
J	7.762	2266	8394	1.3	486.9	486.9	486.9	0.0
K	8.017	2370	9300	1.2	487.6	487.6	487.7	0.1
L	8.239	2541	8380	1.3	488.2	488.2	488.3	0.1
M	8.728	2225	10480	1.4	490.1	490.1	490.2	0.1
N	9.098	2514	8321	1.2	490.6	490.6	490.7	0.1
O	10.064	2230	5809	1.6	494.9	494.9	494.9	0.0
P	10.727	1915	5559	1.7	496.7	496.7	496.7	0.0
Q	11.337	2958	11179	0.8	501.2	501.2	501.3	0.1
R	12.555	1571	3977	2.2	509.0	509.0	509.0	0.0
S	12.703	1182	3010	2.3	510.0	510.0	510.1	0.1
T	12.809	1297	3851	1.8	510.8	510.8	510.9	0.1
U	12.905	1460	3605	1.9	511.2	511.2	511.3	0.1
V	13.590	1128	2309	2.8	515.8	515.8	515.8	0.0
W	13.788	1435	3864	1.7	518.0	518.0	518.0	0.0
X	13.973	1340	3907	1.7	520.0	520.0	520.0	0.0
Y	14.338	1555	4775	1.9	523.0	523.0	523.1	0.1
Z	14.765	1727	5888	0.9	525.9	525.9	526.0	0.1

<sup>1</sup> MILES ABOVE MOUTH

<b>TABLE 2</b>	FEDERAL EMERGENCY MANAGEMENT AGENCY	<b>FLOODWAY DATA</b>
	<b>COUNTY OF CLARK, IN (AND INCORPORATED AREAS)</b>	<b>MUDDY FORK</b>

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH <sup>2</sup> (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
<b>MUDDY FORK</b>								
AA	15.249	1342	4202	1.2	530.8	530.8	530.9	0.1
AB	15.525	992	3464	1.5	534.6	534.6	534.6	0.0
AC	15.883	1001	2946	1.7	539.4	539.4	539.5	0.1
AD	16.076	720	2131	2.4	541.9	541.9	542.0	0.1
AE	16.434	826	2475	1.2	546.3	546.3	546.4	0.1
AF	16.774	209	899	3.3	550.3	550.3	550.4	0.1
AG	17.013	123	844	3.5	554.6	554.6	554.6	0.0
AH	17.191	108	691	4.3	556.1	556.1	556.1	0.0
AI	17.324	105	672	4.4	557.8	557.8	557.9	0.1
AJ	17.580	126	621	3.4	562.4	562.4	562.4	0.0
AK	17.849	135	780	2.7	566.0	566.0	566.0	0.0
AL	17.942	107	539	3.9	566.9	566.9	567.0	0.1
AM	18.085	90	495	4.2	568.9	568.9	568.9	0.0
AN	18.232	80	326	4.3	570.5	570.5	570.5	0.0
AO	18.439	75	295	4.7	575.1	575.1	575.1	0.0
AP	18.642	72	280	5.0	581.4	581.4	581.4	0.0
AQ	18.917	56	258	5.4	589.0	589.0	589.0	0.0
AR	19.156	87	289	4.8	596.3	596.3	596.4	0.1
AS	19.230	47	222	6.3	598.2	598.2	598.2	0.0
AT	19.521	46	156	9.0	608.5	608.5	608.5	0.0
AU	19.764	62	194	7.2	617.3	617.3	617.3	0.0
AV	19.880	53	281	5.0	623.7	623.7	623.7	0.0
AW	20.008	53	252	5.6	629.8	629.8	629.8	0.0

<sup>1</sup> MILES ABOVE MOUTH

<b>TABLE 2</b>	FEDERAL EMERGENCY MANAGEMENT AGENCY	<b>FLOODWAY DATA</b>
	<b>COUNTY OF CLARK, IN (AND INCORPORATED AREAS)</b>	<b>MUDDY FORK</b>

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
<b>OHIO RIVER</b>								
A	603.50	3718	178376	4.6	449.7	449.7	449.8	0.1
B	603.00	2948	130276	6.2	449.6	449.6	449.7	0.1
C	602.50	2973	154875	5.2	450.0	450.0	450.0	0.1
D	602.00	3454	168112	4.8	450.0	450.0	450.1	0.1
E	601.50	2902	139856	5.8	450.0	450.0	450.1	0.1
F	601.00	2541	139439	5.8	450.1	450.1	450.2	0.1
G	600.50	2170	134924	6	450.1	450.1	450.2	0.1
H	600.00	2880	151463	5.4	450.3	450.3	450.4	0.1
I	599.50	3273	159033	5.1	450.4	450.4	450.5	0.1
J	599.00	3560	164123	4.9	450.6	450.6	450.7	0.1
K	598.50	3727	171237	4.7	450.8	450.8	450.9	0.1
L	598.00	3827	172445	4.7	450.9	450.9	451.0	0.1
M	597.50	4366	193933	4.2	451.2	451.2	451.3	0.1
N	597.25	5219	211280	3.8	451.3	451.3	451.4	0.1
O	596.75	6001	217731	3.7	451.3	451.3	451.4	0.1
P	596.50	6055	202709	4	451.4	451.4	451.5	0.1
Q	596.00	4587	187876	4.3	451.5	451.5	451.6	0.1
R	595.75	3700	161632	5	451.5	451.5	451.6	0.1
S	595.50	3587	161488	5	451.5	451.5	451.6	0.1
T	595.00	2769	139444	5.8	451.6	451.6	451.7	0.1
U	594.50	3274	152979	5.3	451.9	451.9	452.0	0.1
V	594.00	3857	169392	4.8	452.1	452.1	452.2	0.1
W	593.50	3665	169303	4.8	452.2	452.2	452.3	0.1
X	593.00	3930	172768	4.7	452.4	452.4	452.5	0.1
Y	592.5	4943	193728	4.2	452.5	452.5	452.6	0.1
Z	592	4687	208686	3.9	452.7	452.7	452.8	0.1

<sup>1</sup> MILES BELOW PITTSBURGH

<b>TABLE 2</b>	FEDERAL EMERGENCY MANAGEMENT AGENCY	<b>FLOODWAY DATA</b>
	<b>COUNTY OF CLARK, IN (AND INCORPORATED AREAS)</b>	<b>OHIO RIVER</b>

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
<b>OHIO RIVER</b>								
(CONTINUED)								
AA	591.5	4047	178506	4.5	452.7	452.7	452.8	0.1
AB	591	3630	163766	5	452.7	452.7	452.8	0.1
AC	590.5	2878	144785	5.6	452.8	452.8	452.9	0.1
AD	590	2294	129993	6.2	452.8	452.8	452.9	0.1
AE	589.5	2597	139552	5.8	453.1	453.1	453.2	0.1
AF	589	2871	146812	5.5	453.2	453.2	453.3	0.1
AG	588.5	2746	138623	5.9	453.3	453.3	453.4	0.1
AH	588	2991	147017	5.5	453.5	453.5	453.6	0.1
AI	587.5	2955	148398	5.5	453.6	453.6	453.7	0.1
AJ	587	3240	153296	5.3	453.8	453.8	453.9	0.1
AK	586.5	3288	159594	5.1	453.9	453.9	454.0	0.1
AL	586	3546	162407	5	454.1	454.1	454.2	0.1
AM	585.5	3268	155347	5.2	454.2	454.2	454.3	0.1
AN	585	3230	152853	5.3	454.3	454.3	454.4	0.1
AO	584.5	2651	135927	6	454.3	454.3	454.4	0.1
AP	584	2619	131432	6.2	454.4	454.4	454.5	0.1
AQ	583.5	2643	137822	5.9	454.6	454.6	454.7	0.1
AR	583	2934	159649	5.1	454.9	454.9	455.0	0.1
AS	582.5	3415	162165	5	455.0	455.0	455.2	0.1
AT	582	4095	165848	4.9	455.2	455.2	455.3	0.1
AU	581.5	2886	149976	5.4	455.3	455.3	455.4	0.1
AV	581	2636	140657	5.8	455.3	455.3	455.5	0.1
AW	580.5	2433	132941	6.1	455.4	455.4	455.5	0.1
AX	580	2128	118007	6.9	455.4	455.4	455.6	0.1
AY	579.5	2510	128536	6.3	455.7	455.7	455.8	0.1
AZ	579	2765	138157	5.9	456.0	456.0	456.1	0.1

<sup>1</sup> MILES BELOW PITTSBURGH

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**COUNTY OF CLARK, IN**  
**(AND INCORPORATED AREAS)**

**FLOODWAY DATA**  
**OHIO RIVER**

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
<b>OHIO RIVER</b>								
(CONTINUED)								
BA	578.5	3235	145258	5.6	456.1	456.1	456.3	0.1
BB	578	2467	136375	6	456.3	456.3	456.4	0.1
BC	577.5	2187	126164	6.4	456.3	456.3	456.4	0.1
BD	577	2353	125912	6.4	456.5	456.5	456.6	0.1
BE	576.5	2574	132387	6.1	456.7	456.7	456.8	0.1
BF	576	2672	131863	6.2	456.8	456.8	456.9	0.1
BG	575.2	2600	144504	5.6	457.2	457.2	457.3	0.1
BH	574.2	3713	165511	4.9	457.6	457.6	457.7	0.1
BI	573.2	3280	148770	5.5	457.8	457.8	457.9	0.1
BJ	572.5	2682	135618	6	458.0	458.0	458.1	0.1
BK	572	2648	136323	6	458.2	458.2	458.3	0.1
BL	571.5	2492	129952	6.2	458.3	458.3	458.5	0.1

<sup>1</sup> MILES BELOW PITTSBURGH

<b>TABLE 2</b>	FEDERAL EMERGENCY MANAGEMENT AGENCY	<b>FLOODWAY DATA</b>
	<b>COUNTY OF CLARK, IN (AND INCORPORATED AREAS)</b>	<b>OHIO RIVER</b>

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
<b>PLEASANT RUN</b>								
A	7.06	82	252	5.7	548.5	548.5	548.6	0.1
B	7.16	71	294	4.9	553.0	553.0	553.1	0.1
C	7.25	102	363	3.7	555.6	555.6	555.6	0.0
D	7.35	47	159	8.5	560.0	560.0	560.1	0.1
E	7.44	51	226	6.0	564.2	564.2	564.3	0.1
F	7.52	50	197	6.8	566.3	566.3	566.3	0.0
G	7.75	98	262	4.4	572.8	572.8	572.9	0.1
H	7.76	150	380	3.0	576.2	576.2	576.2	0.0
I	7.80	150	476	2.4	577.8	577.8	577.8	0.0
J	7.86	200	491	2.3	579.2	579.2	579.2	0.0
K	7.87	200	578	1.9	579.3	579.3	579.3	0.0
L	7.89	265	141	8.1	579.4	579.4	579.4	0.0
M	7.95	390	665	1.6	582.1	582.1	582.1	0.0
N	8.04	280	516	2.1	587.8	587.8	587.8	0.0
O	8.08	220	934	1.2	588.0	588.0	588.1	0.1
P	8.15	174	624	1.6	588.2	588.2	588.3	0.1
Q	8.34	94	198	4.7	590.8	590.8	590.9	0.1
R	8.46	45	124	6.9	593.2	593.2	593.3	0.1
S	8.61	46	131	6.2	598.1	598.1	598.2	0.1
T	8.68	739	320	1.8	599.9	599.9	600.0	0.1
U	8.76	96	107	5.0	601.9	601.9	602.0	0.1
V	8.82	71	90	5.9	603.5	603.5	603.6	0.1

<sup>1</sup> MILES ABOVE MOUTH

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**COUNTY OF CLARK, IN  
(AND INCORPORATED AREAS)**

**FLOODWAY DATA**

**PLEASANT RUN**

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
<b>PLUM RUN</b>								
A	0.12	176	493	6.0	454.5	438.4	438.4	0.1
B	0.16	125	391	5.8	454.5	438.8	438.9	0.1
C	0.23	239	525	7.3	454.5	440.0	440.1	0.1
D	0.34	216	895	2.8	454.5	441.0	441.1	0.1
E	0.40	254	872	3.7	454.5	441.2	441.3	0.1
F	0.50	362	1,051	3.2	454.5	441.7	441.8	0.1
G	0.55	338	822	4.1	454.5	442.0	442.1	0.1
H	0.62	190	552	5.9	454.5	442.6	443.7	0.1
I	0.68	235	595	5.1	454.5	443.4	443.5	0.1
J	0.81	173	544	5.2	454.5	444.9	445.0	0.1
K	0.89	206	603	5.2	454.5	445.9	446.0	0.1
L	0.98	235	707	4.8	454.5	446.9	447.0	0.1
M	1.04	171	505	6.7	454.5	447.4	447.5	0.1
N	1.10	153	487	6.3	454.5	448.5	448.6	0.1
O	1.14	171	492	8.3	454.5	448.9	448.9	0.0
P	1.17	199	691	5.7	454.5	449.6	449.7	0.1
Q	1.18	184	577	7.9	454.5	449.5	449.6	0.1
R	1.20	170	645	6.8	454.5	449.9	450.0	0.0
S	1.22	202	664	6.2	454.5	450.1	450.1	0.0
T	1.24	267	873	5.4	454.5	450.3	450.3	0.0
U	1.25	259	835	5.1	454.5	450.4	450.4	0.0
V	1.27	231	589	6.7	454.5	450.4	450.4	0.0
W	1.30	192	659	6.3	454.5	450.8	450.8	0.0
X	1.31	191	411	6.1	454.5	450.8	450.8	0.0
Y	1.32	205	567	6.9	454.5	451.5	451.5	0.0
Z	1.33	195	627	8.6	454.5	451.7	451.7	0.0

<sup>1</sup> MILES ABOVE MOUTH

<b>TABLE 2</b>	FEDERAL EMERGENCY MANAGEMENT AGENCY	<b>FLOODWAY DATA</b>
	<b>COUNTY OF CLARK, IN (AND INCORPORATED AREAS)</b>	<b>PLUM RUN</b>

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
<b>PLUM RUN</b> (CONTINUED)								
AA	1.36	170	536	7.7	454.5	452.2	452.2	0.0
AB	1.39	190	728	5.0	454.5	452.5	452.6	0.1
AC	1.41	220	824	5.7	454.5	452.6	452.7	0.1
AD	1.45	272	793	7.1	454.5	452.9	453.0	0.1
AE	1.48	168	636	4.4	454.5	453.2	453.3	0.1
AF	1.52	184	673	5.2	454.5	453.3	453.4	0.1
AG	1.55	163	531	8.8	454.5	453.5	453.6	0.1
AH	1.63	159	535	7.2	454.6	454.6	454.7	0.1
AI	1.66	177	648	7.3	455.2	455.2	455.3	0.1
AJ	1.72	459	1513	2.9	455.8	455.8	455.9	0.1
AK	1.76	326	993	3.8	455.8	455.8	455.9	0.1
AL	1.83	161	415	6.2	455.9	455.9	456.0	0.1
AM	1.90	311	424	8.9	456.9	456.9	456.9	0.0
AN	1.95	131	459	5.1	458.0	458.0	458.1	0.1
AO	2.09	205	512	7.3	460.2	460.2	460.3	0.1
AP	2.12	311	844	4.1	460.5	460.7	460.8	0.1

<sup>1</sup> MILES ABOVE MOUTH

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

**COUNTY OF CLARK, IN  
(AND INCORPORATED AREAS)**

**FLOODWAY DATA**

**PLUM RUN**

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
<b>SILVER CREEK</b>								
A	4.69	589 <sup>2</sup>	6,043	4.2	448.1	439.3 <sup>3</sup>	439.4	0.1
B	4.98	516 <sup>2</sup>	5,154	4.9	448.1	440.5 <sup>3</sup>	440.6	0.1
C	5.39	1138 <sup>2</sup>	11,815	2.2	448.1	441.9 <sup>3</sup>	442.0	0.1
D	5.85	532 <sup>2</sup>	6,437	4.0	448.1	442.6 <sup>3</sup>	442.7	0.1
E	6.12	1253 <sup>2</sup>	6,931	3.7	448.1	442.7 <sup>3</sup>	442.8	0.1
F	6.51	1465 <sup>2</sup>	14,603	1.7	448.1	444.7 <sup>3</sup>	444.7	0.0
G	7.00	984 <sup>2</sup>	5,997	4.2	448.1	445.5 <sup>3</sup>	445.5	0.0
H	7.27	397	3,524	7.2	448.1	447.7 <sup>3</sup>	447.7	0.0
I	8.42	782	9,878	2.6	454.4	454.4	454.5	0.1
J	8.70	336	4,637	5.5	454.9	454.9	455.0	0.1
K	8.72	342	4,690	5.4	455.0	455.0	455.1	0.1
L	9.00	484	6,335	4.0	456.3	456.3	456.4	0.1
M	9.41	994	6,112	4.2	457.7	457.7	457.8	0.1
N	9.54	1076	5,074	5.0	458.4	458.4	458.5	0.1
O	9.67	879	9,175	2.8	460.2	460.2	460.3	0.1
P	10.04	1331	15,228	1.7	460.9	460.9	461.0	0.1
Q	10.47	1156	13,299	1.8	461.4	461.4	461.5	0.1
R	10.62	1700	13,547	1.8	461.6	461.6	461.7	0.1
S	10.88	1910	15,945	1.5	461.9	461.9	462.0	0.1
T	11.17	1890	21,105	1.1	462.3	462.3	462.4	0.1
U	11.50	2000	13,307	1.8	462.7	462.7	462.8	0.1
V	13.18	1750	11,571	2	463.6	463.6	463.7	0.1
W	13.52	1700	21,990	1.1	464.5	464.5	464.6	0.1
X	14.55	986	10,459	2.2	465.3	465.3	465.4	0.1
Y	15.00	635	9,349	2.5	466.8	466.8	466.9	0.1
Z	15.48	1578	11,823	1.3	467.6	467.6	467.7	0.1

<sup>1</sup> MILES ABOVE MOUTH

<sup>2</sup> THIS WIDTH EXTENDS BEYOND COUNTY BOUNDARY

<sup>3</sup> ELEVATIONS WITHOUT CONSIDERING BACKWATER EFFECT FROM THE OHIO RIVER

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**COUNTY OF CLARK, IN  
(AND INCORPORATED AREAS)**

**FLOODWAY DATA**

**SILVER CREEK**

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
<b>SILVER CREEK</b>								
AA	16.22	1480	31,051	0.7	468.4	468.4	468.5	0.1
AB	16.55	1780	24,533	0.9	468.6	468.6	468.7	0.1
AC	16.87	2719	22,416	1.0	468.8	468.8	468.9	0.1
AD	17.03	2472	16,756	1.4	469.1	469.1	469.2	0.1
AE	17.42	2250	11,150	2.1	469.5	469.5	469.6	0.1
AF	17.55	2143	19,353	1.2	470.1	470.1	470.2	0.1
AG	17.59	2365	19,900	1.2	470.2	470.2	470.3	0.1
AH	18.42	1070	13,483	1.2	471.2	471.2	471.2	0.0
AI	18.72	1678	19,909	0.8	471.3	471.3	471.3	0.0
AJ	18.92	1193	11,520	1.4	471.4	471.4	471.4	0.0
AK	19.64	1094	12,682	1.3	472.5	472.5	472.5	0.0
AL	20.03	968	13,219	1.0	472.7	472.7	472.7	0.0
AM	20.43	1460	19,320	0.7	472.9	472.9	472.9	0.0
AN	20.78	2668	36,484	0.4	472.9	472.9	472.9	0.0
AO	21.12	2450	32,435	0.4	473.0	473.0	473.0	0.0
AP	21.45	2100	31,619	0.4	473.0	473.0	473.0	0.0
AQ	21.73	2550	33,015	0.4	473.1	473.1	473.1	0.0
AR	21.94	2750	28,857	0.5	473.1	473.1	473.1	0.0
AS	22.67	2750	33,348	0.4	473.2	473.2	473.2	0.0
AT	23.09	3700	32,678	0.4	473.3	473.3	473.3	0.0
AU	23.50	3844	29,775	0.5	473.4	473.4	473.4	0.0
AV	24.09	2593	21,142	0.6	473.5	473.5	473.5	0.0
AW	24.43	2450	20,840	0.6	473.7	473.7	473.7	0.0
AX	24.58	2300	20,133	0.7	473.7	473.7	473.7	0.0
AY	25.12	2300	20,541	0.7	453.5	453.5	453.5	0.0
AZ	25.55	2000	15,770	0.8	474.8	474.8	474.8	0.0
BA	25.74	2161	11,087	1.2	475.2	475.2	475.2	0.0

<sup>1</sup> MILES ABOVE MOUTH

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**COUNTY OF CLARK, IN  
(AND INCORPORATED AREAS)**

**FLOODWAY DATA**

**SILVER CREEK**

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FT/SEC)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
<b>SILVER CREEK</b>								
BB	26.19	2320	18,750	0.7	476.0	476.0	476.1	0.1
BC	26.64	2075	14,926	0.9	476.5	476.5	476.6	0.1
BD	26.95	1829	4,821	2.1	477.9	477.9	478.0	0.1
BE	27.20	2109	5,867	1.2	480.4	480.4	480.4	0.0
BF	27.47	1775	8,215	0.9	481.7	481.7	481.7	0.0
BG	27.80	1559	5,956	1.2	482.6	482.6	482.6	0.0
BH	27.97	1694	9,481	0.8	483.2	483.2	483.2	0.0
BI	28.30	1498	3,352	2.2	484.1	484.1	484.1	0.0
BK	28.45	1290	4,096	1.8	487.2	487.2	487.2	0.0
BK	28.74	844	3,429	2.1	489.7	489.7	489.7	0.0
BL	29.08	839	5,160	1.4	492.4	492.4	492.5	0.1
BM	29.52	1230	4,715	1.5	494.8	494.8	494.9	0.1
BN	29.85	1473	8,195	0.9	497.0	497.0	497.0	0.0
BO	30.50	1101	6,844	1.1	499.72	499.7	499.7	0.0
BP	31.20	903	3,239	2.3	504.2	504.2	504.3	0.1
<b>WOODLAND COURT TRIBUTARY</b>								
A	0.250	363	1081	0.8	458.6	457.1 <sup>2</sup>	457.2	0.1
B	0.330	325	519	1.7	458.6	457.6 <sup>2</sup>	457.7	0.1
C	0.41	334	561	1.6	459.4	459.4	459.5	0.1
D	0.50	624	677	1.2	460.9	460.9	461.0	0.1
E	0.53	734	964	0.8	461.7	461.7	461.7	0.0
F	0.78	102	135	4.8	468.3	468.3	468.4	0.1
G	0.88	80	170	3.8	471.1	471.1	471.1	0.0
H	0.92	81	260	2.5	474.0	474.0	474.1	0.1
I	1.020	23	56	9.0	474.4	474.4	474.5	0.1

<sup>1</sup> MILES ABOVE MOUTH

<sup>2</sup> ELEVATIONS WITHOUT CONSIDERING BACKWATER EFFECT FROM LANCASSANGE CREEK

<b>TABLE 2</b>	FEDERAL EMERGENCY MANAGEMENT AGENCY	<b>FLOODWAY DATA</b>
	<b>COUNTY OF CLARK, IN (AND INCORPORATED AREAS)</b>	<b>SILVER CREEK - WOODLAND COURT TRIBUTARY</b>

## 5.0 INSURANCE APPLICATIONS

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

### Zone A

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

### Zone AE

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

### Zone AH

Zone AH is the flood insurance risk zone that corresponds to the areas of 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

### Zone AO

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

### Zone AR

Zone AR is the flood insurance risk zone that corresponds to an area of special flood hazard formerly protected from the 1-percent-annual-chance flood event by a flood-control system that was subsequently decertified. Zone AR indicates that the former flood-control system is being restored to provide protection from the 1-percent-annual-chance or greater flood event.

### Zone A99

Zone A99 is the flood insurance risk zone that corresponds to areas of the 1-percent-annual-chance floodplain that will be protected by a Federal flood protection system

where construction has reached specified statutory milestones. No BFEs or depths are shown within this zone.

#### Zone V

Zone V is the flood insurance risk zone that corresponds to the 1-percent-annual-chance coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no BFEs are shown within this zone.

#### Zone VE

Zone VE is the flood insurance risk zone that corresponds to the 1-percent-annual-chance coastal floodplains that have additional hazards associated with storm waves. Whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

#### Zone X

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

#### Zone X (Future Base Flood)

Zone X (Future Base Flood) is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined based on future-conditions hydrology. No BFEs or base flood depths are shown within this zone.

#### Zone D

Zone D is the flood insurance risk zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

## **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 countywide FIRM presents flooding information for the entire geographic area of Clark County. Previously, FIRMs were prepared for each incorporated community and the unincorporated areas of the County identified as flood-prone. This countywide FIRM also includes flood-hazard information that was presented separately on Flood Boundary and Floodway Maps (FBFMs), where applicable. Historical data relating to the maps prepared for each community are presented in Table 8, "Community Map History."

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Borden/ New Providence, Town of	April 18, 1980	None	None	None
Charlestown, City of	April 12, 1974	None	November 15, 1979	November 15, 1986
Clark, County of (Unincorporated Areas)	February 24, 1978	None	September 30, 1980	February 18, 1983
Clarksville, Town of	June 14, 1974	August 6, 1976	August 3, 1981	None
Jeffersonville, City of	June 14, 1974	December 26, 1975	August 1, 1979	July 16, 1990
Sellersburg, Town of	November 23, 1973	July 16, 1976	August 1, 1980	None
Utica, Town of	February 12, 1982	None	September 19, 1984	None

**TABLE 8**

**FEDERAL EMERGENCY MANAGEMENT AGENCY**

**CLARK COUNTY, IN  
(ALL JURISDICTIONS)**

**COMMUNITY MAP HISTORY**

## 7.0 OTHER STUDIES

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

## 8.0 LOCATION OF DATA

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

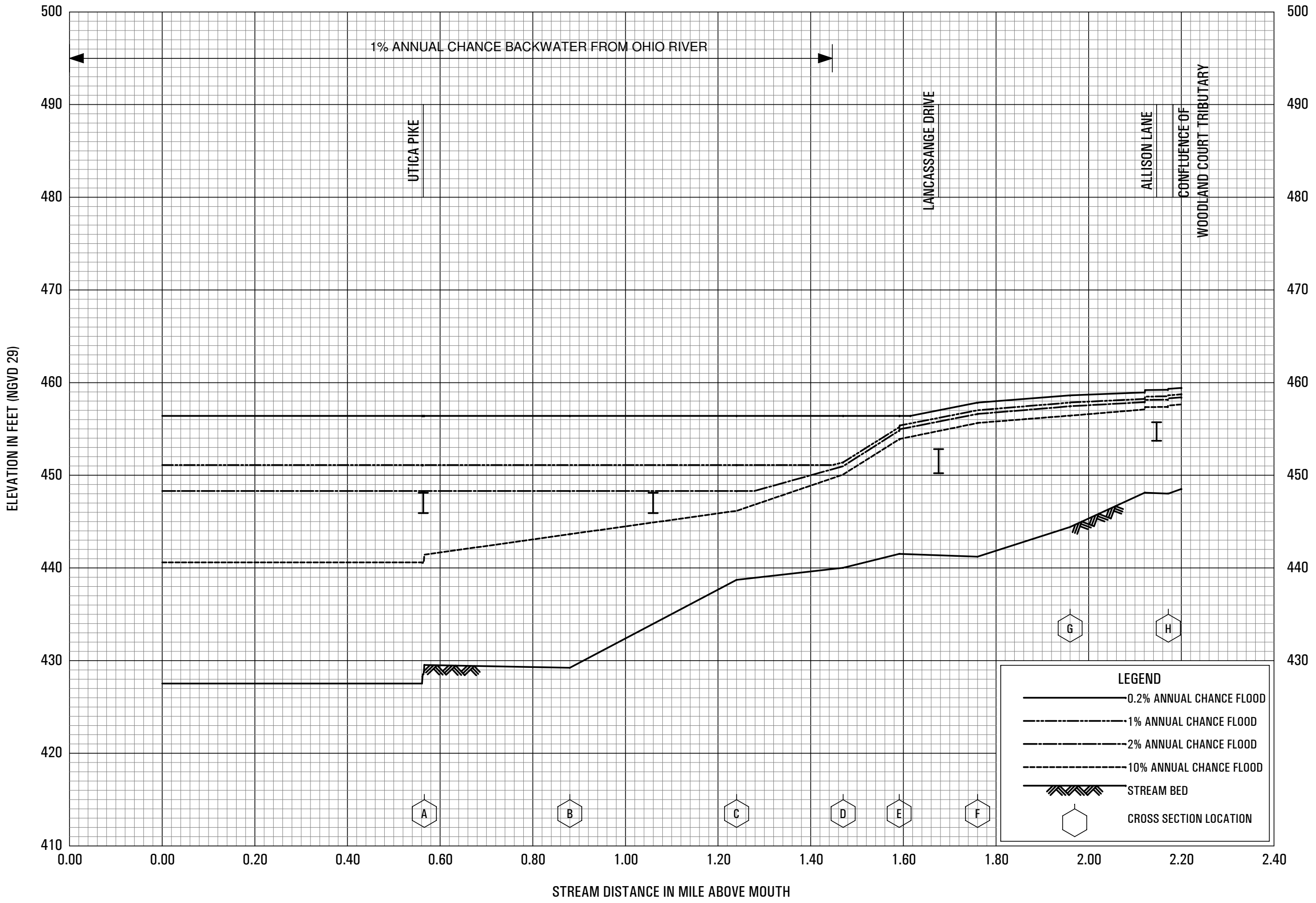
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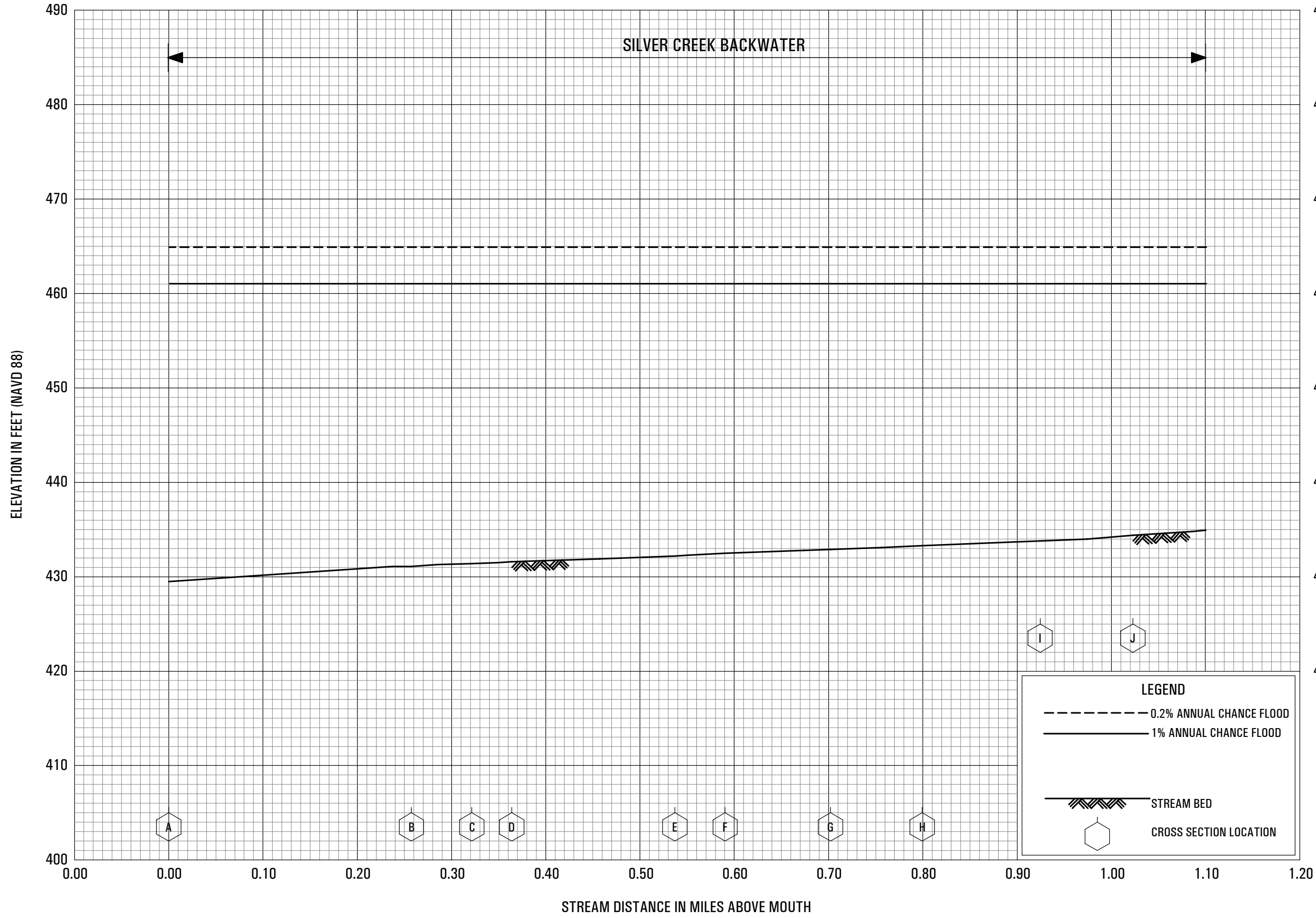
**FLOOD PROFILES**

**LANCISSANGE CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**COUNTY OF CLARK, IN**  
 AND INCORPORATED AREAS

**03P**





**FLOOD PROFILES**

LICK RUN

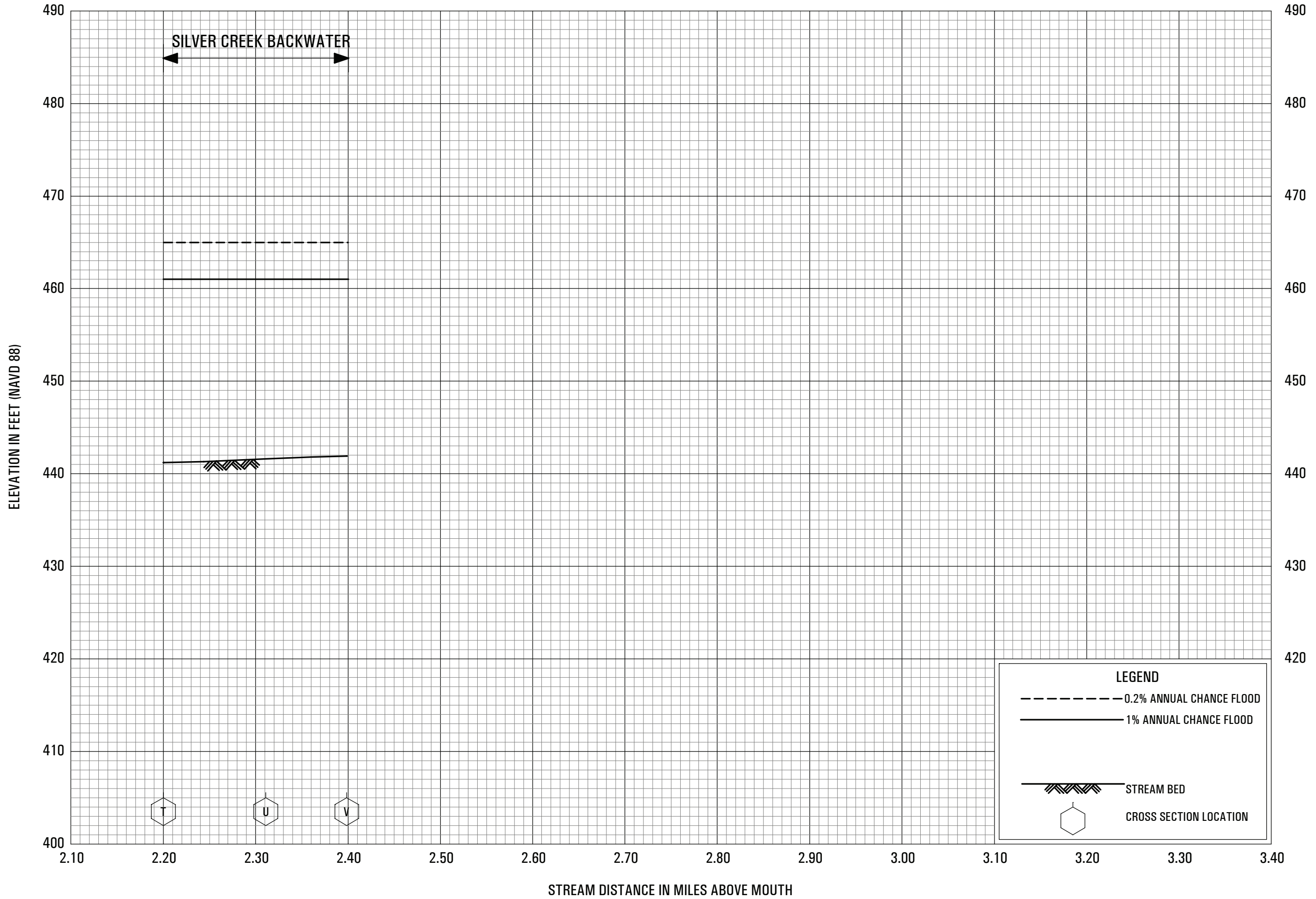
FEDERAL EMERGENCY MANAGEMENT AGENCY  
**CLARK COUNTY, IN**  
 ALL JURISDICTIONS

05P

**LEGEND**

- 0.2% ANNUAL CHANCE FLOOD
- \_\_\_\_\_ 1% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION





**FLOOD PROFILES**

LICK RUN

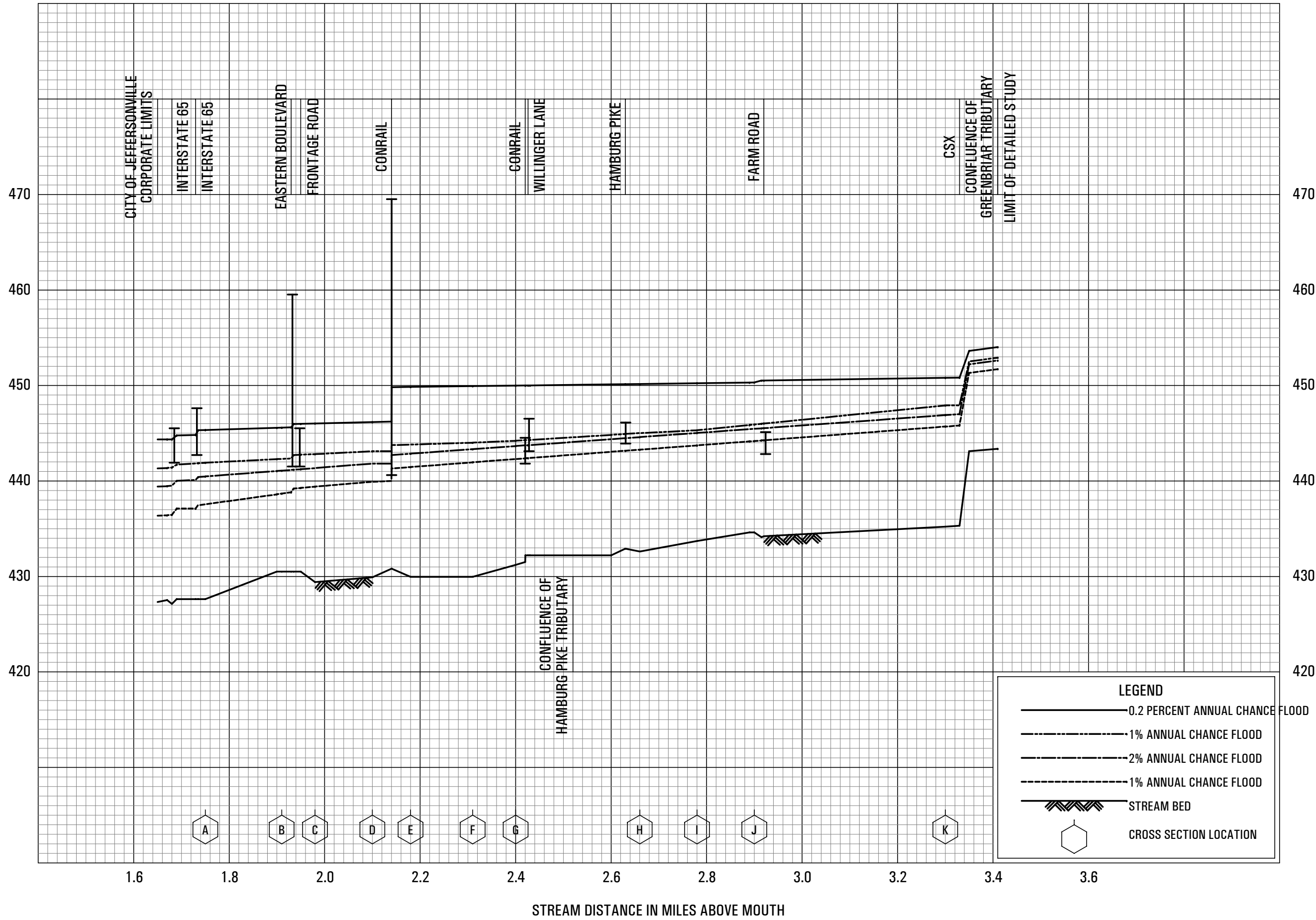
FEDERAL EMERGENCY MANAGEMENT AGENCY  
**CLARK COUNTY, IN**  
 ALL JURISDICTIONS

07P

**LEGEND**

- 0.2% ANNUAL CHANGE FLOOD
- \_\_\_\_\_ 1% ANNUAL CHANGE FLOOD
- /\/\/\————— STREAM BED
- ⬡ CROSS SECTION LOCATION

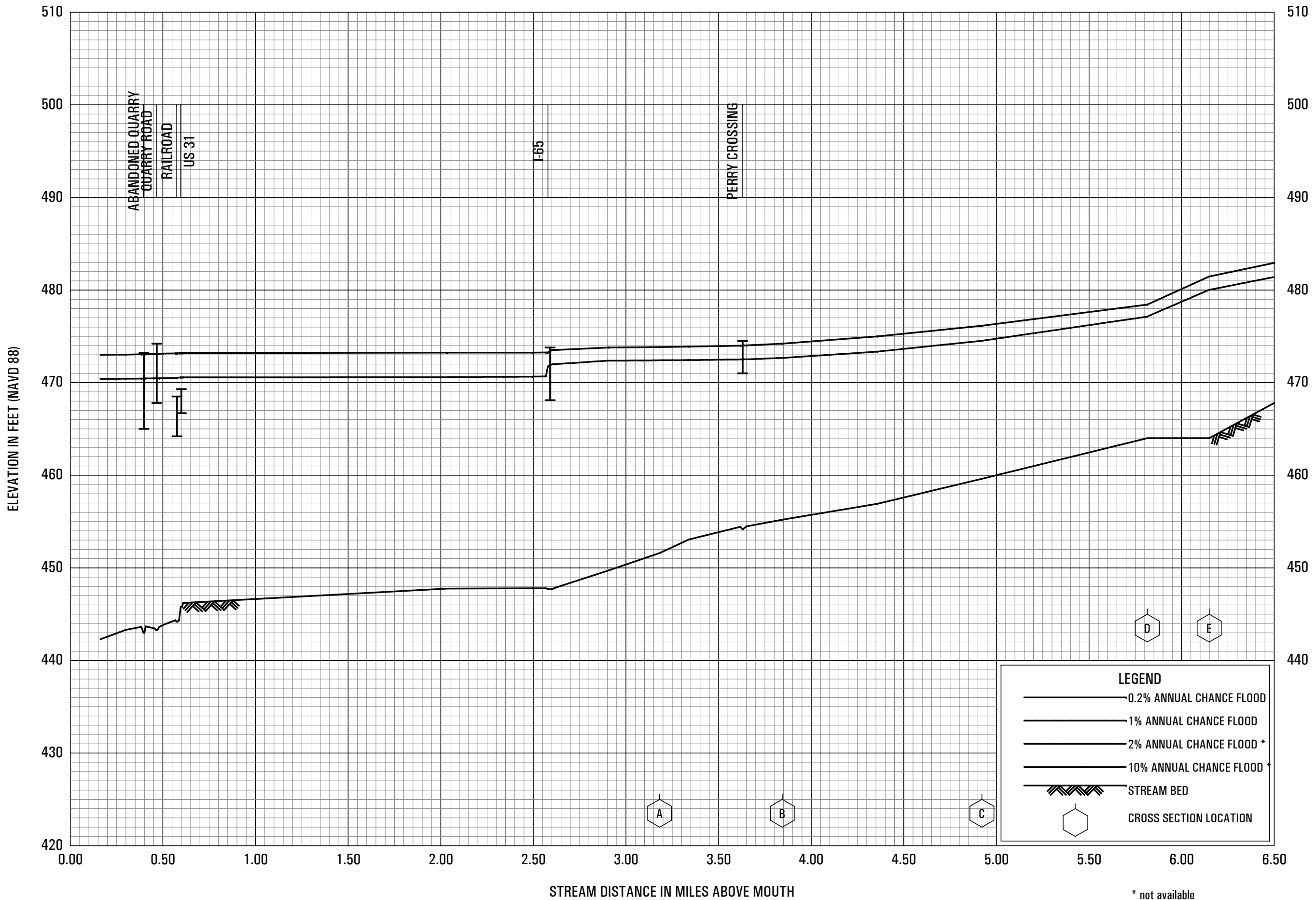
ELEVATION IN FEET (NAVD 88)



**FLOOD PROFILES**  
MILL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**COUNTY OF CLARK, IN**  
AND INCORPORATED AREAS

**08P**



**FLOOD PROFILES**

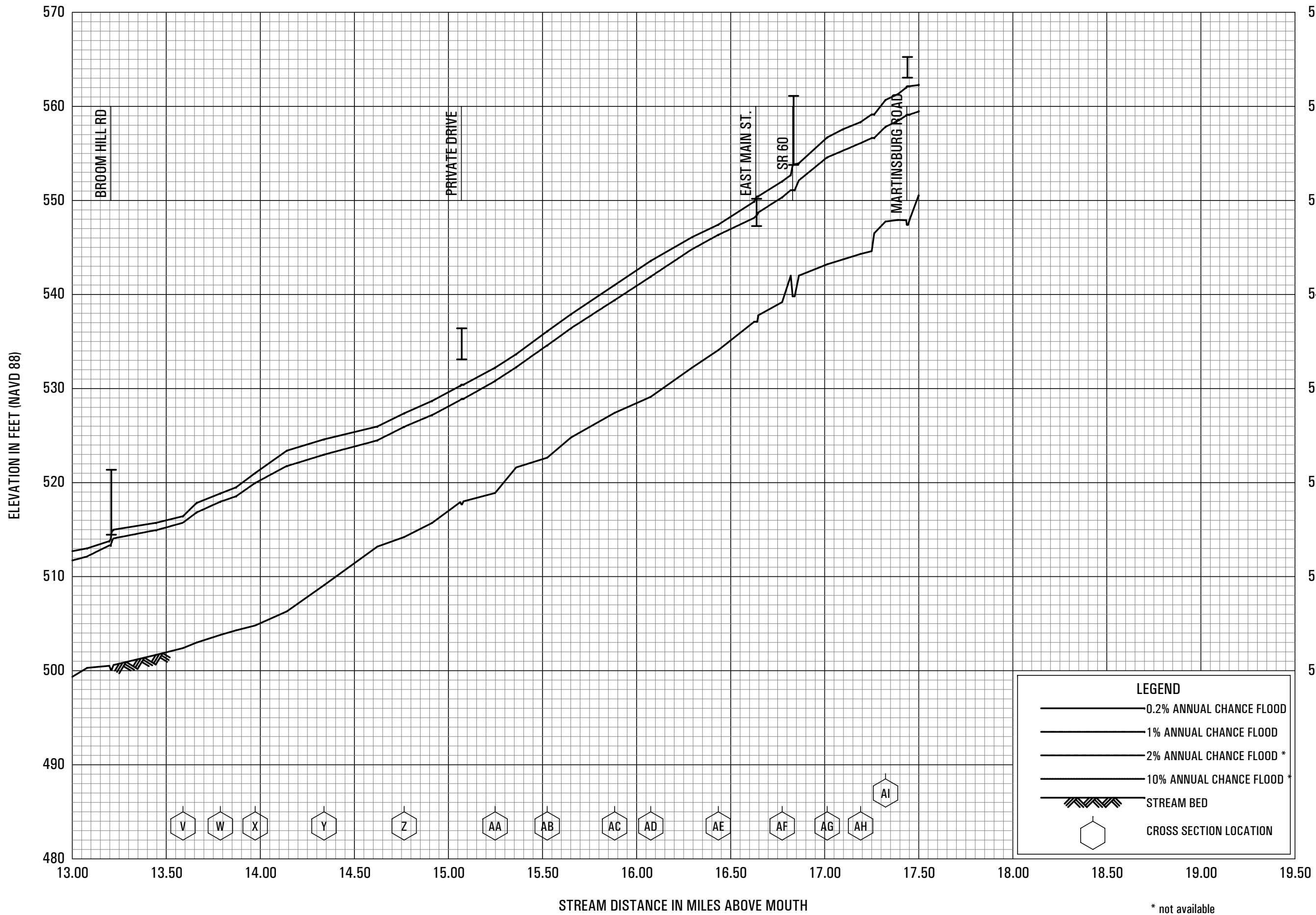
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**FEDERAL EMERGENCY MANAGEMENT AGENCY  
CLARK COUNTY, IN  
ALL JURISDICTIONS**

**09P**

\* not available





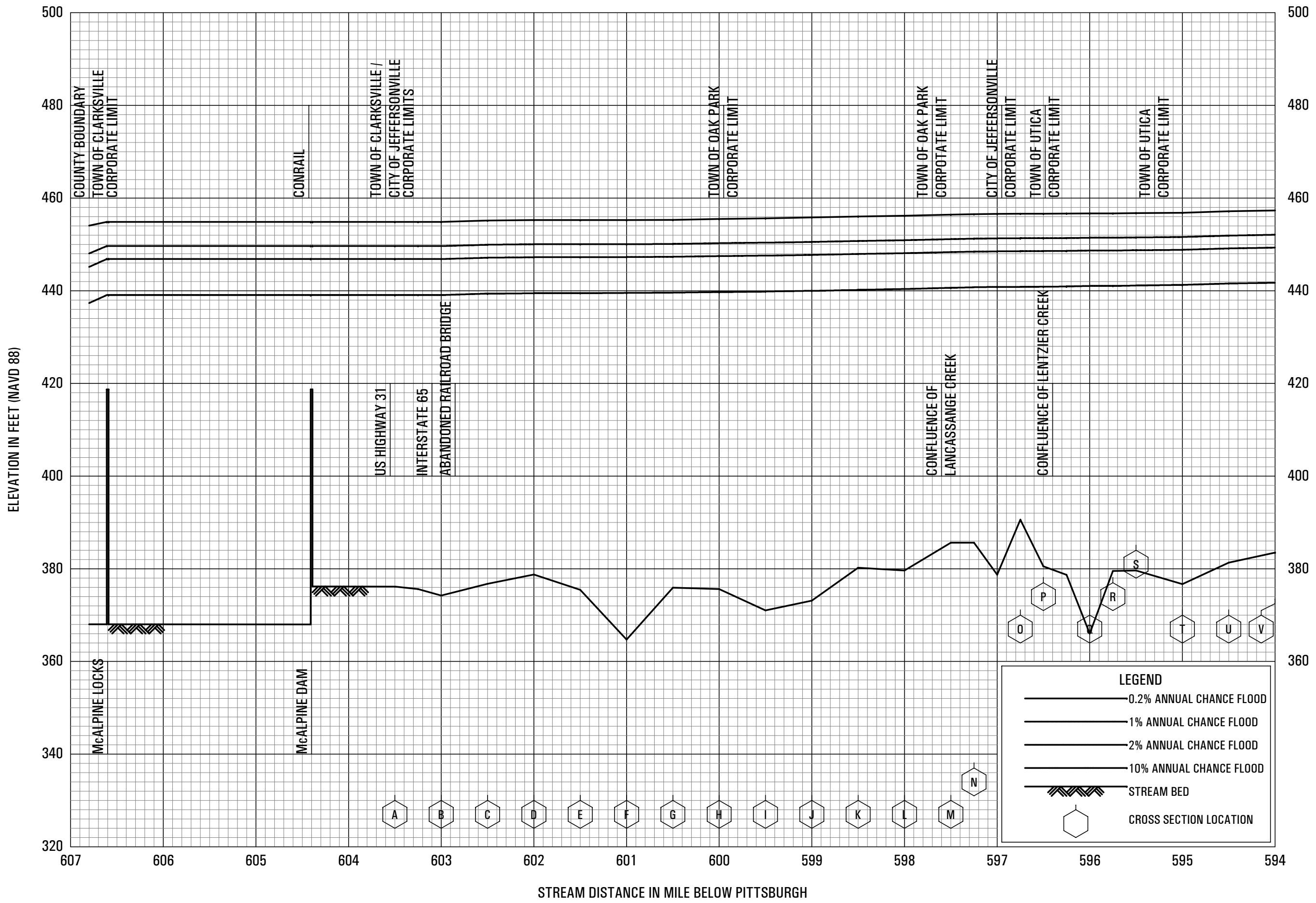
**FLOOD PROFILES**

**MUDDY FORK**

**FEDERAL EMERGENCY MANAGEMENT AGENCY  
CLARK COUNTY, IN  
ALL JURISDICTIONS**

\* not available



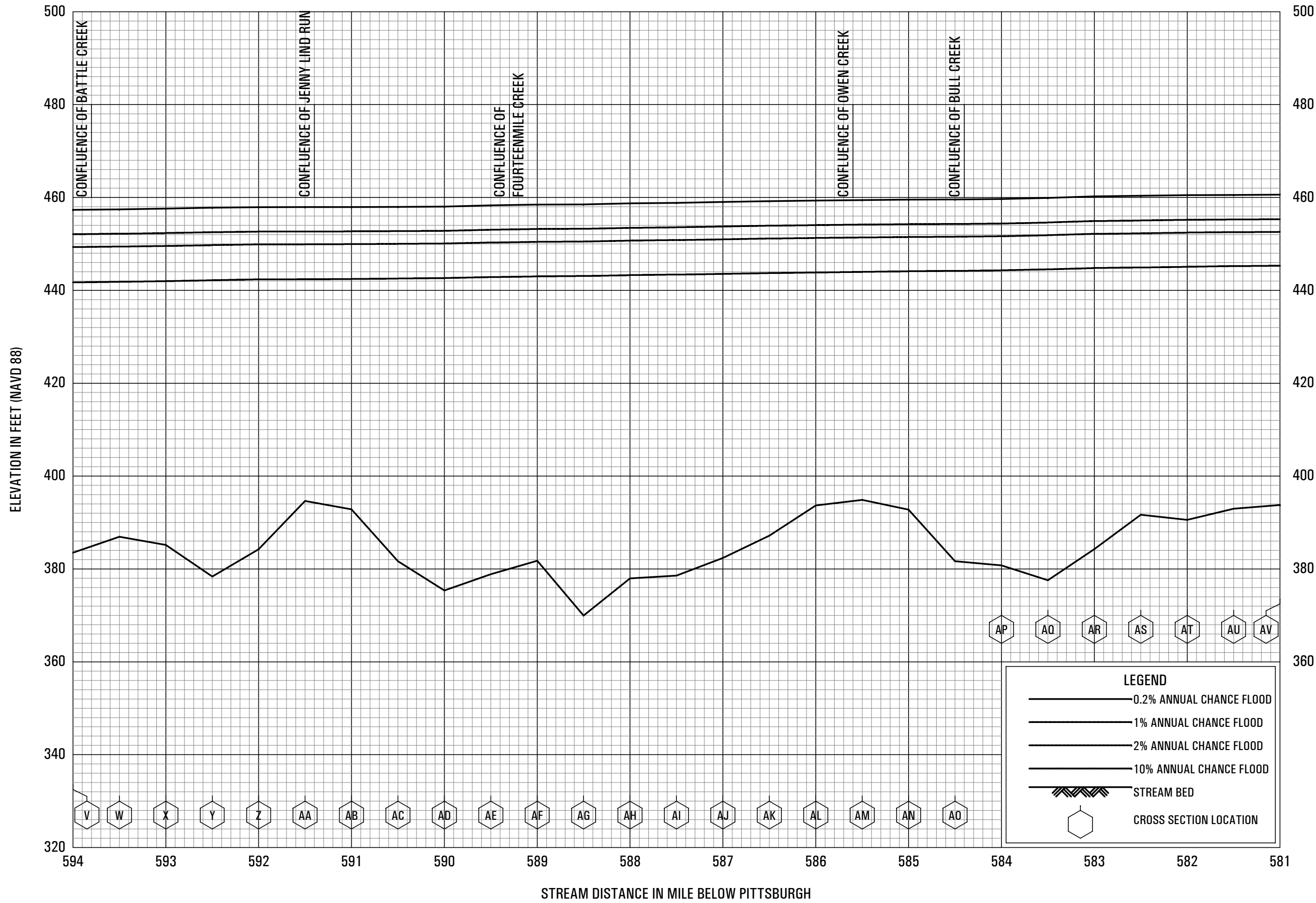


**FLOOD PROFILES**

OHIO RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

**CLARK COUNTY, IN  
AND INCORPORATED AREAS**

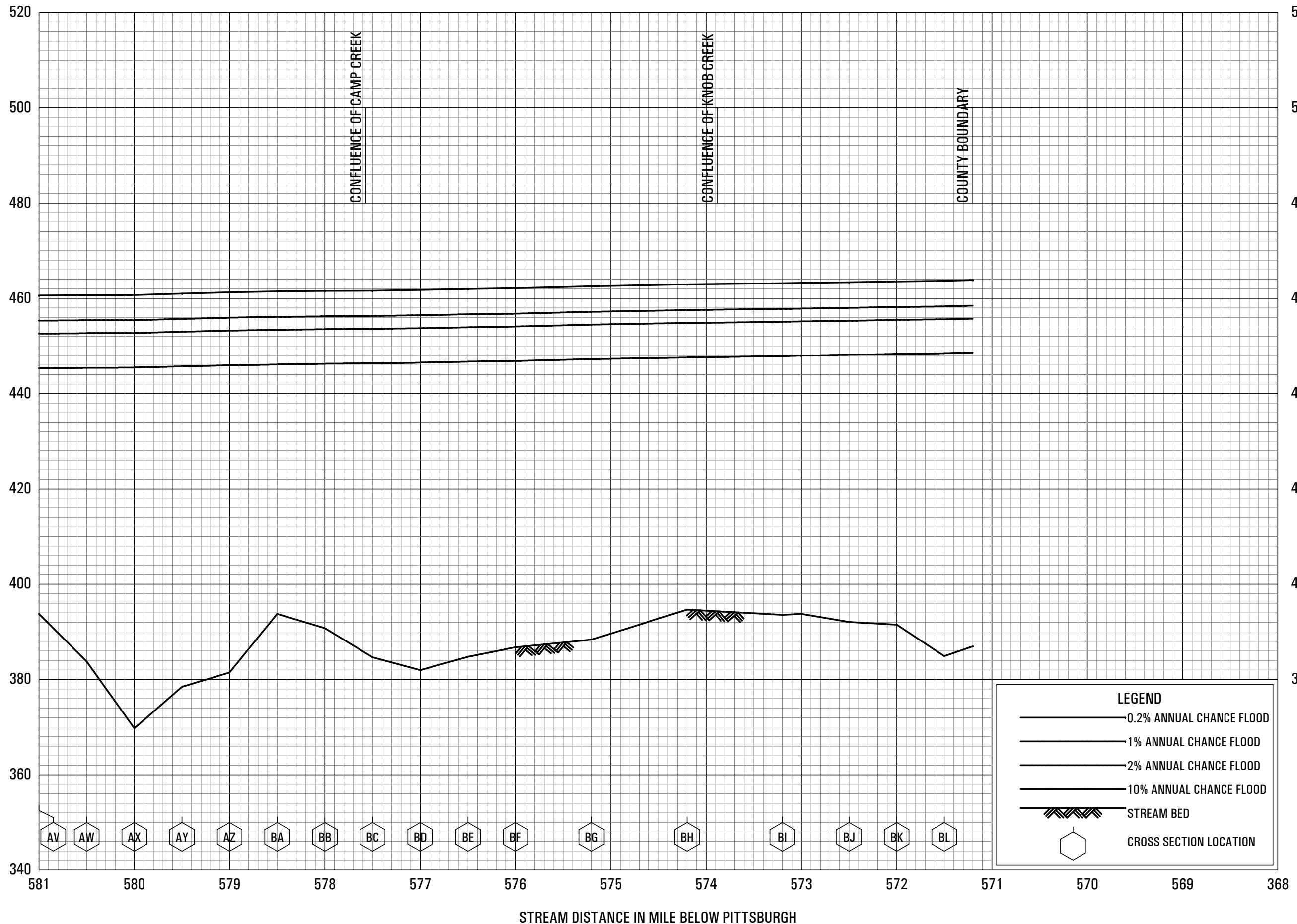


**FLOOD PROFILES**

OHIO RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**CLARK COUNTY, IN**  
 AND INCORPORATED AREAS

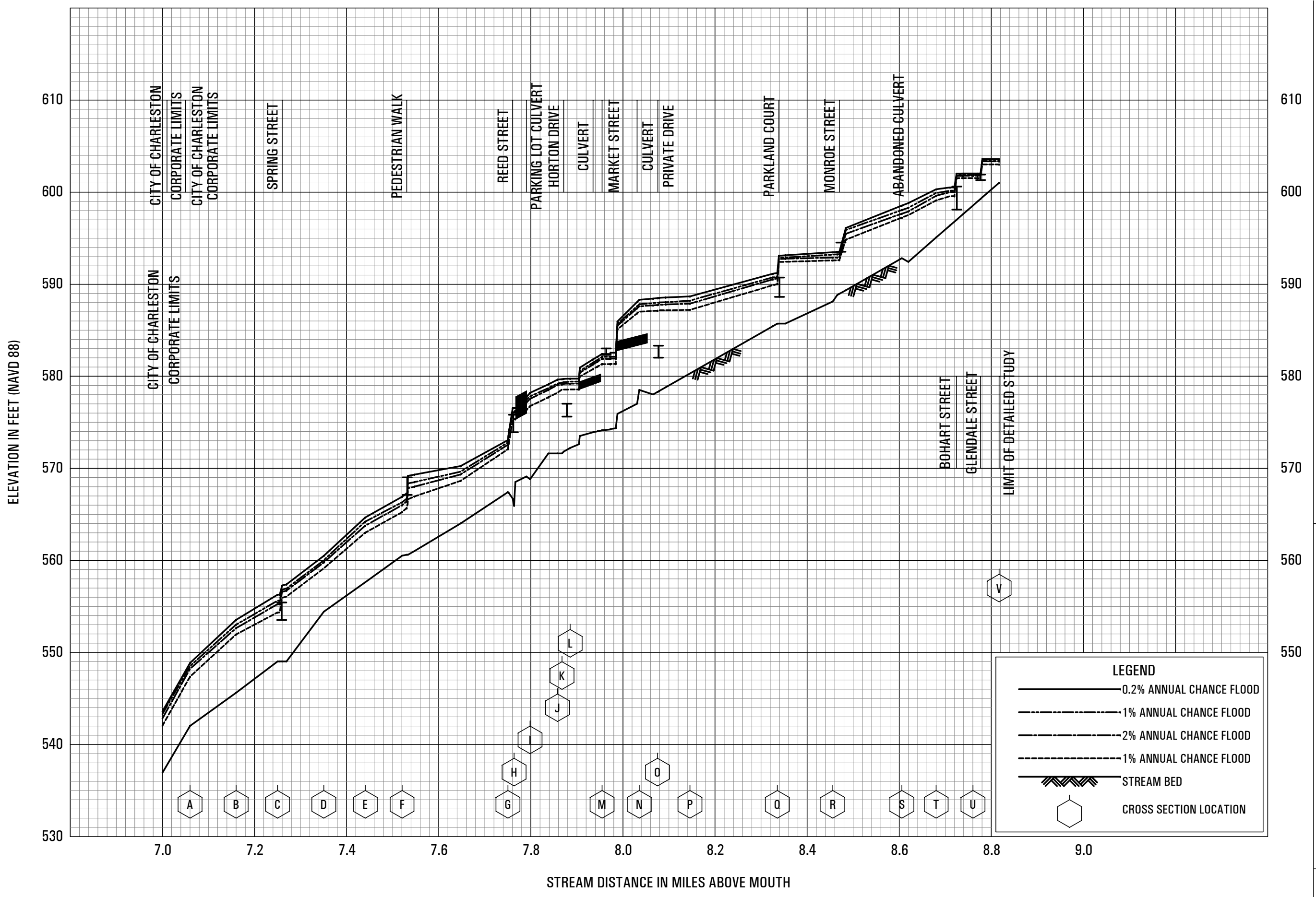
ELEVATION IN FEET (NAVD 88)



**FLOOD PROFILES**

OHIO RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**CLARK COUNTY, IN**  
AND INCORPORATED AREAS

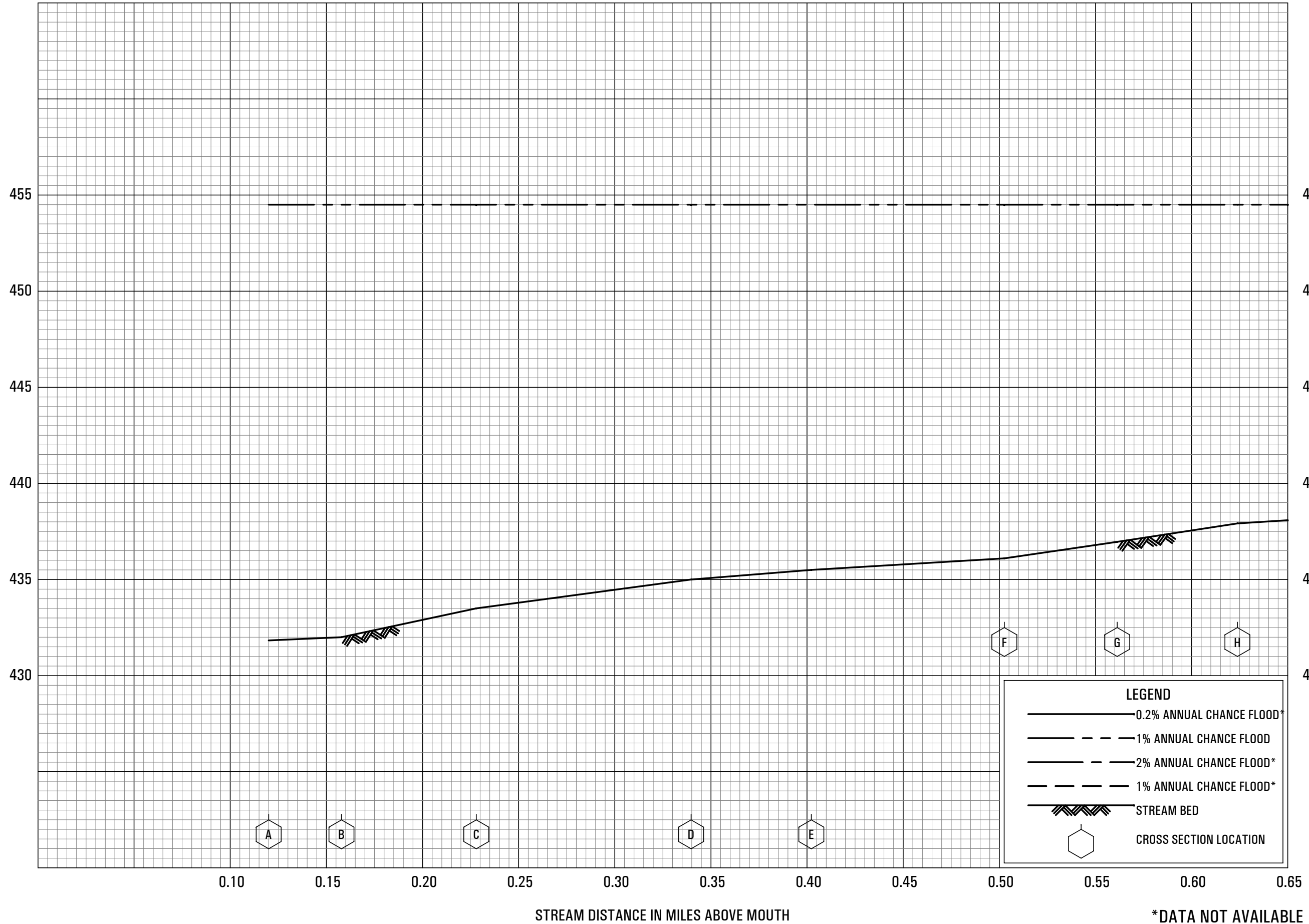


**FLOOD PROFILES**

PLEASANT RUN

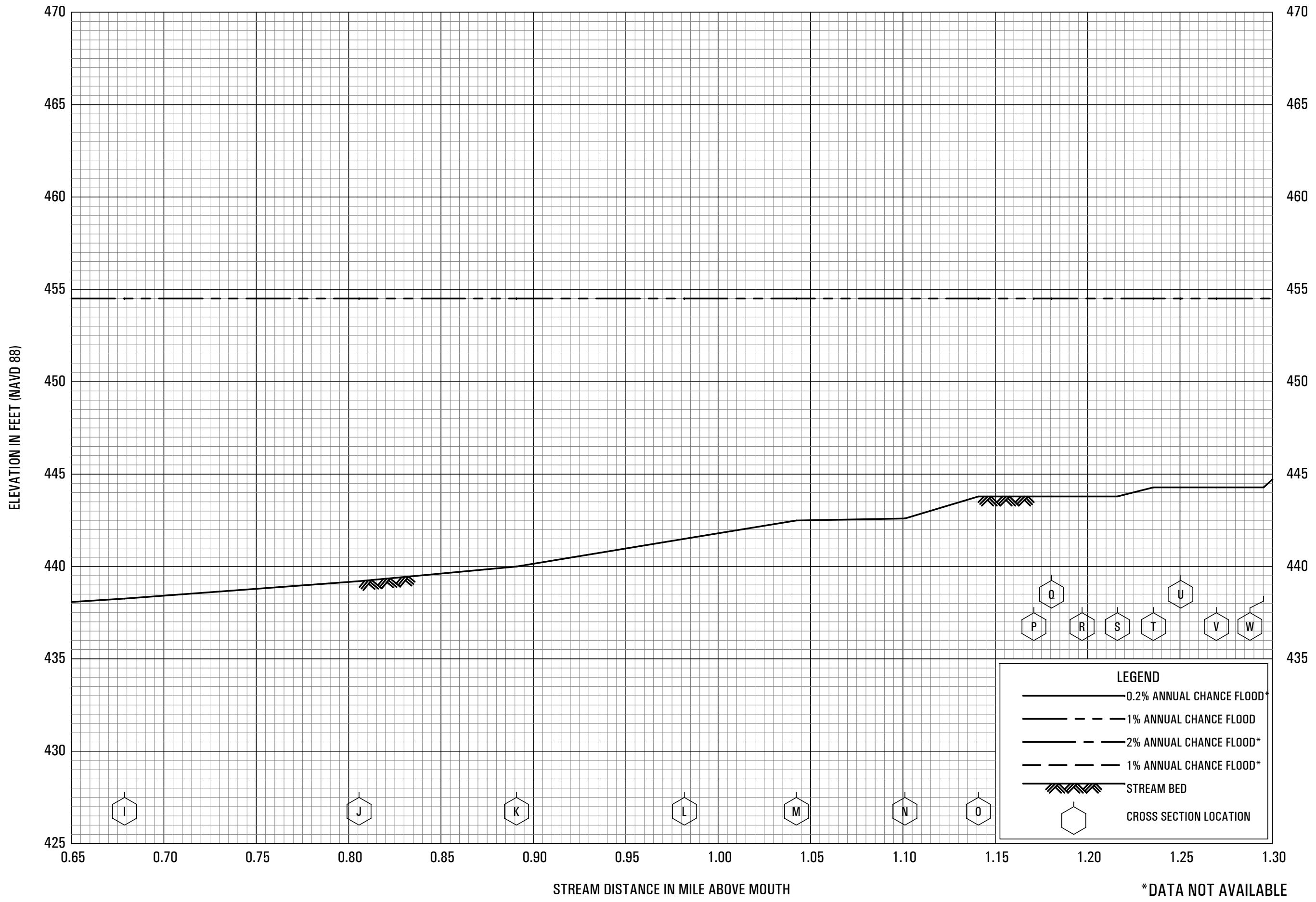
FEDERAL EMERGENCY MANAGEMENT AGENCY  
**COUNTY OF CLARK, IN**  
 AND INCORPORATED AREAS

ELEVATION IN FEET (NAVD 88)



FLOOD PROFILES  
PLUM RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY  
COUNTY OF CLARK, IN, IN  
AND INCORPORATED AREAS

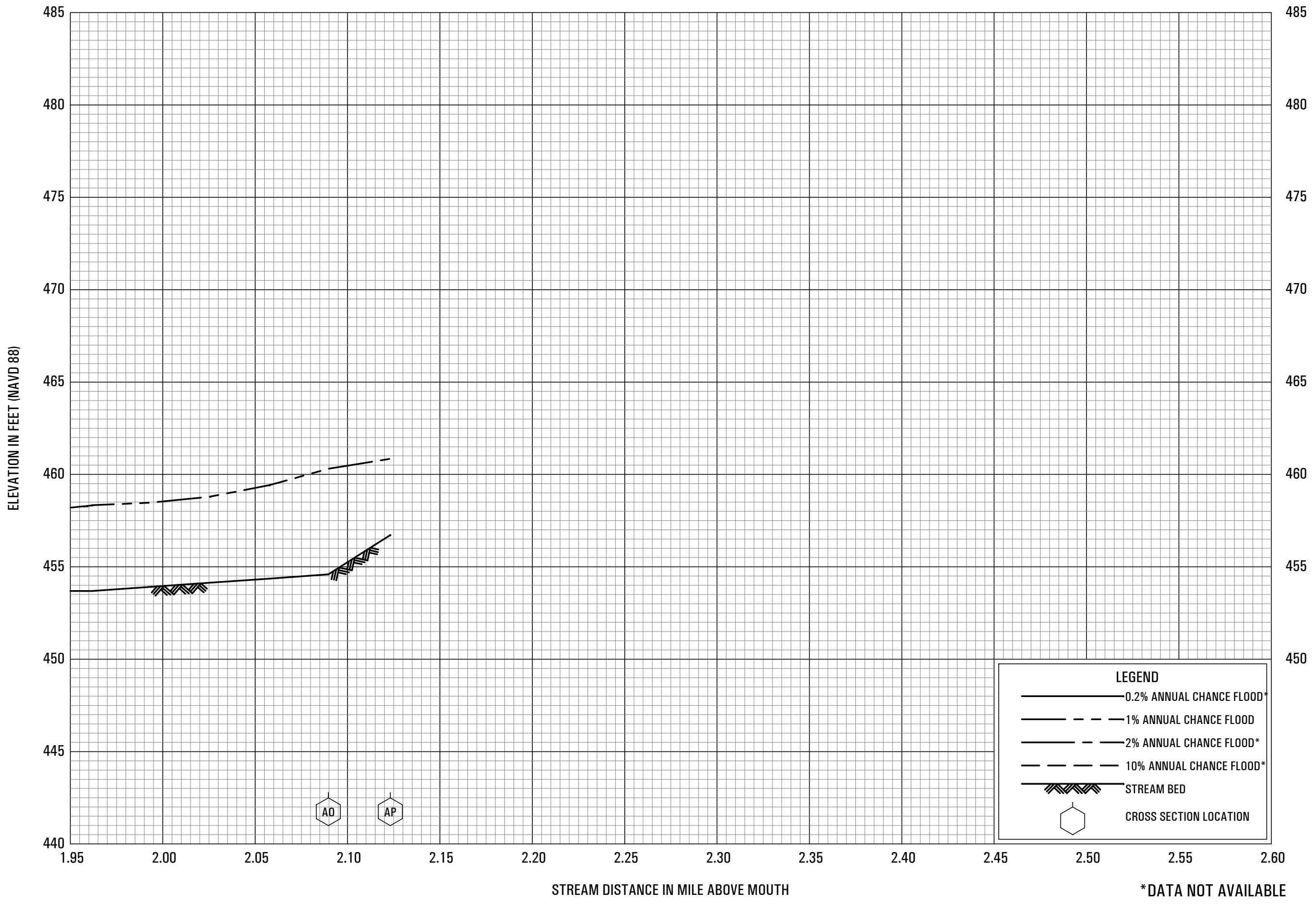


**FLOOD PROFILES**

**PLUM RUN**

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**COUNTY OF CLARK, IN, IN**  
 AND INCORPORATED AREAS





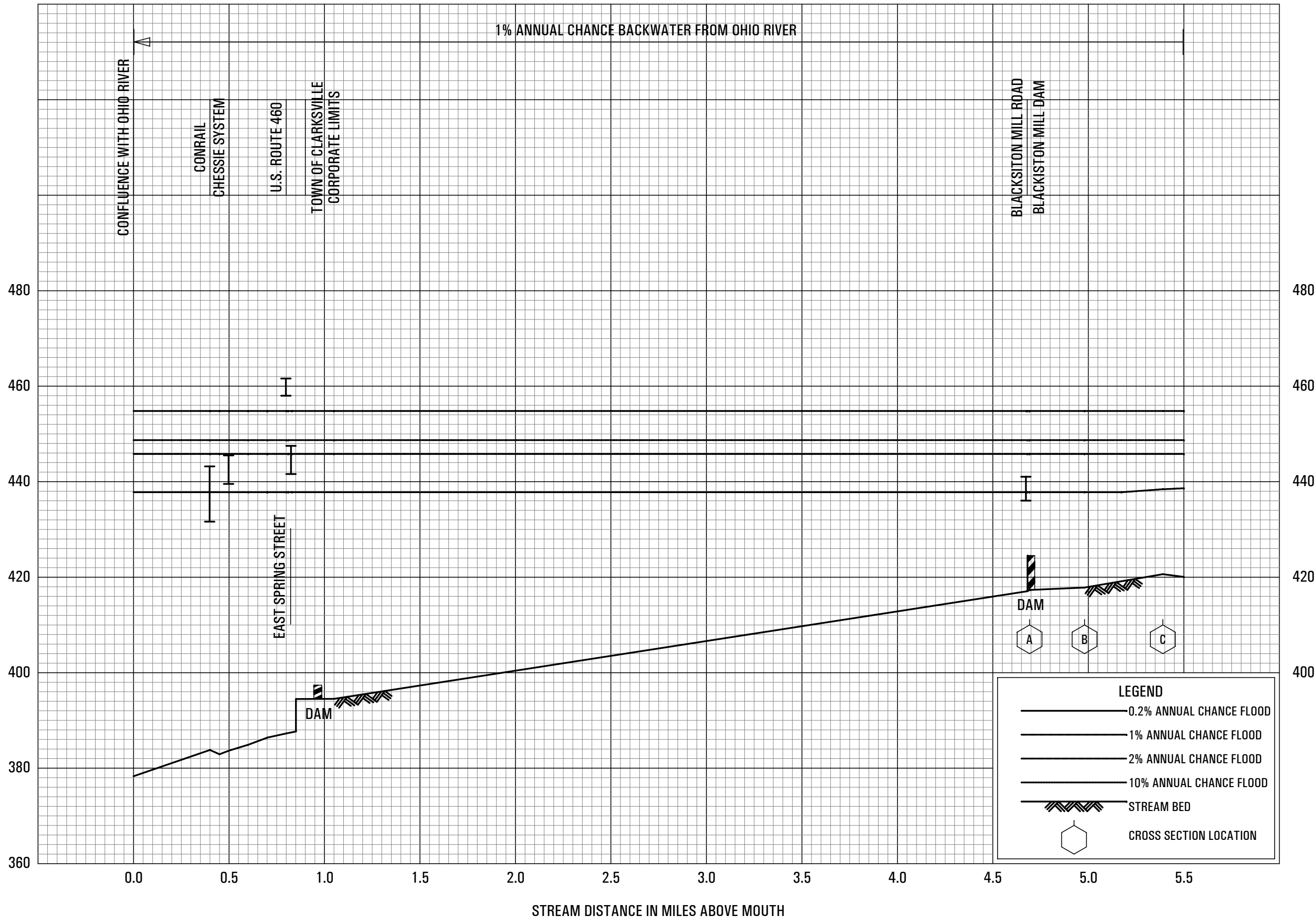
**FLOOD PROFILES**

**PLUM RUN**

**FEDERAL EMERGENCY MANAGEMENT AGENCY  
COUNTY OF CLARK, IN, IN  
AND INCORPORATED AREAS**

**20P**

ELEVATION IN FEET (NAVD 88)



**FLOOD PROFILES**

SILVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**COUNTY OF CLARK, IN**  
AND INCORPORATED AREAS

ELEVATION IN FEET (NAVD 88)

STREAM DISTANCE IN MILES ABOVE MOUTH

1% ANNUAL CHANCE BACKWATER FROM OHIO RIVER

CITY OF CLARKSVILLE  
CORPORATE LIMITS

INTERSTATE ROUTE 265

CITY OF CLARKSVILLE  
CORPORATE LIMITS

CONFLUENCE WITH PLUM RUN

INTERSTATE 65

STATE ROUTE 60

U.S. ROUTE 31 EAST

CONRAIL

CONFLUENCE OF  
LICK RUN

CITY OF JEFFERSONVILLE  
CORPORATE LIMITS

CITY OF JEFFERSONVILLE  
CORPORATE LIMITS

**LEGEND**

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

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**COUNTY OF CLARK, IN**  
AND INCORPORATED AREAS

**FLOOD PROFILES**

SILVER CREEK

22P

470

460

450

440

430

420

410

470

460

450

440

430

420

5.5

6.0

6.5

7.0

7.5

8.0

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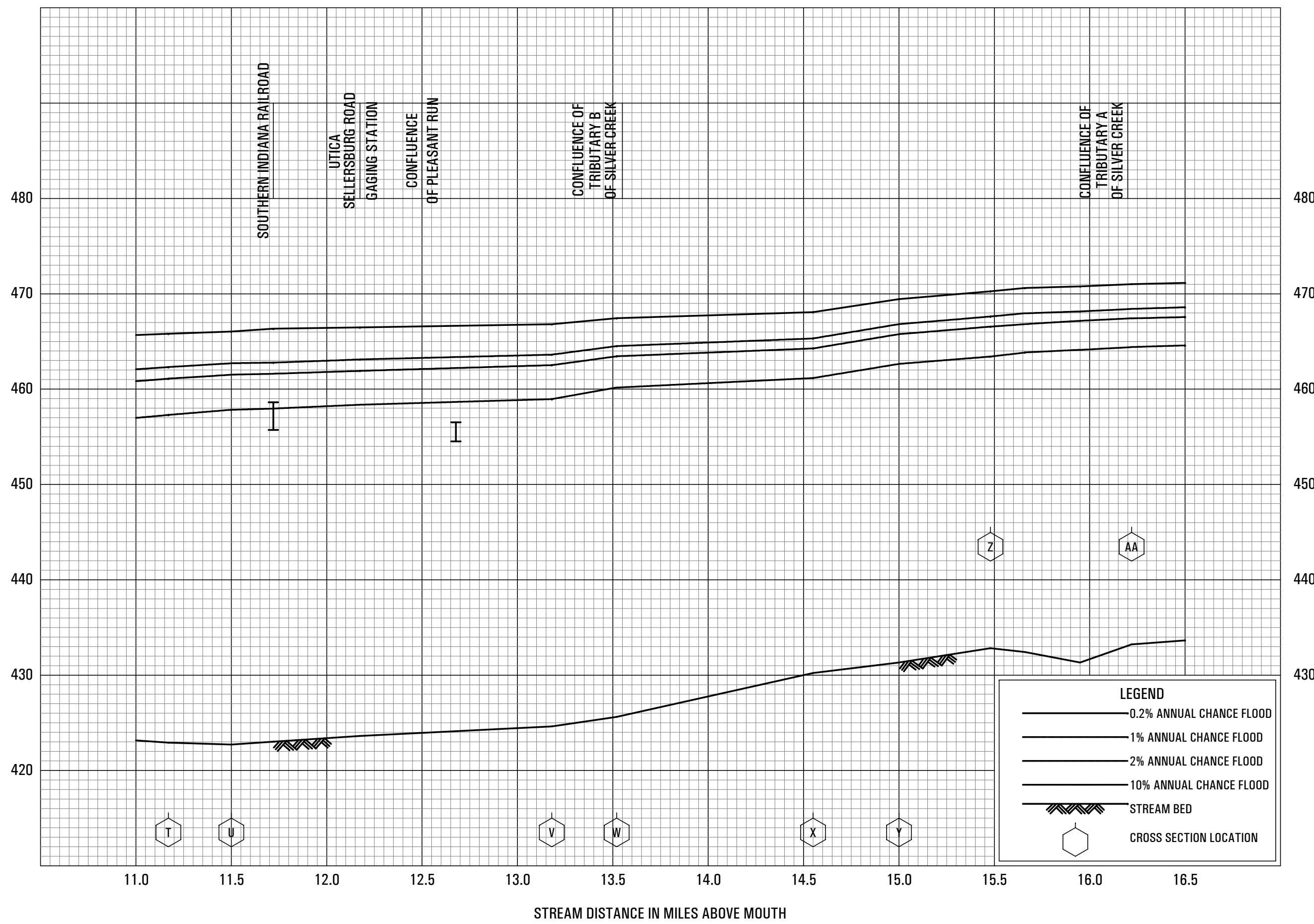
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ELEVATION IN FEET (NAVD 88)

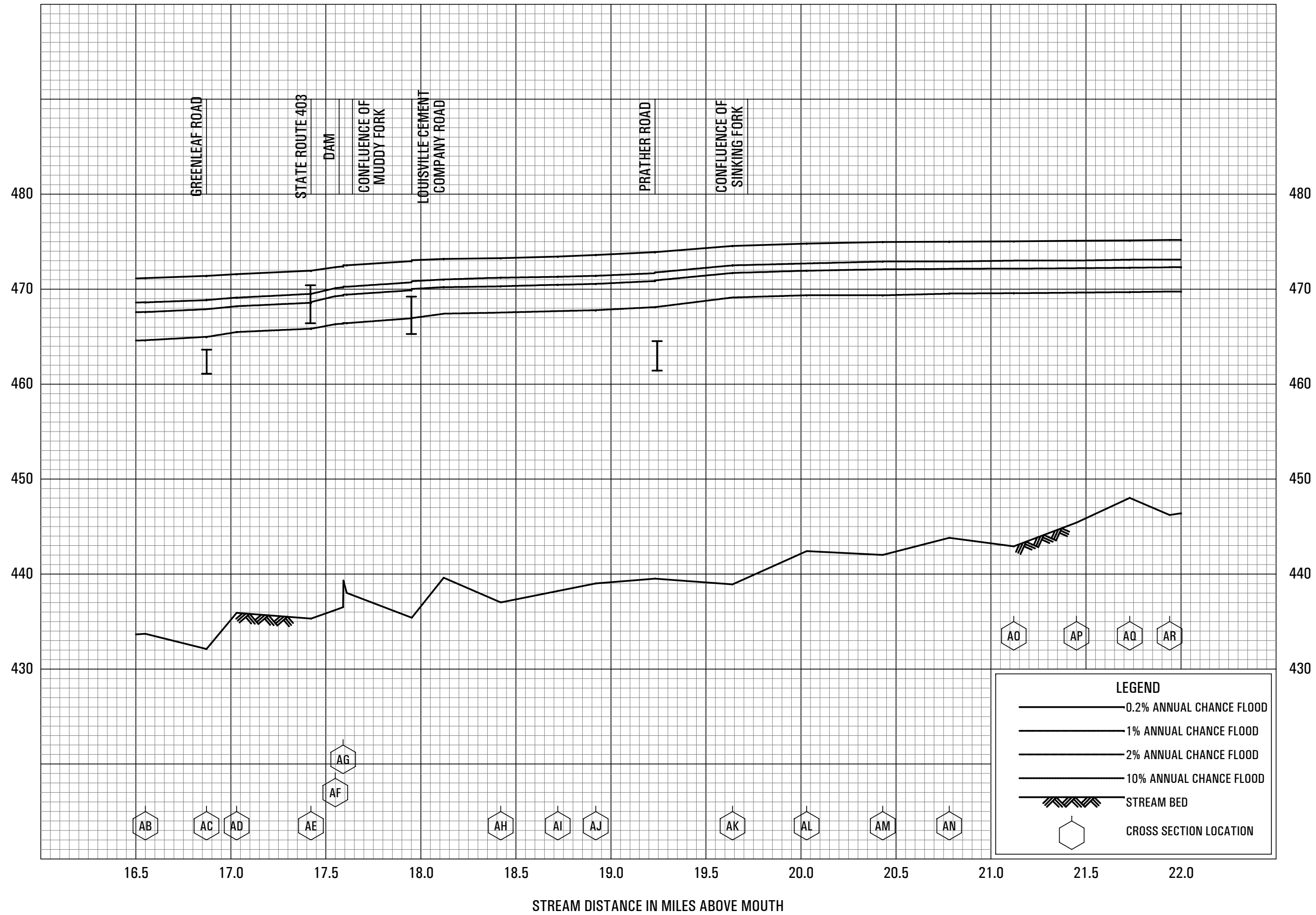


FLOOD PROFILES

SILVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY  
COUNTY OF CLARK, IN  
AND INCORPORATED AREAS

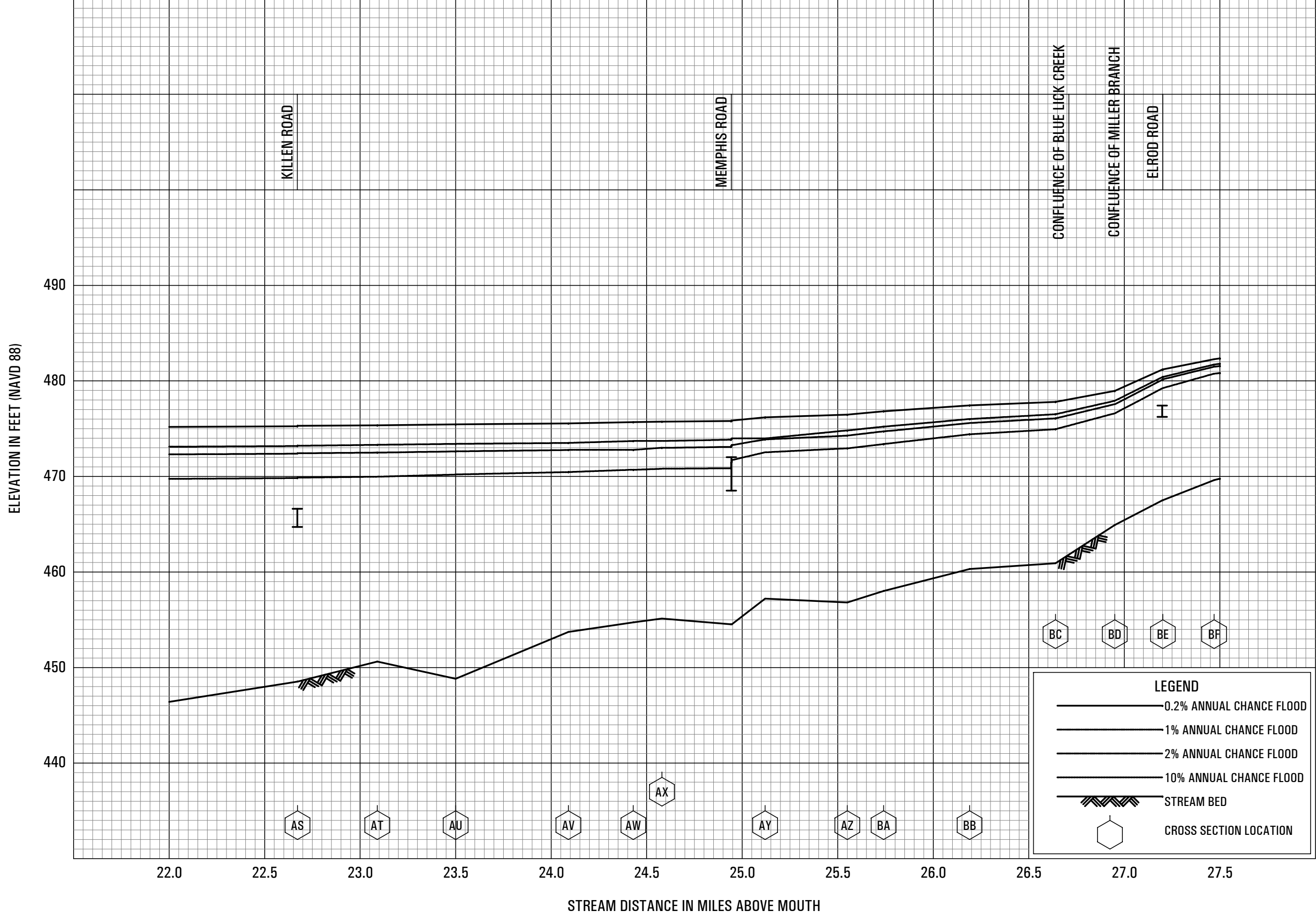
ELEVATION IN FEET (NAVD 88)



FLOOD PROFILES

SILVER CREEK

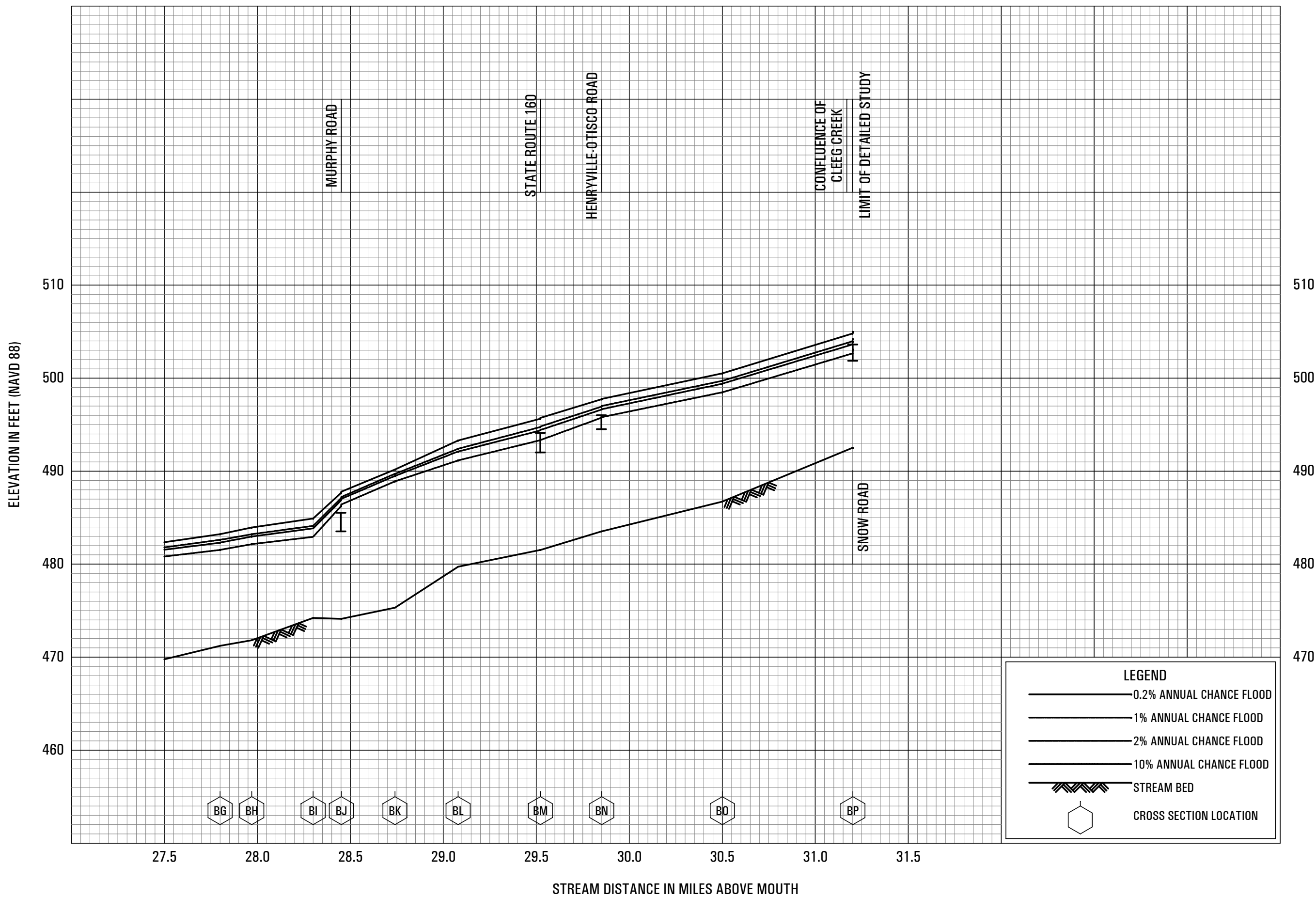
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COUNTY OF CLARK, IN  
AND INCORPORATED AREAS

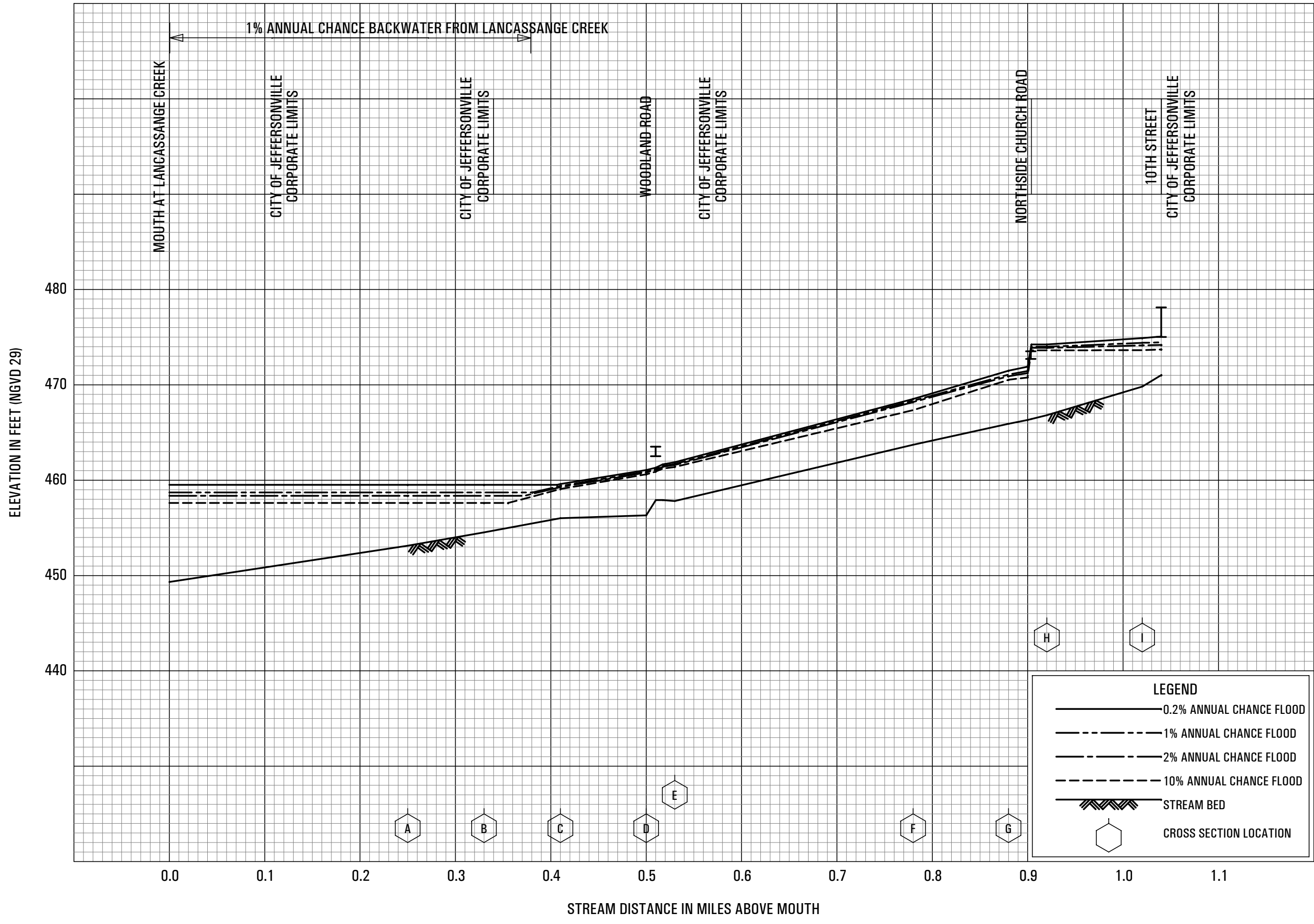


**FLOOD PROFILES**

SILVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**COUNTY OF CLARK, IN**  
 AND INCORPORATED AREAS





**FLOOD PROFILES**

**WOODLAND COURT TRIBUTARY**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**COUNTY OF CLARK, IN  
AND INCORPORATED AREAS**