

FLOOD INSURANCE STUDY



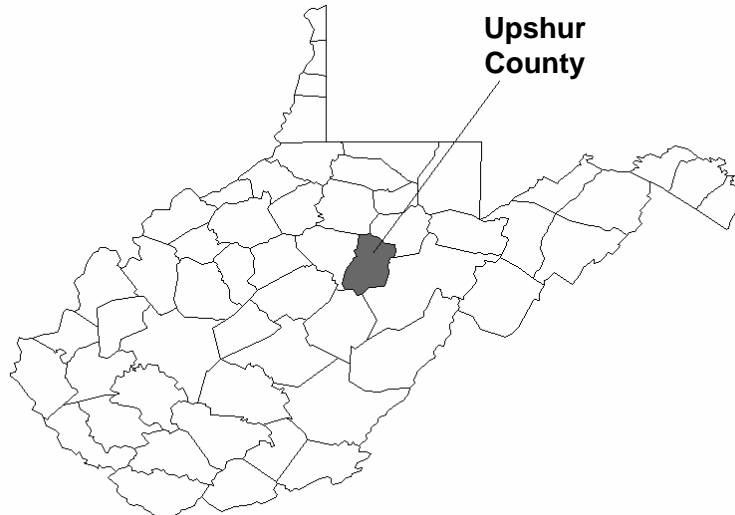
UPSHUR COUNTY, WEST VIRGINIA AND INCORPORATED AREAS

COMMUNITY NAME

BUCKHANNON, CITY OF
UPSHUR COUNTY
(UNINCORPORATED AREAS)

COMMUNITY NUMBER

540199
540198



September 29, 2010



Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
54097CV000A

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

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

<u>Old Zones</u>	<u>New Zones</u>
A1 through A30	AE
B	X
C	X

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

Initial Countywide FIS Effective Date: September 29, 2010

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Exhibit 1 - Flood Profiles

Buckhannon River

Panels 01P-02P

Published Separately:
Flood Insurance Rate Map Index
Flood Insurance Rate Map

FLOOD INSURANCE STUDY

UPSHUR COUNTY, WEST VIRGINIA AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and updates information on the existence and severity of flood hazards in the geographic area of Upshur County, including the City of Buckhannon and the unincorporated areas of Upshur County (referred to collectively herein as Upshur County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This FIS has developed flood risk data for various areas of the county that will be used to establish actuarial flood insurance rates. This information will also be used by Upshur County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and will also be used by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in 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.

1.2 Authority and Acknowledgments

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

This FIS was prepared to include the unincorporated areas of, and incorporated communities within, Upshur County in a countywide format. Information on the authority and acknowledgments for each jurisdiction included in this countywide FIS, as compiled from their previously printed FIS reports, is shown below.

Buckhannon, City of: In the original September 4, 1986 FIS, the hydrologic and hydraulic analyses were prepared by the Pittsburgh District of the U.S. Army Corps of Engineers (USACE) for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement EMW-E-1153, Project Order No. 1, Amendment No. 20. This work was completed in April 1985.

In the December 20, 2002 revision, a full-panel Letter of Map Revision (LOMR) (Case No. 00-03-125P) was

incorporated that became effective on February 2, 2002. This LOMR reflected updated hydraulic analyses and more up-to-date topographic information along the Buckhannon River, as well as revised corporate limits for the City of Buckhannon. The hydraulic analyses for Buckhannon River were prepared by Swecker Engineering and the City of Buckhannon for FEMA.

The authority and acknowledgements for Upshur County (Unincorporated Areas) are not included because there was no previously printed FIS report.

For this countywide FIS, no revised hydrologic and hydraulic analyses were prepared.

Planimetric base map information is provided in digital format for all FIRM panels. These files were compiled at scales of 6000, 12000, and 24000 from photography dated 2003. Additional information was derived from the U.S. Census Bureau, the West Virginia Statewide Addressing and Mapping Board (WV SAMB), the West Virginia Dept. of Environmental Protection (WV DEP), and the West Virginia Division of Natural Resources (WV DNR). 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 Universal Transverse Mercator (UTM), Zone 17 North, 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.

The Digital Flood Insurance Rate Map (DFIRM) conversion for this study was performed by West Virginia University GIS Technical Center and AMEC Earth and Environmental, Inc. for the Federal Emergency Management Agency (FEMA). This work was completed in 2009.

1.3 Coordination

Consultation Coordination Officer's (CCO) meetings may be held for each jurisdiction in this countywide FIS. An initial CCO meeting is held typically with representatives of FEMA, the community, and the study contractor to explain the nature and purpose of a FIS and to identify the streams to be studied by detailed methods. A final CCO meeting is held typically with representatives of FEMA, the community, and the study contractor to review the results of the study.

For the September 4, 1986 FIS an initial CCO meeting was held on August 1, 1983, and a final CCO meeting was held on October 29, 1985. Both of these meetings were attended by representatives of the City of Buckhannon, the USACE, and

FEMA.

For the December 20, 2002 revision, the City of Buckhannon was notified by letter on December 18, 2001, that its FIS would be revised to incorporate the LOMR.

For this revision, a final meeting was held on June 17, 2009 and was attended by representatives of Upshur County, the study contractor, and FEMA.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS report covers the geographic area of Upshur County, West Virginia, including the incorporated communities listed in Section 1.1.

For the September 4, 1986, FIS, the Buckhannon River was studied by detailed methods for its entire length within the corporate limits. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction through April 1990.

For the December 20, 2002 revision, a previously issued LOMR was incorporated and annexations of land made by the City of Buckhannon from the unincorporated areas of Upshur County are shown. This LOMR (Case No. 00-03-125P) reflected updated hydraulic analysis and topographic information along Buckhannon River. Buckhannon River was revised from approximately 150 feet downstream of U.S. Route 33 to approximately 1,310 feet upstream of North Florida Street.

Limits of detailed study are indicated on the Flood Profiles (Exhibit 1) and on the FIRM. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction.

Portions of the Buckhannon River are studied by approximate methods. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study are proposed to, and agreed upon, by FEMA and the city.

For this countywide revision the area bounded by US Route 33, Wabash Avenue, and County Route 33/1 to approximately 2100 feet upstream of intersection of Old Weston Road and County Route 5/7, the previously approximate flood hazard areas, were redelineated using backwater BFE (Base Flood Elevation) from Buckhannon River.

2.2 Community Description

Upshur County is located in the north-central portion of West Virginia. It is bordered by the following unincorporated areas: Harrison County to the north,

Barbour County to the northeast, Randolph County to the east, Webster County to the south, and Lewis County to the west. The 2004 population estimate for Upshur County was 23,996 (U.S. Census Bureau).

The Buckhannon River has a total drainage area of 308.7 square miles. It is formed by the junction of the Right and Left Forks of the Buckhannon River in Upshur County. The headwaters of these streams are located on the western slopes of the Appalachian Mountains in Randolph County in northwestern West Virginia. The Buckhannon River flows north from its source to its confluence with the Tygart River, a distance of approximately 46 miles. Through the City of Buckhannon, the average river gradient is approximately 0.8 feet per mile.

Buckhannon is situated in a wide floodplain where the river makes a narrow elongated loop approximately 0.9 mile in length. Development within the floodplain of the Buckhannon River consists chiefly of residences and small businesses. Local relief above the stream valley varies from a low of 1,400 feet to a high of 1,560 feet.

The climate of the area is temperate with a seasonal variation in temperature. The weather is usually moderate but may have frequent and rapid changes resulting from the passage of fronts. Measurable precipitation occurs approximately 130 days annually and amounts to approximately 47 inches. Temperatures range from an average of 34 degrees Fahrenheit (°F) in January to an average of 72°F in July.

2.3 Principal Flood Problems

Flooding in Buckhannon is generally caused by rainfall combined with snowmelt. The main flood season is from December through April; however, large floods can occur at any time of the year.

The maximum known flood of record occurred in March 1918, with a peak flow of approximately 12,000 cubic feet per second (cfs) at the Elias Street bridge. Other floods, in order of magnitude, occurred in the town in March 1967, June 1972, February 1939, December 1969, and January 1978. A nearby USGS stream gage along Sand Creek indicates that significant flooding events have also occurred more recently in November 1985, February 1994, May 1996, and February 2000 (USGS Peak Streamflow data).

2.4 Flood Protection Measures

The Buckhannon Local Protection Project was completed by the USACE in September 1969. The improvements consisted mainly of widening, deepening, and realigning the river channel, beginning approximately 4 miles downstream of Buckhannon and continuing upstream a distance of 4.58 miles. A cutoff channel was constructed at the upstream end of the project, and a flood control dam was situated on the cutoff. The project is designed to contain, within the channel, flood flows equal to approximately 8,500 cfs (the 2 percent annual chance flood). It is also effective in reducing major flood crests within Buckhannon. For example, had the

project been in existence at the time of the March 1918 flood, elevations would have been reduced by as much as 3 feet. Another dam is located on the Buckhannon River in the city, but it is used for water-supply purposes.

3.0 ENGINEERING METHODS

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

3.1 Hydrologic Analyses

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

Pre-countywide Analyses

For each community within Upshur County that has a previously printed FIS report, the hydrologic analyses described in those reports are listed below.

For the September 4, 1986, FIS, natural discharge-frequency curves for the Buckhannon River were developed following the standard log-Pearson Type III analysis as outlined by Bulletin 17B (U.S. Department of the Interior, September 1981). The stage-discharge records used in the analysis were obtained at the U.S. Geological Survey (USGS) recording gage at Hall, West Virginia, approximately 15 miles downstream of Buckhannon. The gage has been in operation since April 1915. The USACE has maintained various gages at the State Route 4 bridge since October 1939. However, historic records do not cover a continuous period sufficient for application of the log-Pearson Type III analysis and, therefore, were not used in the hydrologic analysis of the river. Flood-flow frequencies developed at the gage were modified to reflect the reduction in drainage area of the Buckhannon River at Buckhannon.

For the December 20, 2002 revision, the hydrologic analyses were not updated.

Therefore the analysis from the previous FIS will remain in effect.

A summary of drainage area-peak discharge relationships for the Buckhannon River is shown in Table 1, "Summary of Discharges."

Countywide Revision

No new hydrologic analyses were developed for this FIS.

TABLE 1 - SUMMARY OF DISCHARGES

<u>FLOODING SOURCE AND LOCATION</u>	<u>DRAINAGE AREA (sq. miles)</u>	PEAK DISCHARGES (cubic feet per second)			
		<u>10-Percent- Annual- Chance</u>	<u>2-Percent- Annual- Chance</u>	<u>1-Percent- Annual- Chance</u>	<u>0.2-Percent- Annual- Chance</u>
BUCKHANNON RIVER					
At the State Route 4 bridge	206.1	9,750	12,700	14,000	16,800

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 FIRM represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data tables in the FIS report. For construction and/or floodplain management purposes, users are encouraged to use the flood elevation data presented in this FIS in conjunction with the data shown on the FIRM.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1) and the Flood Insurance Rate Map, where applicable. 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 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.

Pre-countywide Analyses

For each community within Upshur County that has a previously printed FIS report, the hydraulic analyses described in those reports are listed below.

For the September 4, 1986, study, cross section data for the Buckhannon River were obtained from aerial photographs (Michael Baker, Jr., Inc., September 1984). Project as-built drawings were also utilized to obtain additional information (USACE, 1939).

All bridges and dams were field surveyed to obtain elevation data and structural geometry. Starting water-surface elevations for the Buckhannon River were obtained by a stage-discharge rating curve and a continuation of profile computations initiated far enough downstream to assure convergence.

For the December 20, 2002 revision, cross sections for the flooding source studied by detailed methods were obtained from new topographic information. All bridges, dams, and culverts were field surveyed to obtain elevation data and structural geometry.

Water-surface elevations of floods of the selected recurrence intervals were computed using the USACE HEC-2 step-backwater computer program (USACE, October 1973). Starting water-surface elevations were determined after subtracting the product of the distance downstream of the first cross section and the channel slope from the elevation calculated in the previous study. Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

Roughness factors (Manning's "n") used in the hydraulic computations were based on engineering judgment and field observations for the stream and floodplain areas. For the Buckhannon River, the channel "n" value was 0.04 and the overbank "n" value was 0.075.

Countywide Revision

No new hydraulic analyses were performed for this revision. However, this entire study was updated to the North American Vertical Datum of 1988 (NAVD 88).

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 29). With the completion of NAVD 88, many FIS reports and FIRMs are now prepared using NAVD 88 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 0.56 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

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. To assist in this endeavor, each FIS report provides 1 percent annual chance floodplain data, which may include a combination of the following: 10-, 2-, 1-, and 0.2 percent annual chance flood elevations; delineations of the 1 percent and 0.2 percent annual chance floodplains; and a 1 percent annual chance floodway. This information is presented on the FIRM and in many components of the FIS report, including Flood Profiles, Floodway Data tables, and Summary of Stillwater Elevation tables. Users should reference the data presented in the FIS report as well as additional information that may be available at the local community 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 county. For the streams studied in detail, the 1 percent and 0.2 percent annual chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. The delineations are based on the best available topographic information.

Pre-countywide Analyses

In the September 4, 1986, FIS, the boundaries were interpolated between cross sections, using topographic maps at a scale of 1"=400' with a contour interval of 4 feet, and urban area maps at a scale of 1"=800' (Michael Baker, Jr., Inc., September 1984, State of West Virginia, 1980).

For the December 20, 2002 revision, the boundaries were interpolated between cross sections, using topographic maps at a scale of 1"=400' with a contour interval of 2 feet (Swecker Engineering, June 2000). The floodplain boundaries along Fink Run were controlled by the 1 percent annual chance backwater elevation at the confluence with Buckhannon River.

For the stream studied by approximate methods, the 1 percent annual chance floodplain boundaries were taken from the previously printed FIS/FIRM for the City of Buckhannon, Upshur County, West Virginia (FEMA, September 4, 1986).

Countywide Revision

No new floodplain boundaries were delineated as part of this revision. However, floodplains have been spatially adjusted to fit the best available stream centerline data. Also, floodplain boundaries from the jurisdictions outlined in section 1.1 have been combined in this countywide revision.

The 1 percent and 0.2 percent annual chance floodplain boundaries are shown on the FIRM. On this map, the 1 percent annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and 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 percent 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 base flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this FIS were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. For this revision, the floodway boundaries were digitized from the current floodway maps and superimposed on the newly revised floodplain boundaries. All floodway widths, section areas, flows, and elevations were taken directly from the current floodway tables, with a datum adjustment of 0.56 foot downward applied to the elevation values.

The floodway widths were determined at cross sections; between cross sections, the boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections (Table 2). The computed floodways are shown on the FIRM. In cases where the boundaries of the floodway and the 1 percent annual chance flood are either close together or collinear, only the floodway boundary has been shown.

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 2 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 2, "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.

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 by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1, "Floodway Schematic."

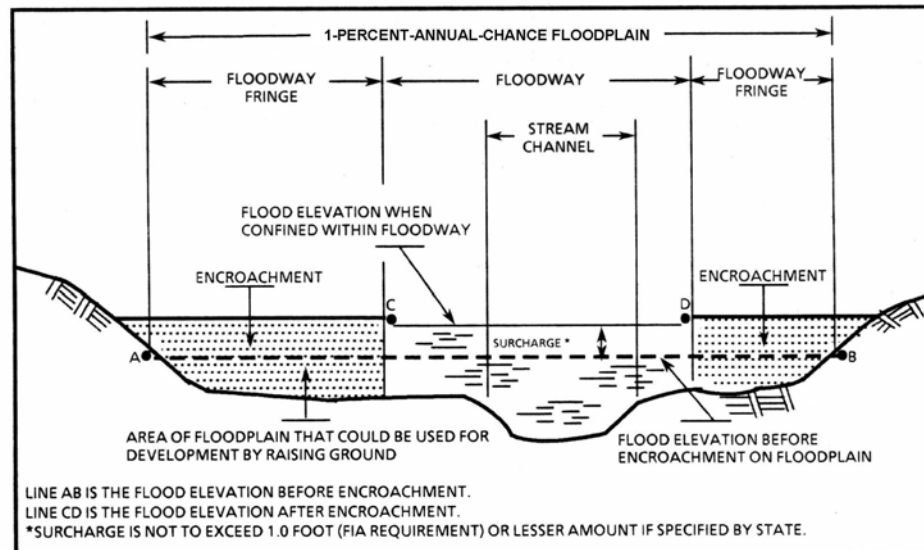


Figure 1: Floodway Schematic

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Buckhannon River								
A	2,650	260	4,887	2.9	1,414.8	1,414.8	1,415.7	0.9
B	3,850	210	3,380	1.7	1,415.1	1,415.1	1,416.0	0.9
C	4,450	210	3,467	1.6	1,415.1	1,415.1	1,416.0	0.9
D	5,480	200	3,529	1.6	1,415.2	1,415.2	1,416.1	0.9
E	6,540	180	3,242	1.7	1,415.3	1,415.3	1,416.2	0.9
F	8,750	160	2,263	2.5	1,415.5	1,415.5	1,416.4	0.9
G	9,810	180	2,882	1.9	1,415.7	1,415.7	1,416.6	0.9
H	11,450	195	3,753	3.7	1,415.8	1,415.8	1,416.6	0.8
I	15,975	180	3,667	3.8	1,416.7	1,416.7	1,417.5	0.8
J	17,929	180	3,310	4.2	1,417.0	1,417.0	1,417.9	0.9
K	20,339	200	4,152	3.4	1,417.6	1,417.6	1,418.4	0.8

¹Feet above Limit of Detailed Study (Limit of Detailed Study is located approximately 300 feet downstream of U.S. Route 33)

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

**UPSHUR COUNTY, WV
AND INCORPORATED AREAS**

FLOODWAY DATA

BUCKHANNON RIVER

5.0 INSURANCE APPLICATIONS

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

Zone A

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

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 1 percent annual chance floodplains that are determined in the FIS report by detailed methods. 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 rate zone that corresponds to areas outside the 0.2 percent annual chance floodplain, areas within the 0.2 percent annual chance floodplain, areas of 1 percent annual chance flooding where average depths are less than 1 foot, areas of 1 percent annual chance flooding where the contributing drainage area is less than 1 square mile (sq. mi.), and areas protected from the base flood by levees. No BFEs or depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

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

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

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

The countywide FIRM presents flooding information for the entire geographic area of Upshur 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 3, "Community Map History."

7.0 OTHER STUDIES

Information pertaining to flood hazards for each jurisdiction within Upshur County has been compiled into this FIS. Therefore, this FIS supersedes all previously printed FIS Reports, FHBMs, FBFMs, and FIRMs for Upshur County, West Virginia and incorporated areas.

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 III, One Independence Mall, Sixth Floor, 615 Chestnut Street, Philadelphia, PA 19106-4404.

COMMUNITY NAME		INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Buckhannon, City of		June 28, 1974	October 17, 1975	September 4, 1986	December 20, 2002 September 29, 2010
Upshur County (Unincorporated Areas)		January 17, 1975	September 25, 1981	None	July 1, 1987 September 29, 2010
TABLE 3	FEDERAL EMERGENCY MANAGEMENT AGENCY		COMMUNITY MAP HISTORY		
	UPSHUR COUNTY, WV AND INCORPORATED AREAS				

9.0 **BIBLIOGRAPHY AND REFERENCES**

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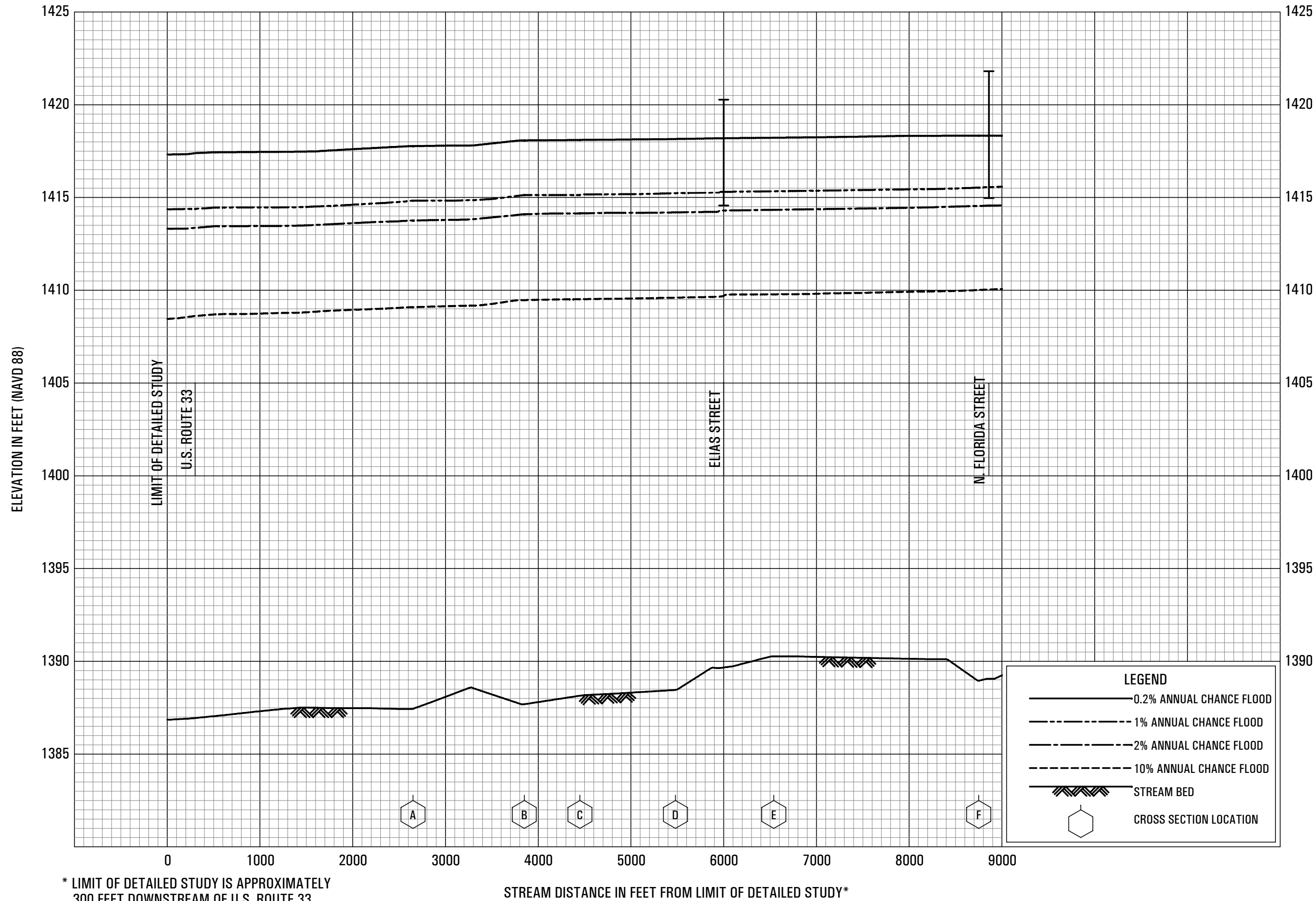
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* LIMIT OF DETAILED STUDY IS APPROXIMATELY 300 FEET DOWNSTREAM OF U.S. ROUTE 33.

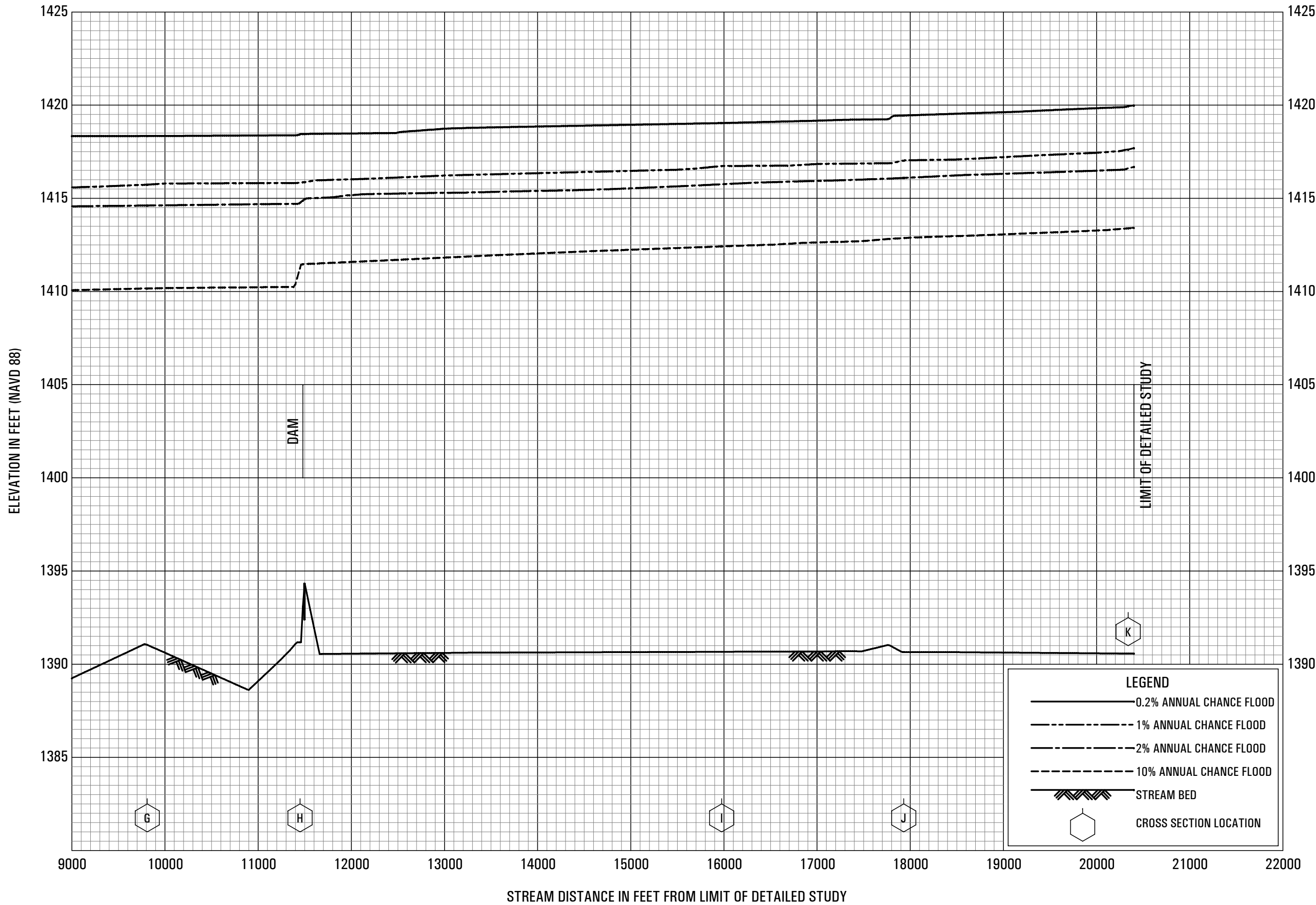
STREAM DISTANCE IN FEET FROM LIMIT OF DETAILED STUDY*

FLOOD PROFILES

BUCKHANNON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

UPSHUR COUNTY, WV
AND INCORPORATED AREAS



FLOOD PROFILES

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