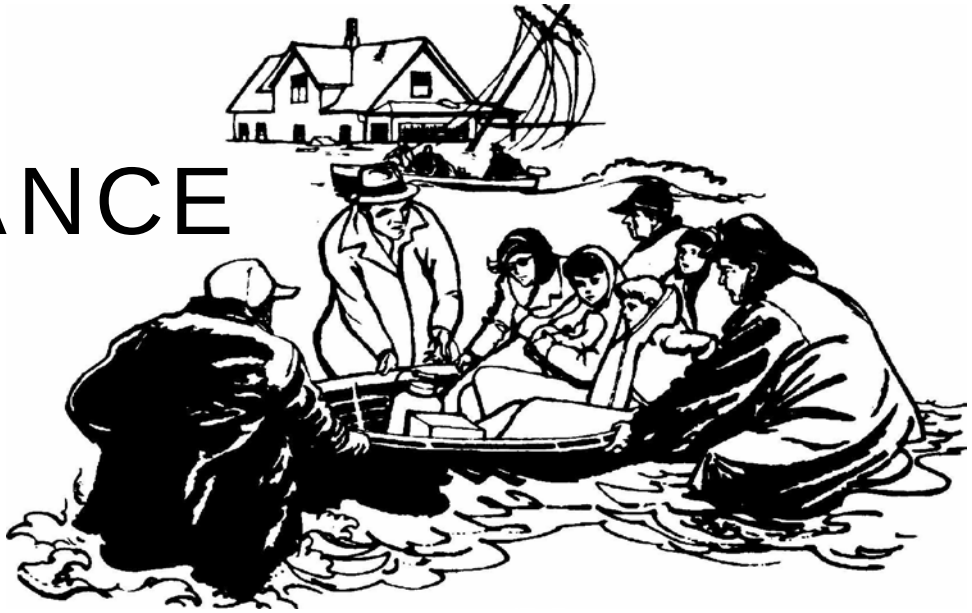
FLOOD INSURANCE STUDY



VOLUME 1 OF 2

MEDINA COUNTY, OHIO
AND INCORPORATED AREAS

	COMMUNITY NAME	COMMUNITY NUMBER
	BRUNSWICK, CITY OF	390380
	CHIPPEWA LAKE, VILLAGE OF	390910
	GLORIA GLENS PARK, VILLAGE OF	390381
	LODI, VILLAGE OF	390382
	MEDINA, CITY OF	390383
	MEDINA COUNTY (UNINCORPORATED AREAS)	390378
	SEVILLE, VILLAGE OF	390384
*	SPENCER, VILLAGE OF	390683
	WADSWORTH, CITY OF	390386
	WESTFIELD CENTER, VILLAGE OF	390694

* No Special Flood Hazard Areas Identified

Revised:

August 19, 2013

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
39103CV001B

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.

Initial Countywide FIS Effective Date: **August 4, 2008**

Revised Countywide FIS Date: **August 19, 2013**

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Published Separately –

FLOOD INSURANCE STUDY

MEDINA COUNTY, OHIO AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and supersedes the FIS reports and/or Flood Insurance Rate Maps (FIRMs), in the geographic area of Medina County, Ohio, including the Cities of Brunswick, Medina, and Wadsworth, the Villages of Chippewa Lake, Gloria Glens Park, Lodi, Seville, Spencer and Westfield Center and the unincorporated areas of Medina County (hereinafter referred to collectively as Medina 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. This information will also be used by Medina 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 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.

Please note that in the Village of Spencer, no special flood hazard areas (SFHAs) have been identified. The Cities of Creston and Rittman are geographically located in Wayne and Medina Counties, and are included in their entirety with the Wayne County, Ohio FIS.

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 FEMA DFIRM database Specifications and Geographic Information System (GIS) format requirements. The flood hazard information was created and is provided in digital format so that it can be incorporated into a local GIS and be accessed more easily by the community.

1.2 Authority and Acknowledgements

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

Previous Analyses

Information on the authority and acknowledgments for each of the previously printed pre-countywide FISs and FIRMs for communities within Medina County was compiled, and is shown below.

Village of Chippewa Lake (Formerly the Villages of Briarwood Beach and Chippewa-on-the-Lake). The hydrologic and hydraulic analyses for the 1985 study for the Village of Briarwood Beach (Reference 1) were obtained from the FIS for Medina County, Unincorporated Areas, Ohio (Reference 2).

City of Brunswick. The hydrologic and hydraulic analyses for the July 1980 FIS and the January 2, 1981, FIRM were performed by the United States Geological Survey (USGS), Water Resources Division, for FEMA under Interagency Agreement No. IAA-H-17-75, Project Order No. 14. That study was completed in November 1978.

The hydrologic and hydraulic analyses for the 2003 study for the City of Brunswick were performed by CT Consultants, Inc., for FEMA, Project Order No. 00-05-295P. The analyses were completed in February 2002 (Reference 3).

Village of Gloria Glens Park. The hydrologic and hydraulic analyses for the 1985 study for the Village of Gloria Glens Park (Reference 4) were obtained from the FIS for Medina County, Unincorporated Areas, Ohio (Reference 2).

Medina County, Unincorporated Areas. The hydrologic and hydraulic analyses for the 1983 study for Medina County, Unincorporated Areas, were performed by Finkbeiner, Pettis & Strout, Limited for FEMA, under Contract No. EMW-C-0289. This study was completed in January 1982 (Reference 2). Hydrologic data for streams within the Chippewa Creek watershed was obtained from the U.S. Department of Agriculture (USDA), Soil Conservation Service (SCS), Engineering Division in Columbus, Ohio.

Village of Seville. The hydrologic and hydraulic analyses for the 1986 study for the Village of Seville (Reference 5) were performed by the U.S. Army Corps of Engineers (USACE), Huntington District for FEMA, under Inter-Agency Agreement No. EMW-E-115, Project Order No. 1. Hydraulic data for Chippewa Creek was obtained from the FIS for the Unincorporated Areas of Medina County (Reference 2). This study was completed in September 1984.

City of Wadsworth. The hydrologic and hydraulic analyses for the 1984 study for the City of Wadsworth (Reference 6) were obtained from the FIS for Medina County, Unincorporated Areas, Ohio (Reference 2).

Redelineation of previously effective flood hazard information and conversion of the unincorporated and incorporated areas of Medina County into countywide format for the previously effective initial countywide FIS report dated August 4, 2008, was performed by Fuller, Mossbarger, Scott, and May Engineers, Inc. (FMSM) for FEMA under Contract No. HSFE-05-D-0026, Task Order No. HSFE05-06-J-0012. This work was completed in August of 2008.

Current Analyses

This FIS revision was initiated by a Physical Map Revision (PMR) request submitted to FEMA. The PMR work included performing hydrologic and hydraulic analyses on nine streams. This work was conducted by the USGS for the Ohio Department of Natural Resources (ODNR) in an agreement that began July 1, 2009 and ended August 31, 2011 (Reference 36).

These analyses were incorporated into the FIS and DFIRM by Stantec Consulting Services, Inc. (Stantec) for ODNR as part of Cooperating Technical Partners (CTP) Contract MAS # 2009-03. This work was completed in August 19, 2013.

The digital base mapping information for this revised countywide FIS report was provided by the Medina County Engineer's Office, 791 West Smith Road, Medina, Ohio 44256. Further information about the base mapping is available by contacting the County. These files were compiled by photogrammetric methods and meet or exceed National Map Accuracy Standards. The coordinate system used for the production of the digital FIRMs was State Plane Ohio North (FIPS Zone 3401) referenced to the North American Datum of 1983 (NAD83). Differences in the datum, spheroid, projection or state plane zones used in the production of FIRMs in adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

1.3 Coordination

The purpose of an initial Consultation Coordination 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 pre-countywide FISs for the incorporated communities and unincorporated areas within Medina County are shown in Table 1.

Table 1. CCO Meeting Dates for Pre-Countywide FISs

Community Name	Initial CCO Date	Final CCO Date
Briarwood Beach, Village of	*	September 10, 1984
Brunswick, City of	*	September 5, 1979
Gloria Glens Park, Village of	*	September 10, 1984
Medina County, Unincorporated	June 12, 1979	August 30, 1982
Seville, Village of	June 12, 1979	May 3, 1985
Wadsworth, City of	*	September 18, 1984

* Not available

For the August 4, 2008 initial countywide FIS, an initial CCO meeting was held on August 15, 2006. The meeting was attended by representatives from Medina County, the City of Brunswick, the City of Medina, the Village of Seville, the Village of Chippewa Lake, the Village of Lodi, the City of Wadsworth, ODNR, FEMA and FMSM. The final CCO meeting was held on August 14, 2007. The meeting was attended by representatives from Medina County, the City of Brunswick, ODNR, FEMA and FMSM.

For this revised countywide FIS report, no initial CCO meetings was held as this revision is a Physical Map Revision (PMR). The final CCO meeting was held on March 1, 2012.

The meeting was attended by representatives from Medina County, the City of Brunswick, Village of Gloria Park, Stantec and ODNR.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Medina County, Ohio, including the incorporated communities listed in Section 1.1 and unincorporated areas.

Previous Analyses

For the previously effective initial countywide FIS dated August 4, 2008, no new detailed studies were performed. Detailed studies were redelineated using information from the effective pre-countywide FIS reports for Medina County, Unincorporated Areas, Village of Gloria Glens Park, Village of Seville, City of Wadsworth, Village of Briarwood Beach and the City of Brunswick. The Cities of Creston and Rittman are both multi-county communities geographically located in Medina and Wayne Counties. They are not included as part of this FIS report but are included in their entirety in the FIS report for Wayne County, Ohio.

For the August 4, 2008 initial countywide FIS, streams previously mapped as Zone A were replaced by new approximate studies. The flooding sources studied by approximate methods for the August 4, 2008 initial countywide FIS are listed in Table 2. Large lakes and areas of ponding that were mapped as Zone A were digitally converted with consideration given to the topography. Those streams studied previously by detailed methods are shown in Table 3.

Table 2. Streams Studied Previously by Approximate Methods

Camel Creek	East Fork Black River Tributary 8.1	Hubbard Creek
Chippewa Creek	East Fork Black River Tributary 9	Little Killbuck Creek
Chippewa Creek Tributary 3	East Fork Black River Tributary 10	Mallet Creek
Chippewa Creek Tributary 5	East Fork Black River Tributary 11	McCabe Creek
Chippewa Creek Tributary 6	East Fork Black River Tributary 12	North Branch Rocky River Tributary 1
Chippewa Creek Tributary 7	East Fork Black River Tributary 12.1	North Branch Rocky River Tributary 2
Chippewa Creek Tributary 8	East Fork Black River Tributary 13	North Branch Rocky River Tributary 3
Chippewa Creek Tributary 9	East Fork Black River Tributary 14	North Branch Rocky River Tributary 4
Clear Creek	East Fork Black River Tributary 15.1	North Branch Rocky River
Coon Creek	East Fork Black River Tributary 16	Plum Creek
Cossett Creek	East Fork Black River Tributary 17	Plum Creek Tributary 1
Cossett Creek Tributary 1	East Fork Black River Tributary 17.1	Plum Creek Tributary 2
Cossett Creek Tributary 2	East Fork Black River Tributary 18	River Styx
Crow Creek	East Fork Black River Tributary 18.1	River Styx Tributary 1
Crow Creek Tributary 1	East Fork Black River Tributary 18.1.1	Silver Creek
East Branch Rocky River	East Fork Black River Tributary 18.2	West Branch Rocky River
East Branch Rocky River Tributary 1	East Fork Black River Tributary 19	West Branch Rocky River Tributary 1
East Fork Black River	Granger Ditch	West Branch Rocky River Tributary 4
East Fork Black River Tributary 1	Granger Ditch Tributary 1	West Fork

Table 2. Streams Studied Previously by Approximate Methods (Continued)

East Fork Black River Tributary 2	Granger Ditch Tributary 2	West Fork Tributary 1
East Fork Black River Tributary 3	Granger Ditch Tributary 4	West Fork Tributary 2
East Fork Black River Tributary 4	Granger Ditch Tributary 5	West Fork Tributary 4
East Fork Black River Tributary 5	Granger Lake	Wolf Creek Tributary 1
East Fork Black River Tributary 6	Healey Creek Tributary 1	Wolf Creek Tributary 2
East Fork Black River Tributary 7	Healey Creek	Wolf Creek Tributary 3
East Fork Black River Tributary 8	Holmes Brook	Yellow Creek Tributary 1.1

Table 3. Limits of Detailed Studies From Pre-Countywide FIS Reports

Flooding Source	Limits of Detailed Study
Camel Creek	From the confluence with Killbuck Creek to approximately 620 feet upstream of Seville Road
Chippewa Creek	From the Medina-Wayne County line to approximately 3140 feet upstream of Kennard Road
East Branch Black River (Downstream)	From the Medina-Lorain County line to the confluence with the tributary flowing from the northwest corner of Spencer Lake State Wildlife Area
East Branch Black River (Upstream)	From the confluence with the first major tributary south of State Route 162 (Chatham Road), (approximately 1,770 feet upstream of State Route 162) to the confluence with East Fork and West Fork
East Fork (Downstream)	From the confluence with East Branch Black River to the Village of Lodi corporate limits
East Fork (Upstream)	From the Village of Lodi corporate limits to Coon Club Road
Healey Creek (Downstream)	From West 130th Street at the City of Brunswick corporate limits to 2,100 feet upstream of Bettie Lane
Healey Creek (Upstream)	From approximately 3,500 feet downstream of Starview Drive to Starview Drive, within the City of Brunswick corporate limits
Hubbard Creek	From the confluence with Chippewa Creek to approximately 2,900 feet upstream of Greenwich Road
Killbuck Creek	From the Medina-Wayne County line to the Medina-Wayne County line
Mallet Creek	From the confluence with West Branch Rocky River to approximately 175 feet downstream of Norwalk Road
Plum Creek (Downstream)	From approximately 2,600 feet downstream of Laurel Road to 2,400 feet upstream of Laurel Road
Plum Creek (Upstream)	From Center Road to Interstate Highway 71
River Styx	From the Medina-Wayne County line to approximately 1,200

Table 3. Limits of Detailed Studies From Pre-Countywide FIS Reports (Continued)

Flooding Source	Limits of Detailed Study
	feet upstream of Wadsworth Road
Tommy Run	From the Medina-Wayne County line to Seville Road
Tributary P-3	From it's mouth at Plum Creek to Berwick Drive
Tributary P-4	From the confluence with Plum Creek to approximately 170 feet upstream of Tyler Drive
Tributary P-8	From Center Road to approximately 3,100 feet upstream of Center Road
Unnamed Tributary	From the confluence with Chippewa Creek to approximately 150 feet upstream of Greenwich Road
Unnamed Tributary to Tributary P-4	From the confluence with Tributary P-4 to approximately 130 feet upstream of South Carpenter Road
West Branch Rocky River (Downstream)	From the Medina-Lorain County line to approximately 8,000 feet upstream of Fenn Road
West Branch Rocky River (Upstream)	From Medina Road to Interstate Route 71
West Fork	From the East Branch Black River to approximately 5,400 feet upstream of Greenwich Road
Wolf Creek	From the Medina-Summit County line to Sharon-Copley Road

The August 4, 2008 initial countywide FIS incorporated the determination of letters issued by FEMA resulting in map revisions (Letter of Map Revisions (LOMR)). LOMRs that were incorporated are shown in Table 4.

Table 4. Previously Incorporated Letters of Map Revision (LOMRs)

Flooding Source	Case ID	Community	Date Issued
Cossett Creek	07-05-2680P	Medina County, Unincorporated	April 20, 2007
Plum Creek	06-05-BU69P	Medina County, Unincorporated	September 25, 2006
Plum Creek	06-05-B240P	City of Brunswick	November 23, 2006
The Gary Ditch (Tributary P-8)	06-05-B003P	City of Brunswick	August 28, 2006
The Gary Ditch (Tributary P-8)	06-05-B003P	Medina County, Unincorporated	August 28, 2006
Tributary P-4 and Unnamed Tributary to Tributary P-4	04-05-A934P	City of Brunswick	April 25, 2005
Tributary P-7 to Plum Creek	05-05-0674P	City of Brunswick	May 6, 2005
West Branch Rocky River	99-05-215P	Medina County, Unincorporated	September 10, 1999

Current Analyses

For this revised countywide FIS, nine streams were studied by detailed methods by the USGS in 2011. The analyses were incorporated into this revised countywide FIS and its accompanying DFIRMs. Limits of the detailed studies performed by the USGS are shown in Table 5.

Areas studied by detailed methods were selected with priority given to all known flood hazard areas of projected development or proposed construction. For previous FIS reports, approximate methods of analysis were used to study those areas having a low development potential or minimal flood hazards as identified at the initiation of the study. The scope and methods of study were proposed to and agreed upon by FEMA.

Table 5. Limits of Detailed Studies for Current Analyses

Flooding Source	Limits of Detailed Study
Chippewa Creek	From the Medina-Wayne County line to a point approximately 1,300 feet downstream of Chippewa Road.

Table 5. Limits of Detailed Studies for Current Analyses

Flooding Source	Limits of Detailed Study
East Fork	From approximately 1,000 feet downstream of U.S. Route 224 to the North Lodi corporation limit (a distance of approximately 1.7 miles).
Granger Ditch	From its mouth at the confluence with North Branch Rocky River to a point approximately 700 feet upstream of State Road (County Road 44).
Healey Creek	From a point approximately 4,100 feet upstream of West 130th Street upstream for a distance of approximately 0.9 mile.
North Branch Rocky River	From its mouth at the confluence with West Branch Rocky River to a point approximately 0.3 mile upstream of Remsen Road.
Plum Creek	From a point approximately 450 feet downstream of Plum Creek Parkway upstream for a distance of approximately 0.7 mile.
Plum Creek (Liverpool Township)	From the Medina-Lorain County line upstream for a distance of approximately 4.9 miles to Station Road.
The Inlet	From approximately 1,300 feet downstream of Chippewa Road to approximately 1,300 feet upstream of Wedgewood Road
Tributary of East Fork East Branch Black River	From its mouth at the confluence with East Fork upstream for a distance of approximately 0.5 mile to the CSX railroad culvert.
West Branch Rocky River	From Smith Road to a point approximately 1.0 mile upstream of State Route 162.

LOMRs that were incorporated into this revised countywide FIS and its accompanying DFIRMs are shown in Table 6. A Summary of Map Amendments (SOMA), which lists the status of the Letters of Map Changes (LOMCs) associated with Medina County, is 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 6. Incorporated Letters of Map Revision (LOMRs)

Flooding Source	Case ID	Community	Date Issued
Unnamed Tributary	09-05-4434P	Village of Seville	July 30, 2009
Tributary B-2	10-05-3125P	City of Brunswick	September 3, 2010

2.2 Community Description

Medina County is located in northeastern Ohio. The cities of Medina, Brunswick and Wadsworth are population centers for the county and nearby communities, outside of Medina County, include the Cities of Cleveland and Akron. Medina County is bordered by Summit County to the east, Cuyahoga County to the north, Lorain County to the

northwest, Ashland County to the southwest, and Wayne County to the south. According to the U.S. Census Bureau, the 2009 population estimate for Medina County was 174,035 (Reference 7).

Medina County is situated along the northeastern highland which divides the water between the Ohio River and the Mississippi River, and Lake Erie and the St. Lawrence River. The eastern half of the county is quite rolling with loamy soil while the western half is much more level with the soil being largely clay (Reference 8). A few steeper slopes exist on the sides of major stream valleys. Medina County includes parts of two major physiographic provinces. These are the Great Central Lowlands and the glaciated part of the Appalachian Plateau (Reference 9).

The soils that formed in glacial till on uplands include six of the soil associations throughout Medina County and make up about 88 percent of the county. These soils are mostly somewhat poorly drained to moderately well drained and generally have slow permeability. The soils that are not used for urban development are used for corn, wheat, soybeans, oats, legume-grass hay, pasture and other crops commonly grown in the county. These soil associations include the Ellsworth-Mahoning association, Mahoning-Ellsworth association, Canfield-Wooster-Ravenna association, Rittman-Wadsworth association, Bennington-Cardington association and Cardington-Bennington association (Reference 9).

The soils that formed in lacustrine, alluvial or glacial outwash deposits on terraces and floodplains and in glacial outwash areas include three of the soil associations throughout Medina County and make up the remaining 12 percent of the county. These soils are mostly somewhat poorly drained or very poorly drained, and there are some limited areas of moderately well drained or well drained soils. The soils range from very clayey, lake deposited soils to course-textured gravelly soils and organic soils. Where adequately drained, these soils are used for crops common to the area. The soil associations include the Haskins-Caneadea-Lobdell association, Fitchville-Chili-Bogart association, and Carlisle-Luray-Lorain association (Reference 9).

Field crops commonly grown in Medina County include corn, oats, wheat, soybeans and other small grain. Plants suitable for pasture and hay are alfalfa, alsike clover, Ladina clover, red clover; birds foot trefoil, timothy, orchardgrass, bromegrass and bluegrass. Special crops commonly grown are sweet corn, tomatoes, peppers, melons, strawberries, and other crops adapted to the climate. Irish potatoes are grown in the muck areas south of Lodi. Apples are the most important tree fruit grown in the county (Reference 9).

Medina County is close to the rapidly expanding communities of Cleveland and Akron. This expansion has greatly affected land use in the northern and eastern parts of the county. Most of the county is still used for crops but an increasingly large acreage of Medina County land is being taken out of farming and used as residential, industrial, commercial and recreational areas.

The streams studied generally have mild to intermediate gradients. The major obstructions of flood flows include inadequate waterway openings under bridges, dams and other encroachments, and fills in channel and overbank areas. Also included in obstructions to flood flows are the bends and irregularities of the channel, growth and debris in the channel, and heavy brush, weeds and trees on the channel banks and overbank areas. Other than dams and highway, railroad and private crossings, little encroachment has been made on the studied streams. However, with the need increasing

for more developed land around the existing cities, more encroachment upon the streams will occur.

The **City of Brunswick**, located in north-central Ohio, is the largest incorporated area (12.6 square miles) in northern Medina County. Close to the Cleveland metropolitan area, the City of Brunswick is bordered by Strongsville and North Royalton in Cuyahoga County to the north and unincorporated areas of Medina County elsewhere. According to the U.S. Census Bureau, the 2009 population estimate for the City of Brunswick was 35,094 (Reference 7).

The climate is moderate with a mean annual temperature of 50 degrees Fahrenheit and a mean annual precipitation of 36.6 inches (Reference 10). Soils are unsorted, unstratified glacial till (Reference 11). The topography of the study area is gently rolling with two principal streams, Plum Creek, which drains into the West Branch Rocky River and Healey Creek, which drains into the East Branch Rocky River. A few small tributaries to the West Branch Rocky River have headwaters at the south and west edge of the community.

The corporate limits of the City of Brunswick are broken up by, and in places completely surround, small areas of unincorporated Medina County. Two recreational lakes, Sleepy Hollow Lake and Lake Brunswick, are located on the main stream of Plum Creek. Sleepy Hollow Lake is located outside of the study area, in Medina County. Floodplain development within the City of Brunswick is primarily residential around the detailed studied streams with scattered commercial development.

The **Village of Gloria Glens Park** is located in southern Medina County in northeastern Ohio. It is bordered on all sides by unincorporated areas of Medina County. According to the U.S. Census Bureau, the 2009 population estimate for Gloria Glens Park was 587 (Reference 7).

The western half of Medina County is more level than the eastern half, which is quite rolling. The soil is largely clay (Reference 8). Land use is mostly residential in the Village of Gloria Glens Park.

The **Village of Seville** is located in northeastern Ohio in south-central Medina County. Seville, located approximately 15 miles west of Akron, Ohio, approximately 1 mile south of Interstate 76, and 2 miles east of Interstate 71, is surrounded by the unincorporated areas of Medina County. According to the U.S. Census Bureau, the 2009 population estimate for the Village of Seville was 2,433 (Reference 7).

The principal stream in the community is Chippewa Creek, which flows in a southeasterly direction through the village. Hubbard Creek is the main tributary of Chippewa Creek within the village limits of Seville.

Seville covers approximately 2.0 square miles within the village limits. The main business district and the majority of the residences are located in the southern portion of the village. Most of the recent residential development has occurred in the central and northern portions of the village. Residential development has occurred in the floodplains in some parts of the village. Most of the main business district along Main Street is in the floodplain.

The **City of Wadsworth** is located in the southeastern corner of Medina County in northeastern Ohio. It is surrounded by unincorporated areas of Medina County.

According to the U.S. Census Bureau, the 2009 population estimate for the City of Wadsworth was 21,007 (Reference 7).

The City is situated along the northeastern highland, which divides the water between the Ohio River and the Mississippi River, and Lake Erie and the St. Lawrence River. The terrain is quite rolling with loamy soil (Reference 8).

2.3 Principal Flood Problems

The principal flood problems have been on those streams where urbanization has occurred in the floodplain. Several days of frequent flooding will also result in damage to crops on farmland and inconvenient delays or detours of flooded highways.

Obstructions to flood flows reduce the floodway capacity and increase the river stages in a stream. Examples of these obstructions include inadequate waterway openings under bridges, abandoned dams, encroachments, fills, bends in the stream, irregularity of channel sections, heavy brush within the channel and on overbanks, and large trees growing on the channel banks and extending into the channel. Each of the streams involved in this study includes numerous obstructions to the flood flows. However, other than dams and highway, railroad and private crossings, most of the obstructions in the studied streams can be attributed to natural occurrences.

Medina County experienced historic flooding in 1913, 1927, 1935, 1950, 1959, 1961, 1968, 1969, 1992 and 2003. Flood profiles of the flooding in July 1969 have been developed by ODNR (References 14 and 15) from observed high water marks for reaches of East Branch Black River, West Fork, Killbuck Creek, Little Killbuck Creek, Camel Creek and Repp Run. Frequencies and discharges, however, were not determined for these profiles, nor were they available for the other historic floods.

The following are several excerpts from the Medina County Gazette describing various historic floods on West Branch Rocky River and on other streams in Medina County, Ohio.

March 23 - 26, 1913 Flood

“The great downpour of rain from Sunday noon (Easter Sunday) to Tuesday noon, last, brought flood and loss and distress to Medina and vicinity as it did to most of the rest of Medina County and northern Ohio.

Medina and vicinity ordinarily measure high water by the showing at the covered bridge at Rocky River on the Granger Road. Measured by the height of water there, the flood of last Tuesday was the greatest within the memory of living man. The water rose until it pounded the sides of the covered bridge and flowed into the east end of it, while the floor of the iron auxiliary bridge was completely submerged. The Medina waterworks plant never before experienced such high water. The whole river bottom was flooded, the flood extending west to E.W. Nettleton’s barns and dwelling.

Of all the sufferers and losers by the flood in Medina County the people of Seville and vicinity and those living in the Chippewa valley met with the greatest loss and discomfort. Seville business streets were turned into canals.

The water at Chippewa Lake on Tuesday was the highest ever known. In fact, at the Medina-Lafayette Road and from that point a boat could have been rowed across lots

southward to Sterling and farther. The water completely surrounded the entire lower grounds, flowing over both the electric and B&O tracks east of the elevated ground on which the park is located. South of the lake, Chippewa Creek widened to the extent of a half-mile or more and presented the appearance of a continuous lake extending to Seville and beyond."

Figure 1 and Figure 2 depict flooding associated with the March 1913 flood (References 16 and 17).

Figure 1. March 25, 1913 - Covered Bridge over Rocky River on Granger Road (Looking east)

Figure 2. March 25, 1913 - Seville, Ohio from the Square (Looking east)

December 16, 1927 Flood

"The high water caused traffic congestion near West Salem, went above the bridge floors in several Medina County communities, washed out four culverts along Medina County roads and washed out the stone of the secondary road just east of Fenns Corners. The

water was above the flooring of the covered bridge east of Medina and was standing in Smith Road, west of South Court Street in Medina."

August 9, 1935 Flood

"Rocky River, which approaches Medina from the east and crosses both the main roads leading into town, Routes 3 and 42, was out of its banks as early as midnight.

When they (fire department) returned to Medina, they learned that Rocky River was out of its banks where it crosses Route 42 north of Medina and that cars were stranded in the flood.

Farther north, at Valley City, the river was over the road leading between Brunswick and the town. One car was swept off the road by the force of the current which came across the roadway just west of the Valley City bridge, but luckily no one was injured.

The bridge which carries Route 252 across Rocky River just north of Valley City was endangered by the high water and the road leading to the bridge was undermined and partly washed away.

Undoubtedly some of the high water in Rocky River was aggravated to flood stage by the failure of two dams on streams which feed the river. The two dams were the Sleepy Hollow Lake Dam on Plum Creek south of Brunswick and the Lester Dam at Lester. The Sleepy Hollow Dam gave way shortly after midnight and the Lester Dam about 2 a.m.

The territory around Chippewa Lake and to the south through Seville and on into Sterling and Orrville was hard hit. Chippewa Lake rose over its banks to flood the cottages which line its shores and to sweep back in some cases almost to the road by the entrance. Cottagers in Briarwood and Gloria Glens were forced to use rowboats to get in and out of their places. The cottages in the upper ground which line the lake all had water around them, and those which have basements had them filled.

The water rose at the park itself until it covered the cement pier and swept over the floor of the pier restaurant.

The territory south of Chippewa toward Seville, which is low land, was one of the hardest hit sections in the county as far as crop damage is concerned. The water from the lake, which poured over the road that crosses the outlet of the lake, swept down through the many acres of muck land to the south and carried away field after field of shocked grain.

The Black River, Medina County's stream on the west that corresponds to Rocky River on the east, went out of its banks early and flooded most of Lodi and the surrounding low land."

January 17, 1950 Flood

"Mother nature threw a one-two punch at Medina County Saturday and Sunday, winds of exceptionally high velocity early Saturday morning having been followed by an all-day rain Sunday which brought flooded conditions to every section of the county.

County highway officials stated that the floods were the worst experienced here in many years, many roads having been blocked for several hours by swirling waters. Rocky

River went on such a rampage that two families had to be evacuated by boat from their homes at Riverby, two miles north of Medina.

The first punch was thrown at the County about 4 a.m. Saturday when high winds toppled trees and utility poles and damaged buildings. The winds roared over this entire section of the state, the Cleveland weather bureau having reported gusts of between 70 and 80 miles per hour.

The floods, which reached their heights at about 3 a.m. Monday, were brought on by a steady downpour all day Sunday. Weather Observer C.W. Carlton of Chippewa Lake reported a fall of 2.4 inches between early morning and late evening.

The Sunday downpour was the finishing touch to rains of the past two weeks which had already swollen all streams. Carlton said 3.8 inches of rain had fallen from the first of the month through Sunday evening.

Although streams went out of their banks in all sections of the county, worst conditions existed in the northern part of the county in the Abbeyville-Valley City area, where many roads were still under water Monday mid-morning.

Route 42 at Riverby was closed to traffic for nearly two hours as Rocky River spilled over the highway. Completely inundated were the state picnic grounds there, while the flood waters lapped at the entrance of Riverby Inn before receding.

The heavy downpour raised the level of Chippewa Lake an estimated three feet, water having poured over the retaining wall at the upper grounds. The entire inlet area at the north end of the lake was still flooded late Monday morning.

End of the rain late Sunday evening and lowering of the temperatures to below the freezing point started streams to recede at about 4 a.m. Monday."

January 30 - February 1, 1968 Flood

"Eight to ten inches of water covering about 500 feet of Rt. 252 between Rt. 303 and the Lorain County line north-east of Valley City have made the road impassable and, according to State Highway Department Supervisor Don Wagar, 'things may get worse before they get better'.

The water is backing up because of an ice jam further north on the Cuyahoga River and, unless the ice is dynamited, Wagar said he could make no predictions about when the water level would start to drop. 'When it goes, it'll all go at once,' he said.

The water was four to six inches deep at about 6 last night, and cars traveling slowly could still get through. The water reached eight to ten inches by 2 a.m. today, and Wagar said that, although the road is not officially closed, he would not advise anyone to try driving through that section.

Water surges into Mallet Creek from the spillway of the dam at the old Baltimore and Ohio Railroad reservoir in Lester. Rains filled the reservoir to overflowing Tuesday but the water level is starting down again now. Originally, there were two reservoirs built by the railroad in York Township, but the other dam has been washed away. The remaining dam is bridged by the tracks near Lester Road."

July 5, 1969 Flood

"Worst hit areas are Granger, Hinckley, Sharon Center and Chippewa Village. Medina City was the least hit.

Shawnee Lake east of Spencer, the villages' main recreation area, is flooded, with trailers floating. Homes on North Main Street were being evacuated this morning. Spencer Manufacturing and Enterprise Machine is flooded and it was still raining at 8 a.m.

The three ways out of town are flooded; 162 East, 301 north and south are blocked.

Rt. 57 at the edge of Rittman was closed yet this morning. Rt. 97 from Lodi and LeRoy also was closed. Phones were reported out since 10 o'clock last night in Lodi; Rt. 76 in Lodi has remained passable.

Rt. 604 between Rt. 57 and Rt. 3; Rt. 71 at Rt. 224 was blocked at press time.

LODI – John Keim's rain gauge showed over 10 inches of rainfall in his backyard for a 10 hour period starting at 8:30 Friday evening.

The 224-42 by-pass was under water from Township Road 69 west to 421, and there was no through traffic. Both the Bank and S. Broadway crossings were under water, and motorists had a difficult time getting out.

SPENCER – The north dam of the 70-acre Spencer Lake at the Spencer Wildlife Area broke during the flooding stages of the weekend storm.

Leonard Porter, area manager, yesterday said water flowed over the dam at the southern end of the huge lake, but when it struck the northern section of the lake, broke the wall and poured through a gaping 50-foot hole. It flooded nearby farm field as it followed the course of a small stream, but Porter indicated this flooding would have occurred even without the break."

Figure 3 and Figure 4 show flooding in July 1969 (Reference 13).

Figure 3. July 4, 1969 – Bridge on River Corners Road

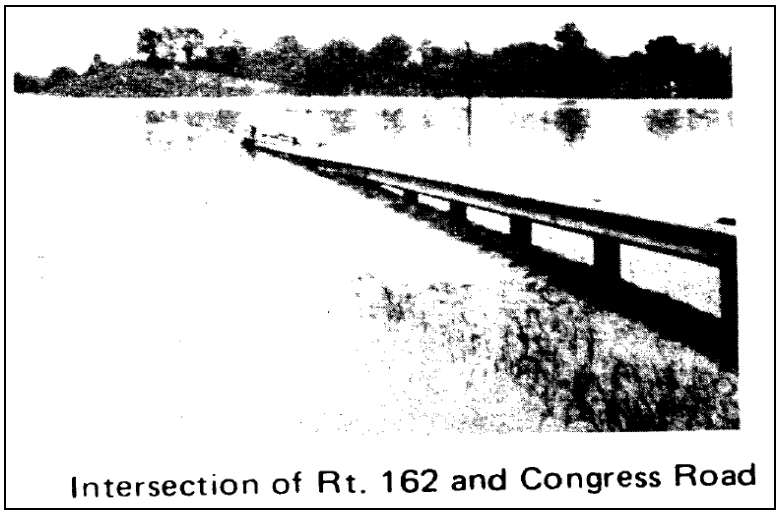

Figure 4. July 4, 1969 - East Branch Black River at Rt. 162 and Congress Road

July 2003 Flood

The following excerpt about the July 2003 flood which occurred in Medina County, Ohio, was taken from the Medina County Emergency Management Agency's All Hazard and Mitigation Plan (Reference 35).

"In July of 2003, slow moving thunderstorms dropped up to four inches of rain on Medina County. Flash flooding occurred in portions of the county during the evening hours. 3.91 inches of rain fell in Chippewa Lake and around 3.5 inches in the City of Medina. Over two inches of rain was measured between 6 and 7 pm. The flooding was most severe in Medina, Montville, Lafayette and Westfield Townships. In Montville Township, the west branch of the Rocky River left its bank and flooded several homes along River Styx Road. The river rose nine feet above normal causing a basement wall in one of the houses to collapse. Several people were evacuated from homes near the river.

Extensive lowland and street flooding occurred in the City of Medina with several roads damaged by the floodwaters. Many homes were damaged by flooding in the city with areas along Smith Road affected the most. A total of 37 homes and 110 apartment units sustained major flood damage in the county. An additional 73 homes and 2 apartments sustained minor damage. Many businesses were also affected. At least seven motorists were rescued from stranded cars during the storm."

Figure 5. July 2003 - Flooding in Village of Gloria Glens Park

City of Brunswick

Low-lying areas along Healey Creek and Plum Creek are inundated frequently from heavy rains and rapid runoff. Tributary streams also overflow their banks causing flood damage.

Village of Chippewa Lake (Formerly the Villages of Briarwood Beach and Chippewa-on-the-Lake)

The principal flood problems have been on those streams where urbanization has occurred in the flood profile. Frequencies and discharges are not available for historic floods.

Village of Gloria Glens Park

The principal flood problems in Medina County have been on those streams where urbanization has occurred in the floodplain. Frequencies and discharges are not available for historic floods.

Village of Seville

The principal flood problems have been along streams where urbanization has occurred in the floodplain. Several days of frequent flooding will also result in damage to crops on farmland and inconvenient delays or detours of flooded highways.

2.4 Flood Protection Measures

Several of the streams in this study have dams located within their reaches. Streams which contain a dam include River Styx, Chippewa Creek, West Branch Rocky River and East Branch Black River. In addition, Mallet Creek has a dam located on it which is ineffective due to erosion around one side.

Recent flood protection measures have been completed within the Chippewa Creek watershed. Channel improvements were made on Chippewa Creek, River Styx and The Inlet. In addition, eight floodwater retarding structures were constructed on various streams, five of which are in Medina County and three are in Wayne County. The flood control reservoirs constructed in Medina County are located on Buck Creek, Hubbard Creek, Fall Creek, River Styx and Holmes Brook. Buck Creek is a tributary of Chippewa Creek with the confluence approximately 4000 feet downstream of Chippewa Lake. Fall Creek is also a tributary of Chippewa Creek with the confluence in Wayne County. Holmes Brook is a tributary of River Styx with the confluence within the corporate limits of Wadsworth. The reservoirs on River Styx and Hubbard Creek are located just upstream of the respective detailed study limits.

City of Brunswick

The two dams that form Sleepy Hollow Lake and Lake Brunswick consist of concrete masonry overflow weirs with earth embankments. Neither has the capacity to control floods nor are they operated to control floods (Reference 14).

Village of Gloria Glens Park

Chippewa Creek has a low head dam located just upstream of Kennard Road, downstream of Gloria Glens Park.

Recent flood protection measures have been completed within the Chippewa Creek watershed. Channel improvements were made on Chippewa Creek, the River Styx and The Inlet. In addition, floodwater-retarding structures exist on Buck Creek, a tributary of Chippewa Creek with the confluence approximately 4,000 feet downstream of Chippewa Lake. This structure does not have a noticeable effect on the flooding in Gloria Glens Park.

Village of Seville

Chippewa Lake is located approximately 3 miles up Chippewa Creek from Seville. Its effect on flood reduction is believed to be minimal.

A floodwater-retarding structure is located on Hubbard Creek upstream of Seville. Its flood-reducing effect would also be quite small, especially on the larger floods.

Channel improvements have been made on Chippewa Creek through the Village of Seville. These improvements (widening, straightening and clearing the channel of brush and debris) increase the volume of water the channel will carry. This is especially helpful on the smaller floods, as it tends to keep the water within the channel instead of overflowing its banks.

City of Wadsworth

Principal flood problems have been on those streams where urbanization has occurred in the floodplain. Several days of frequent flooding will also result in damage to crops on farmland and inconvenient delays or detours on flooded highways. Frequencies and discharges for historic floods are not available.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods within the County, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude 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- or 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), and for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study.

3.1 Hydrologic Analyses

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

This FIS report includes information from previously published FIS reports where streams were studied by detailed and approximate methods. It also includes new information for streams studied by detailed methods by the USGS in 2011.

Peak discharges for the 10-, 2-, 1- and 0.2-percent-annual-chance floods of each flooding source studied in detail are shown in Table 7.

Previous Analyses

Detailed Studies

Medina County, Unincorporated

Excluding those streams in the Chippewa Creek watershed, the method used to develop the 10-, 2- and l-percent-annual-chance flood flows was Bulletin 45 "Floods in Ohio, Magnitude and Frequency" prepared by ODNR, Division of Water (Reference 15). Bulletin 45 uses regression equations for estimating flood magnitudes in ungaged areas. These equations were developed from the relationships of physical and climatic factors of river basins to peak discharges at stream gaging stations. The streams for which Bulletin 45 was used to develop the flows include: West Branch Rocky River, East Branch Black River, Mallet Creek, East Fork, West Fork, Wolf Creek, Killbuck Creek and Camel

Creek. The 10-, 2- and l-percent-annual-chance flood flows were extrapolated graphically to obtain the 0.2-percent-annual-chance flood discharges.

Wolf Creek has previously been studied in the County of Summit, Ohio FIS (Reference 16) adjacent to Medina County. In the Summit County study the hydrology for the streams within the Tuscarawas River basin, which includes Wolf Creek, was determined taking into account a relatively large amount of retention within the watershed (Reference 17). Retention on Wolf Creek occurs in the Barberton Reservoir in Summit County. However, upstream of this in Medina County Wolf Creek does not have an inordinate amount of retention. Therefore, in determining the hydrology for Wolf Creek in Medina County standard procedures outlined in Bulletin 45 were used. This resulted in the hydrology for Wolf Creek in the Medina County study not matching that in the Summit County study at the Medina-Summit County line. This was discussed with ODNR and was acceptable in this situation.

The detailed study streams within the Chippewa Creek basin include: The Inlet, Chippewa Creek, River Styx, Hubbard Creek and Tommy Run. The flow rates used in the Chippewa Creek watershed were obtained from the USDA, SCS. The SCS has a computer model of the hydrology for the Chippewa Creek watershed. The model was achieved by using SCS's Technical Release No. 20 (TR-20), "Computer Program for Project Formulation, Hydrology" (TR-20) (Reference 18). This model takes into account valley storage, floodplain storage, flow routing, and flow velocities in developing the frequency-discharge relationships for the streams. This sometimes results in a downstream takeoff point having lower discharges than at an upstream location. The current hydrologic model reflects improvements which were recently completed within the Chippewa Creek watershed. This current model of the hydrology for the Chippewa Creek watershed was used in this study for the streams within this drainage basin.

Adjacent to Medina County, River Styx has previously been studied in the City of Rittman, Ohio FIS (Reference 19). Flow rates from the Rittman FIS were compared with those in the SCS TR-20 computer model for River Styx and differences were found. Flow rates used in the Medina County study reflect those from the latest SCS TR-20 model and not those from the Rittman study. The flows used in the Rittman FIS are from an earlier TR-20 model by SCS which was subsequently revised by SCS to the current model. The current model reflects the improvements to River Styx and the remainder of the Chippewa Creek watershed which the previous model did not contain.

On Camel Creek it was necessary to hydraulically route the flood flows through a Chessie System culvert. Due to the restrictive nature of the culvert and the high embankment of the railroad, a large amount of ponding occurred upstream of this culvert. This storage produced decreased peak outflows downstream of the impoundment area.

City of Brunswick

In the July 1980 study for the City of Brunswick, the magnitudes of discharges for the various recurrence intervals were determined by methods outlined in the state flood-frequency report (Reference 20). This report, Floods in Ohio - Magnitude and Frequency, used the statistical analysis outlined by the U.S. Water Resources Council Bulletin No. 17 to determine the peak discharge-frequency relationships for all gaging stations on unregulated streams in Ohio (Reference 21). Mathematical equations that relate the peak discharge to basin parameters were developed through multiple regression analysis of the gaging station data. These regression equations were used to compute

discharges at 10-, 2-, 1- and 0.2-annual-chance flood recurrence intervals for each stream, as there are no gaging stations in the study area. Peak discharges were reduced if the drainage area became significantly less upstream. For streams studied by approximate methods, the magnitude of the l-percent-annual-chance-flood was determined using the same techniques.

Plum Creek was restudied in the Mueller Creek Subdivision beginning at Carpenter Road at the downstream tie-in to Interstate Highway 71 at the upstream tie-in. Previously, this stretch of Plum Creek was an approximate Zone A. The discharges for Plum Creek in the previous 1980 FIS are the same discharges used in this analysis.

LOMR Case No. 04-05-A934P (effective date of 8/26/2005) was incorporated into the previously effective initial countywide FIS report dated August 4, 2008. For the LOMR, hydrologic and hydraulic analyses were performed to incorporate updated topographic information and the effects of culvert installation along Tributary P-4 from the confluence with Plum Creek to approximately 3,700 feet upstream and along an unnamed tributary to Tributary P-4 from the confluence with Tributary P-4 to approximately 500 feet upstream. This has resulted in increases and decreases in SFHA width and establishment of Base Flood Elevations (BFEs) for Tributary P-4 and the Unnamed Tributary to Tributary P-4.

Village of Chippewa Lake (Formerly the Villages of Briarwood Beach and Chippewa-on-the-Lake)

Flow rates were obtained from the USDA, SCS. The SCS has a computer model (TR-20) (Reference 18) of the hydrology for the Chippewa Creek watershed. This model takes into account valley storage, floodplain storage, flow routing and flow velocities in developing the frequency-discharge relationships for the streams. The hydrologic model reflects improvements that were recently completed within the Chippewa Creek watershed.

Village of Gloria Glens Park

Flow rates used in the Chippewa Creek watershed were obtained from the USDA, SCS. The SCS used the TR-20 computer program (Reference 18) to model the hydrology for the Chippewa Creek watershed. This model takes into account valley storage, floodplain storage, flow routing, and flow velocities in developing the frequency-discharge relationships for the streams. The hydrologic model reflects improvements that were recently completed within the Chippewa Creek watershed.

Village of Seville

Natural discharge-frequency curves were developed on a regional basis in accordance with the method outlined in "Statistical Methods in Hydrology" (Reference 22) and U.S. Water Resources Council Bulletin No. 17 (Reference 21). These discharges compare favorably with the values used by Finkbeiner, Pettis & Strout, Limited, of Toledo, Ohio, in preparing a FIS for the Unincorporated Areas of Medina County (Reference 2). In the above-mentioned report, the flow rates used were obtained from the USDA, SCS. The SCS has a computer model of the hydrology for the Chippewa Creek watershed. The model uses the SCS TR-20 "Computer Program for Project Formulation, Hydrology" (Reference 18). This model takes into account valley storage, floodplain storage, flow routing, and flow velocities in developing the frequency-discharge relationships for the

streams. This sometimes results in a downstream point having lower discharges than at an upstream location. The hydrologic model reflects improvements that were recently completed within the Chippewa Creek watershed. This model of the hydrology for the Chippewa Creek watershed was used in this study for the streams within this drainage basin.

City of Wadsworth

Flow rates used were obtained from the USDA, SCS. The SCS has a computer model of the hydrology for the Chippewa Creek watershed of which the River Styx is a part. The model was achieved by using the SCS TR-20 computer program (Reference 18). This model takes into account valley storage, floodplain storage, flow routing, and flow velocities in developing the frequency-discharge relationships for the streams. This sometimes results in a downstream takeoff point having discharges lower than those at an upstream location. The hydrologic model reflects improvements that were recently completed within the watershed.

Approximate Studies

For the previously effective initial countywide FIS dated August 4, 2008, peak discharges for the 1-percent-annual-chance storm event were determined at various locations throughout each of the approximate study reaches in Medina County. Hydrologic calculations were performed using regression equations presented in the USGS – Techniques for Estimating Flood-Peak Discharges for Rural, Unregulated Streams in Ohio, 2003 (WRIR03-4164) (Reference 23).

Current Analyses

Detailed Studies

Hydrologic analyses performed by the USGS in 2011 on nine streams were incorporated into this revised countywide FIS report. The streamflow statistics for some of the reaches in this study were estimated with regression equations in the USGS application StreamStats. StreamStats is a Web-based GIS application for use in water resources planning and management, and in engineering design, developed through a cooperative effort of the USGS and ESRI, Inc. StreamStats determines drainage-basin boundaries by use of digital elevation data. These data usually are derived from digital elevation data from the National Elevation Dataset (NED) that have been specially processed so that the elevation data conforms to the digital stream channels depicted in the high-resolution version of the National Hydrography Dataset (NHD) and to the drainage-basin boundaries of the Watershed Boundary Dataset (WBD). The equations used to estimate streamflow statistics for ungaged sites were developed through a process known as regionalization. This process involves use of regression analysis to relate streamflow statistics computed for a group of selected streamgaging stations (usually within a state) to basin characteristics measured for the stations (Koltun and others, 2006).

The estimates for the 10-, 2-, 1-, and 0.2-percent-annual-chance peak discharges, reported in cubic feet per second (cfs), were determined at selected locations for four of the nine stream reaches: Granger Ditch, North Branch Rocky River, Plum Creek, and Tributary to East Fork East Branch Black River.

These locations for flow changes were picked along the study reaches through the GIS interface of StreamStats and the resulting computed discharge outputs were used in the hydraulic models.

Estimates for the 10-, 2-, 1-, and 0.2-percent-annual-chance peak discharges for East Fork, Healey Creek, and Plum Creek were taken from the previous FIS because these reaches were extensions or part of previous detailed studies. West Branch Rocky River reach was also an extension of a previous FIS but, at selected locations above upstream tributaries, the flow estimates were reduced by the ratio of the drainage area.

Streamflow statistics estimated by StreamStats are not appropriate for the Chippewa Creek basin in Medina County because of the effects of two flood control reservoirs built by the SCS (SCS Structures II-A and III-A) and Chippewa Lake. Therefore, the peak flow estimates for Chippewa Creek and The Inlet were determined from a Hydrologic Engineering Center's Hydrologic Modeling System (HEC-HMS) model. This model is a precipitation-runoff model using observed data from rain and streamflow gages. The USGS used precipitation from the National Oceanic and Atmospheric Administration's (NOAA) rain gage located at the north end of Chippewa Lake (NOAA rain gage station COOP ID number 331541) and streamflow data from the USGS gage Chippewa Creek at Miller Road at Sterling, Ohio (USGS station number 03116077). The precipitation-runoff model was calibrated from data from 4 different storm events which occurred on May 21-22, 2004, June 21-22, 2006, August 19-20, 2007, and February 5-6, 2008.

Peak discharges for the 10-, 2-, 1- and 0.2-percent-annual-chance floods of each flooding source studied in detail are shown in Table 7.

Table 7. Summary of Discharges

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cfs)			
		10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
Camel Creek					
At confluence with Killbuck Creek	13.66	1,260	2,265	2,800	4,215
Upstream of Chessie System bridge	12.98	1,806	3,114	3,788	5,600
Chippewa Creek[2]					
At Miller Road USGS Stream Gage 0311677 (Wayne County)	49.5	1,480	2,610	3,240	5,050
Above McCoy Ditch just upstream of the Medina /Wayne County line	46.1	1,340	2,390	2,860	4,450
Above Hubbard Creek	35.8	819	1,560	1,950	2,570
Above unnamed tributary about 1,820 feet upstream of County Highway 97 (Greenwich Road)	33.9	738	1,370	1,710	2,650
Above Westfield Ditch	26.2	319	542	655	979

Table 7. Summary of Discharges (Continued)

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cfs)			
		10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
Chippewa Creek (Continued) [2]					
Above Buck Creek	22.4	229	442	558	809
East Branch Black River					
Medina-Lorain County Line	102.77	4,845	6,900	7,865	10,050
Approximately 1,100 feet upstream of State Route 162 (Chatham Road)	77.54	4,128	5,935	6,787	8,800
County Road 99 (Shaw Road)	65.51	3,717	5,366	6,146	8,000
East Fork					
At mouth	18.3	1,433	2,090	2,399	3,155
Village of Lodi Corporate Limits	12.76	1,271	1,901	2,201	2,920
Just upstream of tributary approximately 500 feet downstream of County Road 50 (Chippewa Road)	7.72	898	1,355	1,572	2,100
Granger Ditch					
At mouth	15.2	1,490	2,190	2,500	3,220
Above unnamed tributary upstream of Remsen Road	14.2	1,420	2,110	2,410	3,100
Above unnamed tributary downstream of Stony Hill Road	13.4	1,370	2,030	2,320	2,990
Above unnamed tributary upstream of Interstate-271	8.13	972	1,450	1,660	2,150
Above unnamed tributary upstream of Wilbur Road	3.31	468	699	800	1,030
Above unnamed tributary downstream of State Road	1.89	295	441	504	650
Healey Creek					
At West 130th Street	2.85	500	760	880	1,160
Above unnamed tributary below Interstate 71	1.66 [1]	291 [3]	443 [3]	513 [3]	676 [3]
Above unnamed tributary 800 Feet upstream of Carpenter Road North	0.72	200	320	380	510

Table 7. Summary of Discharges (Continued)

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cfs)			
		10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
Hubbard Creek					
At confluence with Chippewa Creek (in Village of Seville)	8.34	883	1,413	1,523	2,135
Killbuck Creek					
Medina-Wayne County line	41.51	3,688	6,123	7,354	10,500
Just upstream of confluence with tributary approximately 700 feet downstream of County Road 35 (Friendsville Road)	35.95	2,748	4,951	6,116	9,200
Just upstream of confluence with Camel Creek	22.30	2,400	4,034	4,864	7,000
Mallet Creek					
Just upstream of confluence with West Branch Rocky River	17.88	1,466	2,152	2,475	3,260
Approximately 600 feet upstream of confluence with West Branch Rocky River	16.27	1,363	2,002	2,302	3,025
Chessie System bridge	13.79	1,180	1,731	1,988	2,610
North Branch Rocky River					
At mouth	37.9	2,800	4,080	4,640	5,920
Above unnamed tributary 2,500 feet downstream of Cook Road	31.7	2,420	3,530	4,010	5,120
Plum Creek					
Approximately 450 feet downstream of Plum Creek Parkway	7.97	1,120	1,680	1,930	2,510
At Center Road (State Route 303)	2.74	500	700	890	1,190
500 feet upstream of Fireside Drive	2.17	350	540	630	840
Plum Creek (Liverpool Township)					
At Crocker Road, Medina / Cuyahoga County Line	6.69	846	1,260	1,440	1,860
Above unnamed tributary upstream of Station Road	3.23	512	771	883	1,150

Table 7. Summary of Discharges (Continued)

Flooding Source and Location	Drainage Area (square miles)	10-percent-annual-chance	2-percent-annual-chance	1-percent-annual-chance	0.2-percent-annual-chance
River Styx					
Approximately 11,000 feet downstream of confluence with Holmes Brook (in Wayne County)	25.03	1,490	2,542	2,771	4,130
Just downstream of confluence with Holmes Brook (in City of Wadsworth)	21.99	2,191	3,682	3,991	5,752
Just upstream of confluence with Holmes Brook (in City of Wadsworth)	14.79	1,232	1,963	2,113	2,967
Approximately 12,660 feet upstream of confluence with Holmes Brook	10.37	1,061	1,671	1,794	2,482
Approximately 18,660 feet upstream of confluence with Holmes Brook	8.25	1,265	1,989	2,135	2,948
The Inlet [2]					
At mouth of The Inlet (head of Chippewa Creek)	14.7	880	1,680	2,100	3,330
Above unnamed western tributary about 1,900 feet downstream of State Route 162 / Wedgewood Road	9.5	587	1,150	1,450	2,260
Tommy Run					
Approximately 3,100 feet downstream of Medina-Wayne County line (in Wayne County)	5.13	1,420	2,191	2,348	3,226
Tributary to East Fork East Branch Black River					
At mouth	0.97	161	238	270	346
Tributary P-3					
At mouth	0.42	130	210	250	340
Tributary P-4					
At mouth	0.73	*	*	593	*
Just above Tyler Drive	0.19	*	*	192	*
Tributary P-8					
At Center Road (State Route 303)	1.91	340	520	600	790
Unnamed Tributary					
At Mouth	0.70	455	770	960	1,480
At Center Street	0.23	365	615	770	1,185
Unnamed Tributary to Tributary P-4					
At confluence with Tributary P-4	0.52	*	*	356	*

Table 7. Summary of Discharges (Continued)

Flooding Source and Location	Drainage Area (square miles)	10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
West Branch Rocky River					
Medina-Lorain County Line	130.12	5,399	7,495	8,506	10,800
Just upstream of confluence of second tributary upstream of Medina-Lorain County line	119.73	4,956	6,951	7,883	10,100
Just upstream of confluence of tributary approximately 3,000 feet upstream of State Route 303 (Center Road)	112.30	4,650	6,510	7,377	9,400
Just upstream of confluence with Mallet Creek	82.77	3,531	4,926	5,569	7,050
Approximately 1,000 feet downstream of County Road 47 (Abbeyville Road)	75.79	3,294	4,596	5,195	6,600
U.S. Route 42 (Pearl Road)	61.16	2,943	4,118	4,660	5,950
At State Route 18 / Medina Road	21.1	1,441	2,064	2,358	3,075
Above east and west unnamed tributaries just upstream of Smith Road	11.9	812[4]	1,160[4]	1,330[4]	1,730[4]
Above unnamed western tributary about 1750 feet above I-71	9.3	635[4]	909[4]	1,040[4]	1,360[4]
Above unnamed eastern tributary about 1,100 feet above State Route 162 / Sharon Copley Road	5.63	384[4]	550[4]	630[4]	820[4]
West Fork					
Confluence with East Branch Black River	38.08	2,608	3,813	4,382	5,770
Wolf Creek					
Medina-Summit County Line	20.67	1,391	2,127	2,466	3,180
Just upstream of second tributary upstream of Medina-Summit County line (approximately 6,700 feet upstream of county line)	11.11	928	1,448	1,692	2,300
State Route 94 (Ridge Road)	6.72	711	1,128	1,324	1,850

*Data not available

[1] Drainage area determined with the USGS computer application StreamStats (USGS, 2010).

[2] Streamflow estimates are from a HEC-HMS model.

[3] Streamflow estimates were computed by drainage area reduction method based on West 130th Street flows from the Medina County FIS dated August 4, 2008 (FEMA, 2008).

[4] Streamflow estimates were computed by drainage area reduction method based on State Route 18 / Medina Road flows from the Medina County FIS dated August 4, 2008 (Reference 36).

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 the floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the FIRM represent rounded whole-foot elevations and my 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.

The hydraulic analyses for this study are based only on the effects of 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.

This FIS report includes information from previously published FIS reports where streams were studied by detailed and approximate methods. It also includes new information for streams studied by detailed methods by the USGS in 2011.

Previous Analyses

Detailed Studies

Medina County, Unincorporated Areas. Cross-sections, bridges and structures were field surveyed for all streams studied in detail. Overbank data were supplemented by enlarged USGS topographic base mapping (1:12,000) and where available were developed by detailed topographic mapping (1:2400). Those streams for which detailed mapping was available and used include Wolf Creek, West Branch Rocky River, about half of Mallet Creek, a portion of The Inlet, and a portion of Chippewa Creek (Reference 24). The flood study information plotted on detailed maps was transferred from the detailed topographic mapping to the enlarged USGS topographic base mapping. Inconsistencies in cross-section lengths for the above mentioned streams can be attributed to the use of the larger scale mapping where available.

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

Roughness coefficients (Manning's "n" values) were estimated by field inspections of each stream. In addition, the Soil Survey of Medina County prepared by the USDA, SCS (Reference 25), was used to supplement the field information for the overbank "n" values.

Normal depth techniques were used to establish the starting water surface elevations for West Branch Rocky River, East Branch Black River, Mallet Creek, East Fork, Wolf Creek, River Styx, Tommy Run, Hubbard Creek, Killbuck Creek and Camel Creek. The starting elevations for The Inlet were obtained from the corresponding flood elevations calculated for Chippewa Lake. West Fork was computed continuous with East Branch Black River. The Chippewa Creek starting elevations were those obtained from the SCS TR-20 model for Chippewa Creek at the Medina-Wayne County line. The profile of Mallet Creek reflects the backwater from West Branch Rocky River, the profile of East Fork reflects the backwater from East Branch Black River, and the profile of Camel Creek reflects the backwater from Killbuck Creek.

The starting water surface elevations for Wolf Creek and River Styx were not matched to the County of Summit, Ohio FIS and the City of Rittman, Ohio FIS, respectively, for reasons discussed in the previous section.

Water-surface elevations for the 10-, 2-, 1- and 0.2-percent-annual-chance flood frequencies were developed through use of the USACE's HEC-2 step-backwater model computer program (Reference 12). Flood profiles were drawn showing computed water surface elevations for floods of the selected recurrence intervals.

Village of Chippewa Lake (Formerly the Villages of Briarwood Beach and Chippewa-on-the-Lake). Cross-sections, bridges and structures were field surveyed for all streams studied in detail. Overbank data were supplemented by enlarged USGS topographic base mapping at a scale of 1:24000 (Reference 26).

Roughness coefficients (Manning's "n" values) were estimated by field inspection of each stream. In addition, the "Soil Survey of Medina County, Ohio" (Reference 25) was used to supplement the field information for the overbank "n" values. The ranges of "n" values used were 0.032 to 0.037 for the channel and 0.037 to 0.1 for the overbank.

The starting water-surface elevations for The Inlet were obtained from the corresponding flood elevations calculated for Chippewa Lake.

Water-surface elevations for the 10-, 2-, 1- and 0.2-percent-annual-chance flood frequencies were developed through the use of the USACE's HEC-2 step-backwater computer program (Reference 27).

Flood profiles were drawn showing the computed water-surface elevations for floods of the selected recurrence intervals. In cases where the 2- and 1-percent-annual-chance floods elevations are close together, due to limitations of the profile scale, only the 1-percent-annual-chance profile has been drawn.

City of Brunswick. In the 1980 study, cross-section data for the reach of Plum Creek between Sleepy Hollow Lake and Lake Brunswick were obtained from the USACE (Reference 19). Cross-section data for each of the remaining streams were obtained from Tallamy, Van Kuren, Gertis, and Thielman, who utilized field-surveying methods (Reference 28).

Water-surface profiles were developed for all streams studied in detail by means of the USGS step-backwater analyses program E 431 (Reference 29) or J635 (Reference 30) that was used on steep channels where E 431 would not give an elevation. J635 attempts to seek a usable elevation by running an upstream and downstream profile for each frequency discharge in question in the reach. Elevations were computed to an accuracy of 0.5 foot. A profile of the 1-percent-annual-chance flood for the reach of Plum Creek between Sleepy Hollow Lake and Lake Brunswick was published by the USACE (Reference 14).

Starting elevations for Plum Creek were based on profiles and ratings on Sleepy Hollow Dam and Brunswick Lake Dam as published in the USACE Flood Plain Information report (Reference 14). Starting elevations for the remaining streams were based on slope-conveyance relationships at the initial sections. The downstream elevations of Tributary P-3 were affected by backwater of Plum Creek.

For the 2003 restudy of Plum Creek, starting flood elevations were taken from the effective upstream limit of detailed study near Carpenter Road. The water surface profiles were developed using HEC-RAS (Reference 31). The source of the channel and overbank cross-sections for the study of Plum Creek was a June 1998 field survey prepared by Rolling & Hocevar, Inc.

LOMR Case No. 04-05-A934P (effective date of 8/26/2005) was incorporated into the previously effective initial countywide FIS report dated August 4, 2008. For the LOMR, hydrologic and hydraulic analyses were performed to incorporate updated topographic information and the effects of culvert installation along Tributary P-4 from the confluence with Plum Creek to approximately 3,700 feet upstream and along an unnamed tributary to Tributary P-4 from the confluence with Tributary P-4 to approximately 500 feet upstream. This has resulted in increases and decreases in SFHA width and establishment of BFEs for Tributary P-4 and the Unnamed Tributary to Tributary P-4.

All bridges and culverts were field surveyed to obtain elevation data and structural geometry.

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

Roughness coefficients (Manning's "n") were estimated by field inspections, aerial photographs (Reference 32), and stereo slides of the stream reaches.

Village of Gloria Glens Park. Cross-sections, bridges and structures were field surveyed. Overbank data were supplemented by enlarged USGS topographic base mapping at a scale of 1:24000 (Reference 26).

Roughness coefficients (Manning's "n" values) were estimated by field inspections of each stream. In addition, the Soil Survey of Medina County prepared by the SCS (Reference 25) was used to supplement the field information for the overbank "n" values.

The "n" values ranged from 0.03 to 0.05 in the channel and from 0.03 to 0.12 in the overbank.

The Chippewa Creek starting elevations were those obtained from the SCS TR-20 model for Chippewa Creek at the Medina-Wayne county line.

Water-surface elevations for the 10-, 2-, 1- and 0.2-percent-annual-chance flood frequencies were developed through use of the USACE's HEC-2 step-backwater model computer program (Reference 27).

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

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

Village of Seville. Water-surface elevations of selected floods, floodway data, and flood insurance zone data were calculated through use of the computer program HEC-2 (Reference 27). Glaus, Pyle, Schomer, Burns and DeHaven Consulting Engineers of

Akron, Ohio, provided 2-foot contour orthophoto mapping obtained from aerial photography taken in 1970 (Reference 33). Cross-section data were located at close intervals immediately upstream and downstream of bridges and low-water dams (downstream of study area) to compute the backwater effects of these structures. It was assumed in the analyses that bridge openings would remain unobstructed. Bridge opening geometries were obtained from field surveys performed May 1984.

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

Channel roughness coefficients (Manning's "n") for water-surface computations were determined by characteristics of historical floods in the study reach and existing floodplain conditions. The selected "n" values ranged from 0.030 to 0.050 and from 0.030 to 0.120 for channel and overbanks, respectively.

Flood profiles were drawn showing the computed water-surface elevations for floods of the selected recurrence intervals. In cases where the 2- and l-percent-annual-chance flood elevations are close together, due to limitations of the profile scale, only the 1-percent-annual-chance flood profile has been drawn.

Starting elevations for backwater computations of the various frequency interval floods on Chippewa Creek were selected from the SCS TR-20 model for Chippewa Creek at the Medina-Wayne county boundary. The backwater profiles for Hubbard Creek and the Unnamed Tributary reflect the elevations of Chippewa Creek.

City of Wadsworth. Cross-sections, bridges and structures were field surveyed. Overbank data were supplemented by USGS topographic base mapping at a scale of 1:24000 with a contour interval of 10 feet (Reference 34).

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

Roughness coefficients (Manning's "n" values) were estimated by field inspections. In addition, the Soil Survey of Medina County prepared by the SCS (Reference 25) was used to supplement the field information for the overbank "n" values. Values ranged from 0.032 to 0.042 in the channel, and from 0.030 to 0.110 in the overbank.

Normal depth techniques were used to establish the starting water-surface elevations for the River Styx.

Water-surface elevations for the 10-, 2-, 1- and 0.2-percent-annual-chance flood frequencies were developed through the use of the USACE’s HEC-2 step-backwater model computer program (Reference 27).

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

Approximate Studies

For the previously effective initial countywide FIS dated August 4, 2008, approximate hydraulic analyses were performed using the USACE’s HEC-RAS computer program

(Version 3.1.3). The models contain unsurveyed cross-sections with an average spacing of 2,000 feet. No structures (i.e. bridges or culverts) were included in the modeling.

Cross-section geometry data was created using 2002 two-foot contour data from the Medina County Engineer's Office. Local digital orthoimagery was used to determine Manning's roughness coefficients for the hydraulic models and no field reconnaissance was performed. A representative Manning's roughness coefficient ('n' value) was selected for each study reach. One 'n' value was used for both overbanks and the channel for each stream studied. Roughness values ranged from 0.040 to 0.085.

The boundary conditions were either known water surface elevations when connected to a previously-studied detailed reach at a location other than the mouth, or they were calculated as normal depth at the downstream end of each stream.

Current Analyses

Detailed Studies

On September 12, 2011, the USGS performed detailed hydraulic analyses for nine stream reaches in Medina County. The analyses were performed on, Chippewa Creek, East Fork, Granger Ditch, Healey Creek, North Branch Rocky River, Plum Creek, Plum Creek (Liverpool Township), The Inlet, Tributary to East Fork East Branch Black River, and West Branch Rocky River (Reference 36).

The USGS used the USACE's HEC-RAS computer program (version 4.1.0), using the HEC-2 conveyance computations option, to model flood profiles for all streams analyzed in this study effort. After the initial hydraulic models calculations were completed, warnings presented by the HEC-RAS model were reviewed. The results were assessed for validity, accuracy, and appropriate engineering practices. Some of the areas of concern included: 1) critical water-surface calculations, 2) water-surface elevation differences between adjacent cross-sections, and 3) correct usage of ineffective flow areas. After the initial areas of concern were addressed, the HEC-RAS models were recalculated. All remaining warnings generated by HEC-RAS were reviewed and judged acceptable for the final models presented in this study.

Special Hydraulic Considerations

Solution Check at Bridges. During high flow conditions, it is possible for pressure flow to occur at a bridge or culvert. Pressure flow occurs when the water surface on the upstream side of a bridge equals or exceeds the low chord elevation. The validity of this type of solution was checked at all bridges where the water-surface elevation derived from the energy equation was found to be within 1.0 foot of the low chord elevation of a bridge.

The standard-step method (energy equation) is applicable to the widest range of hydraulic problems (USACE, 2002a). However, if flow conditions are such that the bridge opening may act like a pressurized orifice (flow comes in contact with the low chord), pressure flow computations are warranted.

Submergence Check at Culverts. During high flow conditions, it is also possible for road overflow to occur. Road overflow may result in weir flow if; there is sufficient drop in channel/overbank elevation on the downstream side of the structure and, the structure is not submerged. Submergence is determined as a function of the ratio of the

downstream flow depth to the upstream energy grade line, as measured from the minimum high chord of the deck (USACE, 2010c). The HEC-RAS model uses a default maximum submergence ratio of 0.95 for weir flow calculations. The HEC-RAS Applications Guide states: "When this ratio is exceeded for a bridge analysis, the program will switch from the weir-flow equation to the energy method to determine the upstream flow depth. For a culvert analysis, this ratio is not used because the program cannot perform a backwater analysis through a culvert flowing full. Therefore, a weir analysis will always be used when overflow occurs". As a result, when road overflow occurs at a culvert and a weir flow computation is determined to be invalid, other modeling techniques must be used to account for an energy based solution. For situations in which road grades do not act like weirs, Shearman and others (1986) recommend abandoning culvert and weir hydraulics in favor of composite sections (the combination of the road and culvert cross-section geometries) to reflect pseudo-open-channel conditions.

Chippewa Creek and The Inlet

Cross sections surveyed in the field and synthetic cross sections derived from a digital 2-foot contour map provided by Medina County and LiDAR data were used to develop a step-backwater model to establish the 10-, 2-, 1-, and 0.2-percent-annual-chance flood profile for Chippewa Creek and The Inlet. Estimates of the 10-, 2-, 1-, and 0.2-percent-annual-chance peak discharges were used with cross-sectional geometry data as input to develop the step-backwater profiles.

The USGS surveyed 40 cross sections at 15 hydraulic structures and 3 open channel sites for this reach of Chippewa Creek and The Inlet. All surveys were referenced to NAVD 88 and NAD83.

Using GIS, the USGS generated a TIN from contours, breaklines, and spot elevations to obtain supplemental cross-sectional data for Chippewa Creek and The Inlet. A total of 140 synthetic cross-sectional profiles were generated by use of the TIN at desired locations along the stream reach. In-channel data for all synthetic cross sections were estimated by interpolation from cross-sectional data surveyed in the field.

During the course of modeling Chippewa Creek, it was observed that there were discrepancies between USGS field-surveyed data and the Medina County digital topographic map data. These discrepancies were not noticed in the course of a map accuracy check. The surveyed ground elevations were found to be higher than what was indicated by the digital contour data.

The USGS developed new digital contours for the area of concern using the State of Ohio's LIDAR data set which was obtained in 2006, supplemented by break-lines at stream banks and at the edges of roads were applicable. The new LiDAR based contours were then blended with the portion of the correct portion of the existing Medina County contours. They were then used to develop new cross sections for use in the HEC-RAS model. The remainder of the study was completed using the existing contours provided by Medina County.

The starting water-surface elevations at the initial section for the 10-, 2-, 1-, and 0.2-percent-annual-chance profiles for Chippewa Creek were obtained by means of a slope-conveyance calculation. A slope of 0.000629 ft/ft was calculated from the river stations and minimum channel elevations for cross sections at stations 69,071 and 71,296. These cross sections were obtained from field surveys and provide a representative slope for the channel. Based on the calculated slope, starting water-surface elevations were

determined at the initial section (station 69,071) for the 10-, 2-, 1-, and 0.2-percent-annual-chance profiles.

Manning's roughness coefficients (n) for the main channel and overbank areas of Chippewa Creek were determined from field observation and aerial photographs by experienced personnel. See Table 8 for the estimated Manning's 'n" values for this stream.

Main channel and overbank flow lengths were computed through the use of HEC-GeoRAS (Reference 37). Flow paths are drawn in the GIS by the user for both the main channel and overbanks. HEC-GeoRAS computes all flow lengths based on the flowpaths drawn by the user.

For this study, all hydraulic structure computations were reviewed for the appropriate modeling solutions. Initial reviews focused on the type of solution computed at each structure (energy equation based or based on pressure and/or weir-flow equations). In the cases where road overflow occurred at a culvert, a submergence check was made. In the cases where the hydraulic model computed weir flow at a culvert that was determined to be submerged, the culvert was replaced with composite sections.

East Fork

Cross sections surveyed in the field and synthetic cross sections derived from a digital 2-foot contour map developed by the USGS with LiDAR data were used to develop a step-backwater model to establish the 10-, 2-, 1-, and 0.2-percent-annual-chance flood profiles for East Fork. Estimates of the peak discharges were used with cross-sectional geometry data as input to develop the step-backwater profiles.

The USGS surveyed 22 cross sections at 4 hydraulic structures and 2 open channel sites for this reach of East Fork. All surveys were referenced to NAVD88 and NAD83.

Using GIS, the USGS generated a TIN from contours, breaklines, and spot elevations to obtain supplemental cross-sectional data for East Fork. A total of 40 synthetic cross-sectional profiles were generated by use of the TIN at desired locations along the stream reach. In-channel data for all synthetic cross sections were estimated by interpolation from cross-sectional data surveyed in the field.

During the course of modeling East Fork, it was observed that there were discrepancies between USGS field-surveyed data and the Medina County digital topographic map data. These discrepancies were not noticed in the course of a map accuracy check. The surveyed ground elevations were found to be higher than what was indicated by the digital contour data.

The USGS developed new digital contours for the study reach of concern using the State Of Ohio's LIDAR data set which was obtained in 2006, supplemented by break-lines at stream banks and at the edges of roads were applicable. THE USGS used the developed contours to develop new cross sections for use in the East Fork HEC-RAS model. Most of the remainder of the study was completed using the existing contours provided by Medina County.

The starting water surface elevations are taken from the August 4, 2008 initial countywide FIS for Medina County at river station 5250, labeled D.

Manning's roughness coefficients (n) for the main channel and overbank areas of East Fork were determined from field observation and aerial photographs by experienced personnel. See Table 8 for the estimated Manning's 'n" values for this stream.

Main channel and overbank flow lengths were computed through the use of HEC-GeoRAS (Reference 37). Flow paths are drawn in the GIS by the user for both the main channel and overbanks. HEC-GeoRAS computes all flow lengths based on the flowpaths drawn by the user.

For this study, all hydraulic structure computations were reviewed for the appropriate modeling solutions. Initial reviews focused on the type of solution computed at each structure (energy equation based or based on pressure and/or weir-flow equations). In the cases where road overflow occurred at a culvert, a submergence check was made. In the cases where the hydraulic model computed weir flow at a culvert that was determined to be submerged, the culvert was replaced with composite sections.

Granger Ditch

Cross sections surveyed in the field and synthetic cross sections derived from a digital 2-foot contour map provided by Medina County were used to develop a step-backwater model to establish the 10-, 2-, 1-, and 0.2-percent-annual-chance flood profiles for Granger Ditch. Estimates of the peak discharges were used with cross-sectional geometry data as input to develop the step-backwater profile.

The USGS surveyed 45 cross sections at 8 hydraulic structures and 5 open channel sites for this reach of Granger Ditch. All surveys were referenced to NAVD88 and NAD83.

Using GIS, the USGS generated a TIN from contours, breaklines, and spot elevations to obtain supplemental cross-sectional data for Granger Ditch. A total of 83 synthetic cross-sectional profiles were generated by use of the TIN at desired locations along the stream reach. In-channel data for all synthetic cross sections were estimated by interpolation from cross-sectional data surveyed in the field.

The starting water-surface elevations at the initial section for the 10-, 2-, 1-, and 0.2-percent-annual-chance profiles for Tributary to East Fork East Branch Black River were obtained by means of a slope-conveyance calculation. A slope of 0.00150 ft/ft was calculated from the river stations and minimum channel elevations for cross sections at stations 39 and 3,102. These cross sections were obtained from field surveys and provide a representative slope for the channel. Based on the calculated slope, starting water-surface elevations were determined at the initial section (station 39) for the 10-, 2-, 1-, and 0.2-percent-annual-chance profiles.

Manning's roughness coefficients (n) for the main channel and overbank areas of Granger Ditch were determined from field observation and aerial photographs by experienced personnel. See Table 8 for the estimated Manning's 'n" values for this stream.

Main channel and overbank flow lengths were computed through the use of HEC-GeoRAS (Reference 37). Flow paths are drawn in the GIS by the user for both the main channel and overbanks. HEC-GeoRAS computes all flow lengths based on the flowpaths drawn by the user.

For this study, all hydraulic structure computations were reviewed for the appropriate modeling solutions. Initial reviews focused on the type of solution computed at each structure (energy equation based or based on pressure and/or weir-flow equations). In the cases where road overflow occurred at a culvert, a submergence check was made. In the cases where the hydraulic model computed weir flow at a culvert that was determined to be submerged, the culvert was replaced with composite sections.

Healey Creek

Cross sections surveyed in the field and synthetic cross sections derived from a digital 2-foot contour map provided by Medina County were used to develop a step-backwater model to establish the 10-, 2-, 1-, and 0.2-percent-annual-chance flood profiles for Healey Creek. Estimates of the peak discharges were used with cross-sectional geometry data as input to develop the step-backwater profiles.

The USGS surveyed 18 cross sections at 3 hydraulic structures and 3 open channel sites for this reach of Healey Creek. All surveys were referenced to NAVD88 and NAD83.

Using GIS, the USGS generated a TIN from contours, breaklines, and spot elevations to obtain supplemental cross-sectional data for Healey Creek. A total of 13 synthetic cross-sectional profiles were generated by use of the TIN at desired locations along the stream reach. In-channel data for all synthetic cross sections were estimated by interpolation from cross-sectional data surveyed in the field.

Previous detailed models for Healey Creek reference distance in feet above the corporate limits of Lodi. Water surfaces from cross section "H" of the previous study were used for this study.

Manning's roughness coefficients (n) for the main channel and overbank areas of Healey Creek were determined from field observation and aerial photographs by experienced personnel. See Table 8 for the estimated Manning's 'n" values for this stream.

Main channel and overbank flow lengths were computed through the use of HEC-GeoRAS (Reference 37). Flow paths are drawn in the GIS by the user for both the main channel and overbanks. HEC-GeoRAS computes all flow lengths based on the flowpaths drawn by the user.

For this study, all hydraulic structure computations were reviewed for the appropriate modeling solutions. Initial reviews focused on the type of solution computed at each structure (energy equation based or based on pressure and/or weir-flow equations). In the cases where road overflow occurred at a culvert, a submergence check was made. In the cases where the hydraulic model computed weir flow at a culvert that was determined to be submerged, the culvert was replaced with composite sections.

Healey Creek was considered an extension of the main stem of an existing study of the same stream, the lettering of labeled cross sections for Healey Creek was started at "I".

North Branch Rocky River

Cross sections surveyed in the field and synthetic cross sections derived from a digital 2-foot contour map provided by Medina County were used to develop a step-backwater model to establish the 10-, 2-, 1-, and 0.2-percent-annual-chance flood profiles for North Branch Rocky River. Estimates of the peak discharges were used with cross-sectional geometry data as input to develop the step-backwater profiles.

The USGS surveyed 37 cross sections at 7 hydraulic structures and 4 open channel sites for this reach of North Branch Rocky River. All surveys were referenced to NAVD88 and NAD83.

Using GIS, the USGS generated a TIN from contours, breaklines, and spot elevations to obtain supplemental cross-sectional data for North Branch Rocky River. A total of 137 synthetic cross-sectional profiles were generated by use of the TIN at desired locations along the stream reach. In-channel data for all synthetic cross sections were estimated by interpolation from cross-sectional data surveyed in the field.

The starting water-surface elevations at the initial section for the 10-, 2-, 1-, and 0.2-percent-annual-chance flood profiles for North Branch Rocky River were obtained by means of a slope-conveyance calculation. A slope of 0.0011 ft/ft was calculated from the river stations and minimum channel elevations for cross sections at stations 169 and 2,602. These cross sections were obtained from field surveys and provide a representative slope for the channel. Based on the calculated slope, starting water-surface elevations were determined at the initial section (station 169) for the 10-, 2-, 1-, and 0.2-percent-annual-chance flood profiles.

Manning's roughness coefficients (n) for the main channel and overbank areas of North Branch Rocky River were determined from field observation and aerial photographs by experienced personnel. See Table 8 for the estimated Manning's 'n" values for this stream.

Main channel and overbank flow lengths were computed through the use of HEC-GeoRAS (Reference 37). Flow paths are drawn in the GIS by the user for both the main channel and overbanks. HEC-GeoRAS computes all flow lengths based on the flowpaths drawn by the user.

For this study, all hydraulic structure computations were reviewed for the appropriate modeling solutions. Initial reviews focused on the type of solution computed at each structure (energy equation based or based on pressure and/or weir-flow equations). In the cases where road overflow occurred at a culvert, a submergence check was made. In the cases where the hydraulic model computed weir flow at a culvert that was determined to be submerged, the culvert was replaced with composite sections.

Plum Creek

Cross sections surveyed in the field and synthetic cross sections derived from a digital 2-foot contour map provided by Medina County were used to develop a step-backwater model to establish the 10-, 2-, 1-, and 0.2-percent-annual-chance flood profiles for Plum Creek (Near Brunswick). Estimates of the peak discharges were used with cross-sectional geometry data as input to develop the step-backwater profile.

The USGS surveyed 23 cross sections at 5 hydraulic structures and 3 open channel site for this reach of Plum Creek. All surveys were referenced to NAVD88 and NAD83.

Using GIS, the USGS generated a TIN from contours, breaklines, and spot elevations to obtain supplemental cross-sectional data for Plum Creek. A total of 14 synthetic cross-sectional profiles were generated by use of the TIN at desired locations along the stream reach. In-channel data for all synthetic cross sections were estimated by interpolation from cross-sectional data surveyed in the field.

The starting water-surface elevations at the initial section for the 10-, 2-, 1-, and 0.2-percent-annual-chance flood profiles for Plum Creek were obtained by means of a slope-conveyance calculation. A slope of 0.00293 ft/ft was calculated from the river stations and minimum channel elevations for cross sections at stations 13 and 253. These cross sections were obtained from field surveys and provide a representative slope for the channel. Based on the calculated slope, starting water-surface elevations were determined at the initial section (station 13) for the 10-, 2-, 1-, and 0.2-percent-annual-chance flood profiles.

Manning's roughness coefficients (n) for the main channel and overbank areas of Plum Creek were determined from field observation and aerial photographs by experienced personnel. See Table 8 for the estimated Manning's 'n" values for this stream.

Main channel and overbank flow lengths were computed through the use of HEC-GeoRAS (Reference 37). Flow paths are drawn in the GIS by the user for both the main channel and overbanks. HEC-GeoRAS computes all flow lengths based on the flowpaths drawn by the user.

For this study, all hydraulic structure computations were reviewed for the appropriate modeling solutions Initial reviews focused on the type of solution computed at each structure (energy equation based or based on pressure and/or weir-flow equations). In the cases where road overflow occurred at a culvert, a submergence check was made. In the cases where the hydraulic model computed weir flow at a culvert that was determined to be submerged, the culvert was replaced with composite sections.

Plum Creek (Liverpool Township)

Cross sections surveyed in the field and synthetic cross sections derived from a digital 2-foot contour map provided by Medina County were used to develop a step-backwater model to establish the 10-, 2-, 1-, and 0.2-percent-annual-chance flood profiles for Plum Creek (Liverpool Township). Estimates of the peak discharges were used with cross-sectional geometry data as input to develop the step-backwater profiles.

The USGS surveyed 79 cross sections at 15 hydraulic structures and 4 open channel sites for this reach of Plum Creek (Liverpool Township). All surveys were referenced to NAVD88 and NAD83.

Using GIS, the USGS generated a TIN from contours, breaklines, and spot elevations to obtain supplemental cross-sectional data for Plum Creek (Liverpool Township). A total of 67 synthetic cross-sectional profiles were generated by use of the TIN at desired locations along the stream reach. In-channel data for all synthetic cross sections were estimated by interpolation from cross-sectional data surveyed in the field.

The starting water-surface elevation at the initial section for the 10-, 2-, 1-, and 0.2-percent-annual-chance profiles for Plum Creek (Liverpool Township) were obtained from a previous study of Plum Creek - East (Reference 39). The previous study mistakenly labeled the upper limit as the Cuyahoga County line when it was actually the Lorain County line. Starting water surface elevations were taken from the upper limit of the previous study.

Manning's roughness coefficients (n) for the main channel and overbank areas of Plum Creek (Liverpool Township) were determined from field observation and aerial photographs by experienced personnel. See Table 8 for the estimated Manning's 'n" values for this stream.

Main channel and overbank flow lengths were computed through the use of HEC-GeoRAS (Reference 38). Flow paths are drawn in the GIS by the user for both the main channel and overbanks. HEC-GeoRAS computes all flow lengths based on the flowpaths drawn by the user.

For this study, all hydraulic structure computations were reviewed for the appropriate modeling solutions. Initial reviews focused on the type of solution computed at each structure (energy equation based or based on pressure and/or weir-flow equations). In the cases where road overflow occurred at a culvert, a submergence check was made. In the cases where the hydraulic model computed weir flow at a culvert that was determined to be submerged, the culvert was replaced with composite sections.

Tributary to East Fork East Branch Black River

Cross sections surveyed in the field and synthetic cross sections derived from a digital 2-foot contour map developed by the USGS with LiDAR data were used to develop a step-backwater model to establish the 10-, 2-, 1-, and 0.2-percent-annual-chance flood profiles for Tributary to East Fork East Branch Black River. Estimates of the peak discharges were used with cross-sectional geometry data as input to develop the step-backwater profiles.

Tributary to East Fork East Branch Black River flows generally northwest in the southwestern portion of Medina County. The downstream study limit for this analysis of Tributary to East Fork East Branch Black River is the confluence with East Fork. The upstream study limit is the CSX railroad bridge. This stream reach is approximately 0.5 mi in length. The USGS surveyed 15 cross sections at 4 hydraulic structures and 1 open channel site for this reach of Tributary to East Fork East Branch Black River. All surveys were referenced to the North American Vertical Datum of 1988 (NAVD 88) and NAD83.

Using GIS, the USGS generated a triangular irregular network (TIN) from contours, breaklines, and spot elevations to obtain supplemental cross-sectional data for Tributary to East Fork East Branch Black River. A total of 8 synthetic cross-sectional profiles were generated by use of the TIN at desired locations along the stream reach. In-channel data for all synthetic cross sections were estimated by interpolation from cross-sectional data surveyed in the field.

During the course of modeling Tributary to East Fork East Branch Black River, it was observed that there were discrepancies between USGS field-surveyed data and the Medina County digital topographic map data (Medina County 2009). These discrepancies were not noticed in the course of a map accuracy check. The surveyed ground elevations were found to be higher than what was indicated by the digital contour data.

The USGS developed new digital contours for the study reach of concern using the State Of Ohio's LIDAR data set which was obtained in 2006, supplemented by break-lines at stream banks and at the edges of roads were applicable. The USGS used the developed contours to develop new cross sections for use in the Tributary to East Fork East Branch Black River HEC-RAS model. Most of the remainder of the study was completed using the existing contours provided by Medina County.

The starting water-surface elevations at the initial section for the 10-, 2-, 1-, and 0.2-percent-annual-chance profiles for Tributary to East Fork East Branch Black River were obtained by means of a slope-conveyance calculation. A slope of 0.0036 ft/ft was calculated from the river stations and minimum channel elevations for cross sections at stations 161 and 575. These cross sections were obtained from field surveys and provide a representative slope for the channel. Based on the calculated slope, starting water-surface elevations were determined at the initial section (station 26) for the 10-, 2-, 1-, and 0.2-percent-annual-chance profiles.

Manning's roughness coefficients (n) for the main channel and overbank areas of Tributary to East Fork East Branch Black River were determined from field observation and aerial photographs by experienced personnel. See Table 8 for the estimated Manning's 'n" values for this stream.

Main channel and overbank flow lengths were computed through the use of HEC-GeoRAS (Reference 37). Flow paths are drawn in the GIS by the user for both the main channel and overbanks. HEC-GeoRAS computes all flow lengths based on the flowpaths drawn by the user.

For this study, all hydraulic structure computations were reviewed for the appropriate modeling solutions. Initial reviews focused on the type of solution computed at each structure (energy equation based or based on pressure and/or weir-flow equations). In the cases where road overflow occurred at a culvert, a submergence check was made. In the cases where the hydraulic model computed weir flow at a culvert that was determined to be submerged, the culvert was replaced with composite sections.

West Branch Rocky River

Cross sections surveyed in the field and synthetic cross sections derived from a digital 2-foot contour map provided by Medina County were used to develop a step-backwater model to establish the 10-, 2-, 1-, and 0.2-percent-annual-chance flood profiles for West Branch Rocky River. Estimates of the peak discharges were used with cross-sectional geometry data as input to develop the step-backwater profiles.

The USGS surveyed 85 cross sections at 17 hydraulic structures for this reach of West Branch Rocky River. All surveys were referenced to NAVD88 and NAD83.

Using GIS, the USGS generated a TIN from contours, breaklines, and spot elevations to obtain supplemental cross-sectional data for West Branch Rocky River. A total of 36 synthetic cross-sectional profiles were generated by use of the TIN at desired locations along the stream reach. In-channel data for all synthetic cross sections were estimated by interpolation from cross-sectional data surveyed in the field.

The starting water-surface elevation at the initial section for this FIS was selected from the previous FIS at station 93,600.

Manning's roughness coefficients (n) for the main channel and overbank areas of West Branch Rocky River were determined from field observation and aerial photographs by experienced personnel. See Table 8 for the estimated Manning's 'n" values for this stream.

Main channel and overbank flow lengths were computed through the use of HEC-GeoRAS (Reference 38). Flow paths are drawn in the GIS by the user for both the main channel and overbanks. HEC-GeoRAS computes all flow lengths based on the flowpaths drawn by the user.

For this study, all hydraulic structure computations were reviewed for the appropriate modeling solutions. Initial reviews focused on the type of solution computed at each structure (energy equation based or based on pressure and/or weir-flow equations). In the cases where road overflow occurred at a culvert, a submergence check was made. In the cases where the hydraulic model computed weir flow at a culvert that was determined to be submerged, the culvert was replaced with composite sections. It should be noted that the Akron Canton and Youngstown railroad (located between stations 100,023 and 100,339) which was included in the previous FIS study was not included in this study because the structure does not affect the profiles.

Table 8. Roughness Coefficients (Manning's "n")

Flooding Source	Main Channel Manning's 'n' Value	Overbank Manning's 'n' Value
Chippewa Creek	0.010 – 0.042	0.026 – 0.090
East Fork	0.040 – 0.046	0.035 – 0.070
Granger Ditch	0.034 – 0.038	0.038 – 0.095
Healey Creek	0.038 – 0.044	0.042 – 0.064
North Branch Rocky River	0.040 – 0.048	0.048 – 0.072
Plum Creek	0.035 – 0.060	0.050 – 0.120
Plum Creek (Near Brunswick)	0.039 – 0.058	0.050 – 0.095
The Inlet	0.010 – 0.042	0.026 – 0.090
Tributary to East Fork East Branch Black River	0.048 – 0.050	0.054
West Branch Rocky River	0.042 – 0.044	0.048 – 0.064

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 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 BFEs across the corporate limits between communities. For the initial countywide FIS dated August 4, 2008, effective information was converted from NGVD29 to NAVD88. An average conversion of -0.7 feet (NGVD29 – 0.7 = NAVD88) was applied uniformly across the county to convert all effective BFEs and other profile elevations.

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, Silver Spring, 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 TSDN 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 the 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 Floodway Data Tables. 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

In order to provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base for floodplain management purposes. The 0.2-percent-annual-chance floods are 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 for all effective approximate and detailed studies and new detailed studies for portions of Chippewa Creek, Granger Ditch, Healey Creek, North Branch Rocky River, Plum Creek, Plum Creek (Liverpool Township), The Inlet, West Branch Rocky River) the 1- and 0.2-percent-annual-chance floodplain boundaries were delineated using 2002 2-foot contour information provided by Medina County Engineers Office. Between cross-sections for new detailed studies for Tributary to East Fork East Branch Black River, East Fork and portions of Chippewa Creek and The Inlet, the 1- and 0.2-percent-annual-chance floodplain boundaries were delineated to 2 foot contours created from 2002 2-foot contour information supplemented with LiDAR from 2007 OGRIP OSIP data and break lines created by the USGS. Between cross-sections for all effective approximate the 1-percent-annual-chance floodplain boundaries were delineated using 2002 2-foot contour information provided by Medina County Engineers Office.

The 1- and 0.2-percent-annual-chance floodplain boundaries are shown on the FIRM (published separately). 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 boundaries correspond to the boundary of the areas of moderate flood hazards (Zone X). 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 on the FIRM (published separately). 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 (published separately).

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 standards of FEMA limit such increases in flood heights to 1.0 foot, provided that hazardous velocities are not produced.

The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this study 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 were tabulated at selected cross-sections and are reported in Table 9. For streams not studied by detailed methods for this revised countywide FIS report, the floodway data was directly obtained from the Floodway Data Tables of previous FIS reports. 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 the 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water surface elevation of the 1-percent-annual-chance flood more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 6.

The floodways in this report are recommended to local agencies as minimum standards that can be adopted or used as a basis for additional studies.

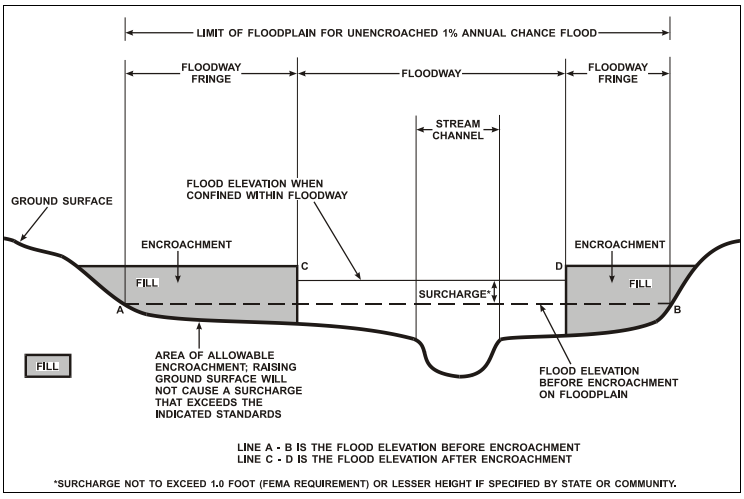

Figure 6. Floodway Schematic

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
CAMEL CREEK								
A	350	371	1,270	2.2	952.8	951.4	952.4	1.0
B	1,000	442	1,324	2.1	952.8	951.9	952.9	1.0
C	3,750	552	2,402	1.2	957.0	957.0	957.7	0.7
D	6,050	468	1,365	2.8	961.1	961.1	961.8	0.7
E	8,510	270	1,369	2.8	963.8	963.8	964.8	1.0
F	9,200	192	811	4.7	965.3	965.3	966.0	0.7
G	10,250	303	1,478	2.6	966.8	966.8	967.7	0.9
H	11,290	203	904	4.2	968.0	968.0	968.9	0.9
I	12,450	223	1,199	3.2	970.9	970.9	971.9	1.0

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

Table 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

MEDINA COUNTY, OH
AND INCORPORATED AREAS

FLOODWAY DATA

CAMEL CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
CHIPPEWA CREEK								
A	78,189	400	927	4.4	972.1	972.1	973.1	1.0
B	80,277	220	622	5.9	974.3	974.3	974.6	0.3
C	82,428	250	891	4.5	978.5	978.5	978.5	0.0
D	83,536	350	875	5.0	979.8	979.8	979.9	0.1
E	83,618	214	796	4.9	980.0	980.0	980.6	0.6
F	84,627	105	562	5.6	981.2	981.2	981.6	0.4
G	85,438	70	476	6.3	982.1	982.1	982.7	0.6
H	86,116	56	451	6.3	984.0	984.0	984.3	0.3
I	87,827	64	688	2.9	985.2	985.2	985.6	0.4
J	88,603	80	817	2.5	985.3	985.3	985.8	0.5
K	89,231	100	1,000	2.2	985.3	985.3	986.1	0.8
L	90,957	100	893	2.4	985.5	985.5	986.3	0.8
M	91,159	169	1,310	1.9	985.6	985.6	986.5	0.9
N	92,946	500	3,795	0.7	985.7	985.7	986.6	0.9
O	95,792	221	1,270	1.9	985.8	985.8	986.7	0.9
P	97,086	118	836	2.4	986.4	986.4	987.1	0.7
Q	98,239	275	1,315	1.9	986.6	986.6	987.5	0.9
R	98,605	300	1,314	0.7	986.7	986.7	987.6	0.9
S	101,803	55	301	2.2	987.1	987.1	987.8	0.7
T	102,076	39	175	3.7	987.5	987.5	988.1	0.6
U	104,468	51	316	1.8	990.0	990.0	990.1	0.1
V	104,572	83	434	1.3	990.0	990.0	990.2	0.2
W	106,788	100	626	0.9	990.1	990.1	990.4	0.3
X	107,228	132	695	0.9	990.3	990.3	991.2	0.9
Y	110,867	3240	29,559	0.0	990.3	990.3	991.2	0.9

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

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
EAST BRANCH BLACK RIVER								
A	850	1,750	11,501	0.7	833.5	833.5	834.5	1.0
B	3,740	1,450	7,688	1.0	833.7	833.7	834.7	1.0
C	5,120	468	3,006	2.6	834.0	834.0	835.0	1.0
D	6,350	437	3,186	2.5	834.7	834.7	835.7	1.0
E	7,900	700	4,063	1.9	835.5	835.5	836.5	1.0
F	10,680	541	3,883	2.0	837.5	837.5	838.3	0.8
G	11,900	540	3,537	2.2	838.3	838.3	839.1	0.8
H	13,530	579	4,344	1.8	839.1	839.1	840.0	0.9
I	14,900	518	3,913	2.0	839.7	839.7	840.6	0.9
J	16,720	409	2,864	2.7	840.6	840.6	841.5	0.9
K	18,200	634	3,970	2.0	841.4	841.4	842.4	1.0
L	36,460	328	2,151	3.2	850.5	850.5	851.5	1.0
M	37,260	524	3,416	2.0	850.9	850.9	851.9	1.0
N	39,180	449	2,455	2.8	851.7	851.7	852.7	1.0
O	40,650	358	2,447	2.8	853.3	853.3	854.3	1.0
P	42,760	502	3,343	2.0	855.4	855.4	856.3	0.9
Q	44,990	440	2,503	2.7	857.0	857.0	857.6	0.6
R	46,560	542	3,315	2.0	858.0	858.0	859.0	1.0
S	47,950	268	1,766	3.8	858.9	858.9	859.9	1.0
T	50,030	317	2,450	2.5	861.9	861.9	862.7	0.8
U	51,470	290	2,215	2.8	862.3	862.3	863.2	0.9
V	52,850	127	1,098	5.6	862.9	862.9	863.8	0.9
W	54,660	168	1,690	3.6	865.5	865.5	866.5	1.0
X	55,820	284	2,244	2.7	866.6	866.6	867.6	1.0
Y	57,230	289	2,420	2.5	867.3	867.3	868.3	1.0
Z	58,880	221	1,434	4.3	868.3	868.3	869.2	0.9

[1]Feet above Medina County Line

Table 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

MEDINA COUNTY, OH
AND INCORPORATED AREAS

FLOODWAY DATA

EAST BRANCH BLACK RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
EAST BRANCH BLACK RIVER (Continued)								
AA	60,540	306	2,292	2.7	870.3	870.3	871.2	0.9
AB	61,860	384	2694	2.3	871.4	871.4	872.4	1.0
AC	64,770	284	2,234	2.8	873.9	873.9	874.9	1.0
AD	66,280	349	2,598	2.4	875.2	875.2	876.2	1.0
AE	68,730	286	1,945	3.2	876.4	876.4	877.4	1.0

[1] Stream distance in feet above Medina County Line

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
EAST FORK								
A	820	322	1,020	2.4	876.4	873.7[2]	874.6	0.9
B	1,990	144	693	3.5	876.4	874.8[2]	875.8	1.0
C	3,500	175	438	5.5	879.8	879.8	879.9	0.1
D	5,250	200	974	3.9	882.6	882.6	883.6	1.0
E	6,194	87	379	7.1	883.8	883.8	884.5	0.7
F	6,482	90	470	6.3	885.6	885.6	885.6	0.0
G	6,768	80	389	7.1	886.2	886.2	886.4	0.2
H	7,410	70	409	6.4	887.4	887.4	888.0	0.6
I	7,970	70	454	5.9	888.5	888.5	889.4	0.9
J	8,457	51	377	6.4	889.8	889.8	890.4	0.6
K	8,833	48	346	6.9	891.1	891.1	891.5	0.4
L	9,022	47	382	6.3	891.4	891.4	892.2	0.8
M	9,484	51	410	5.9	892.5	892.5	893.3	0.8
N	9,956	50	383	6.3	893.9	893.9	894.4	0.5
O	10,180	49	394	6.1	894.5	894.5	895.0	0.5
P	11,164	63	367	6.9	897.3	897.3	897.7	0.4
Q	11,689	47	267	9.0	899.7	899.7	899.9	0.2
R	11,788	55	253	9.8	900.5	900.5	900.6	0.1
S	11,920	45	248	9.7	902.0	902.0	902.0	0.0
T	12,454	42	275	8.7	906.2	906.2	906.2	0.0
U	12,541	46	272	8.8	906.6	906.6	906.8	0.2
V	12,809	56	316	7.7	908.8	908.8	909.0	0.2
W	13,082	53	299	8.0	910.8	910.8	910.9	0.1
X	13,364	49	286	8.4	912.9	912.9	913.0	0.1
Y	13,540	63	326	8.1	916.4	916.4	917.3	0.9
Z	13,735	55	309	8.4	918.2	918.2	918.4	0.2

[1] Stream distance in feet above confluence with East Branch Black River [2] Elevations computed without consideration of backwater effects from East Branch Black River

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
EAST FORK (Continued)								
AA	13,885	50	331	7.3	918.8	918.8	919.4	0.6
AB	14,295	44	274	8.8	921.3	921.3	921.6	0.3
AC	14,621	42	281	8.6	923.4	923.4	923.9	0.5
AD	14,751	41	283	8.5	924.5	924.5	924.8	0.3
AE	14,851	50	278	7.9	924.7	924.7	925.7	1.0
AF	16,151	100	364	6.0	936.5	936.5	936.8	0.3
AG	17,901	71	424	5.2	949.2	949.2	949.4	0.2
AH	19,801	203	417	5.3	960.5	960.5	960.6	0.1
AI	21,271	82	416	5.3	969.5	969.5	969.9	0.4
AJ	22,251	154	726	3.0	972.4	972.4	973.4	1.0
AK	24,011	79	413	5.3	977.6	977.6	978.6	1.0
AL	26,231	92	389	5.7	988.9	988.9	989.3	0.4
AM	27,971	87	508	4.3	995.7	995.7	996.7	1.0
AN	28,901	141	742	3.0	998.5	998.5	999.4	0.9
AO	31,171	157	578	3.8	1,004.0	1,004.0	1,004.9	0.9
AP	33,131	102	322	4.9	1,012.2	1,012.2	1,013.2	1.0
AQ	34,451	101	468	3.4	1,017.0	1,017.0	1,017.8	0.8
AR	35,821	177	273	5.8	1,023.7	1,023.7	1,023.7	0.0
AS	37,481	206	965	1.6	1,032.4	1,032.4	1,033.1	0.7
AT	38,081	194	930	1.7	1,034.4	1,034.4	1,035.4	1.0
AU	38,451	234	972	1.6	1,034.6	1,034.6	1,035.6	1.0

[1] Stream distance in feet above confluence with East Branch Black River

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
GRANGER DITCH								
A	39	110	545	6.3	1,026.9	1,025.5 [2]	1,026.2 [2]	0.7
B	268	95	557	6.2	1,026.9	1,025.7 [2]	1,026.5 [2]	0.8
C	623	80	480	6.4	1,026.9	1,026.5 [2]	1,027.0 [2]	0.5
D	936	80	455	7.0	1,026.9	1,026.7 [2]	1,027.4 [2]	0.7
E	1,174	60	394	7.0	1,027.3	1,027.3	1,027.8	0.5
F	1,642	38	344	7.3	1,027.7	1,027.7	1,028.5	0.8
G	1,860	50	396	6.7	1,028.4	1,028.4	1,029.1	0.7
H	2,369	50	391	6.6	1,029.5	1,029.5	1,029.9	0.4
I	2,559	44	364	7.0	1,029.8	1,029.8	1,030.1	0.3
J	2,750	47	417	6.2	1,030.3	1,030.3	1,030.6	0.3
K	2,969	50	454	5.7	1,030.7	1,030.7	1,030.9	0.2
L	3,102	39	506	4.9	1,037.0	1,037.0	1,037.0	0.0
M	3,427	60	692	4.2	1,037.4	1,037.4	1,037.4	0.0
N	4,161	80	754	4.2	1,037.6	1,037.6	1,037.6	0.0
O	4,232	80	774	3.9	1,037.7	1,037.7	1,037.7	0.0
P	6,000	120	1,088	3.0	1,037.8	1,037.8	1,038.2	0.4
Q	6,732	120	893	3.7	1,037.8	1,037.8	1,038.4	0.6
R	6,881	140	1,049	3.2	1,037.8	1,037.8	1,038.5	0.7
S	7,514	180	1,388	2.8	1,037.9	1,037.9	1,038.6	0.7
T	8,690	110	750	4.7	1,038.0	1,038.0	1,038.9	0.9
U	9,041	85	591	4.9	1,038.7	1,038.7	1,039.3	0.6
V	12,385	41	324	5.5	1,040.9	1,040.9	1,041.4	0.5
W	12,637	41	297	5.8	1,041.1	1,041.1	1,041.6	0.5
X	12,970	41	306	5.6	1,041.7	1,041.7	1,042.1	0.4
Y	13,871	40	248	6.9	1,042.8	1,042.8	1,043.1	0.3
Z	14,149	41	271	6.4	1,043.6	1,043.6	1,043.8	0.2

[1] Stream distance in feet above confluence with North Branch Rocky River [2] Elevation computed without considering backwater effects from North Branch Rocky River

Table 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

MEDINA COUNTY, OH
AND INCORPORATED AREAS

FLOODWAY DATA

GRANGER DITCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
GRANGER DITCH (Continued)								
AA	14,398	46	296	6.0	1,044.1	1,044.1	1,044.3	0.2
AB	14,654	60	369	5.0	1,044.6	1,044.6	1,044.9	0.3
AC	14,912	87	543	3.9	1,045.1	1,045.1	1,045.3	0.2
AD	15,103	100	732	3.0	1,045.2	1,045.2	1,045.5	0.3
AE	17,035	120	535	4.3	1,046.0	1,046.0	1,046.8	0.8
AF	17,204	120	674	3.5	1,047.4	1,047.4	1,048.1	0.7
AG	20,030	160	873	1.4	1,047.6	1,047.6	1,048.5	0.9
AH	21,529	69	303	3.3	1,047.7	1,047.7	1,048.6	0.9
AI	21,864	36	145	3.7	1,047.9	1,047.9	1,048.8	0.9
AJ	22,386	28	99	5.3	1,048.8	1,048.8	1,049.4	0.6
AK	22,646	32	154	3.3	1,049.5	1,049.5	1,050.0	0.5
AL	22,997	35	122	4.3	1,049.9	1,049.9	1,050.2	0.3
AM	23,054	35	157	3.6	1,051.9	1,051.9	1,052.7	0.8
AN	23,474	35	175	3.1	1,052.4	1,052.4	1,053.1	0.7
AO	23,710	29	132	4.0	1,052.6	1,052.6	1,053.2	0.6
AP	24,349	18	74	6.8	1,053.9	1,053.9	1,054.3	0.4
AQ	24,513	32	125	4.0	1,055.3	1,055.3	1,055.5	0.2
AR	24,690	32	138	3.7	1,055.6	1,055.6	1,055.8	0.2
AS	24,953	40	165	3.2	1,055.9	1,055.9	1,056.1	0.2
AT	25,169	35	151	3.6	1,056.0	1,056.0	1,056.2	0.2

[1]Stream distance in feet above confluence with North Branch Rocky River

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
HEALEY CREEK								
A	55	37	239	3.7	1,065.3	1,065.3	1,066.3	1.0
B	540	37	151	5.8	1,066.8	1,066.8	1,067.5	0.7
C	960	37	153	5.8	1,069.3	1,069.3	1,069.9	0.6
D	1,980	30	123	7.2	1,076.5	1,076.5	1,077.4	0.9
E	2,030	20	90	9.8	1,077.0	1,077.0	1,077.8	0.8
F	2,280	22	146	6.0	1,080.7	1,080.7	1,081.2	0.5
G	2,890	75	216	4.1	1,084.5	1,084.5	1,085.2	0.7
H	3,830	100	281	3.1	1,090.3	1,090.3	1,091.0	0.7
I	4,100	100	452	2.6	1,091.6	1,091.6	1,092.3	0.7
J	4,923	31	172	5.1	1,092.1	1,092.1	1,093.1	1.0
K	5,099	30	160	5.5	1,093.0	1,093.0	1,093.5	0.5
L	5,284	35	159	5.7	1,093.5	1,093.5	1,094.1	0.6
M	5,807	40	167	3.5	1,094.5	1,094.5	1,095.2	0.7
N	6,171	35	166	3.3	1,096.3	1,096.3	1,096.7	0.4
O	6,440	55	251	2.4	1,096.5	1,096.5	1,096.9	0.4
P	6,704	55	184	3.1	1,096.6	1,096.6	1,097.0	0.4
Q	6,803	60	253	2.6	1,097.5	1,097.5	1,097.8	0.3
R	8,128	40	155	2.6	1,098.1	1,098.1	1,098.6	0.5
S	8,463	28	120	3.2	1,098.4	1,098.4	1,098.8	0.4
T	8,538	25	111	3.4	1,098.5	1,098.5	1,098.9	0.4
U	8,762	25	115	3.3	1,099.0	1,099.0	1,099.3	0.3
V	8,975	32	163	2.6	1,099.3	1,099.3	1,099.6	0.3
W	9,109	31	154	2.7	1,099.4	1,099.4	1,099.7	0.3
X	9,670	26	109	4.1	1,101.4	1,101.4	1,102.0	0.6
Y	10,650	15	80	4.8	1,102.7	1,102.7	1,103.7	1.0
Z	11,950	8	41	9.3	1,112.6	1,112.6	1,113.6	1.0

[1] Stream distance in feet above West 130th Street

Table 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

MEDINA COUNTY, OH
AND INCORPORATED AREAS

FLOODWAY DATA

HEALEY CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
HEALEY CREEK (Continued)								
AA	12,620	40	106	3.6	1,119.2	1,119.2	1,120.2	1.0

[1] Stream distance in feet above West 130th Street

Table 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

MEDINA COUNTY, OH
AND INCORPORATED AREAS

FLOODWAY DATA

HEALEY CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
HUBBARD CREEK								
A	317	65	228	6.7	985.3	983.6	983.6	0.0
B	792	57	289	5.3	985.3	985.1	985.2	0.1
C	1,162	48	168	9.0	986.3	986.3	986.3	0.0
D	2,376	80	375	4.1	990.4	990.4	990.5	0.1
E	3,010	50	241	6.3	991.2	991.2	991.3	0.1
F	3,326	90	467	3.3	991.8	991.8	992.2	0.4
G	4,700	74	248	6.1	998.5	998.5	999.3	0.8
H	6,575	125	514	3.0	1,005.8	1,005.8	1,006.8	1.0
I	7,980	117	317	4.8	1,011.6	1,011.6	1,011.8	0.2
J	10,260	82	435	3.5	1,023.7	1,023.7	1,024.3	0.6
K	11,940	81	337	4.5	1,030.5	1,030.5	1,031.5	1.0

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

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
KILLBUCK CREEK								
A	0	89	1,231	6.0	946.9	946.9	947.5	0.6
B	1,610	185	2,291	3.2	949.3	949.3	950.0	0.7
C	3,385	619	6,930	1.1	949.8	949.8	950.6	0.8
D	4,850	456	3,904	1.9	950.0	950.0	950.9	0.9
E	5,720	92	1,448	5.1	950.4	950.4	951.4	1.0
F	6,760	666	6,359	1.2	951.2	951.2	952.2	1.0
G	8,120	1,007	9,076	0.8	951.3	951.3	952.3	1.0
H	9,590	687	5,381	1.4	951.4	951.4	952.4	1.0
I	11,170	678	5,755	1.3	951.9	951.9	952.9	1.0
J	12,230	817	5,841	1.3	952.3	952.3	953.3	1.0
K	14,425	1,125	6,926	0.9	952.7	952.7	953.7	1.0
L	15,440	1,096	6,531	0.9	952.7	952.7	953.7	1.0
M	16,320	1,063	5,193	1.2	952.8	952.8	953.8	1.0
N	16,800	788	3,850	1.3	952.9	952.9	953.9	1.0
O	17,400	600	2,610	1.9	953.0	953.0	954.0	1.0

[1] Stream distance in feet above Medina County Line

Table 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

MEDINA COUNTY, OH
AND INCORPORATED AREAS

FLOODWAY DATA

KILLBUCK CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
MALLET CREEK								
A	540	241	929	2.7	832.5	832.5	833.5	1.0
B	2,020	133	561	4.1	840.5	840.5	841.2	0.7
C	2,775	131	555	4.1	845.7	845.7	846.7	1.0
D	5,100	56	319	7.2	861.6	861.6	861.7	0.1
E	6,575	57	326	7.1	871.2	871.2	871.6	0.4
F	7,900	55	320	7.2	879.5	879.5	879.9	0.4
G	10,100	145	624	3.7	892.9	892.9	893.8	0.9
H	11,545	110	404	5.7	900.0	900.0	900.8	0.8
I	12,700	132	591	3.9	904.8	904.8	905.4	0.6
J	14,360	122	314	3.7	911.0	911.0	911.4	0.4
K	15,440	117	688	3.3	913.8	913.8	914.2	0.4
L	16,760	122	381	6.0	918.4	918.4	918.6	0.2
M	18,930	61	359	5.5	931.1	931.1	931.4	0.3
N	20,350	115	602	3.3	937.3	937.3	937.7	0.4
O	21,880	333	1,577	1.3	944.1	944.1	945.1	1.0
P	22,890	224	1,582	1.3	948.3	948.3	948.9	0.6
Q	23,590	164	1,006	2.0	948.7	948.7	949.7	1.0
R	25,380	226	1,348	1.5	951.5	951.5	952.1	0.6
S	27,040	298	1,725	1.2	952.7	952.7	953.5	0.8
T	28,020	111	731	2.7	953.4	953.4	954.3	0.9
U	28,790	97	621	3.2	954.8	954.8	955.5	0.7

[1] Stream distance in feet above confluence with West Branch Rocky River

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
NORTH BRANCH ROCKY RIVER								
A	169	200	1,157	5.4	907.0	907.0	907.7	0.7
B	1,421	120	969	5.6	908.3	908.3	909.0	0.7
C	1,673	120	922	6.1	908.5	908.5	909.3	0.8
D	2,414	120	753	7.1	909.5	909.5	910.2	0.7
E	2,602	130	944	5.6	911.2	911.2	911.2	0.0
F	3,283	200	857	6.7	912.5	912.5	912.9	0.4
G	3,754	220	1,155	5.6	913.9	913.9	914.5	0.6
H	4,854	250	1,215	5.9	916.3	916.3	916.7	0.4
I	5,031	250	1,376	5.3	916.6	916.6	917.1	0.5
J	6,232	200	1,084	6.5	918.0	918.0	919.0	1.0
K	6,564	200	962	7.1	919.2	919.2	920.1	0.9
L	6,888	170	901	7.3	920.9	920.9	921.3	0.4
M	7,001	140	645	9.6	921.3	921.3	921.5	0.2
N	7,626	120	648	9.3	924.0	924.0	924.8	0.8
O	8,034	90	545	9.4	927.6	927.6	927.8	0.2
P	8,192	80	513	9.9	928.6	928.6	928.8	0.2
Q	8,270	72	407	12.0	928.9	928.9	929.0	0.1
R	8,336	68	382	12.7	929.8	929.8	929.9	0.1
S	8,527	84	419	11.5	934.4	934.4	934.4	0.0
T	8,629	68	389	12.6	935.8	935.8	935.8	0.0
U	8,971	85	668	7.8	939.7	939.7	939.7	0.0
V	9,280	68	568	8.2	940.3	940.3	940.7	0.4
W	9,361	65	531	8.7	940.5	940.5	941.0	0.5
X	9,644	60	480	9.7	942.3	942.3	942.6	0.3
Y	9,756	60	488	9.5	943.1	943.1	943.4	0.3

[1] Stream distance in feet above confluence with West Branch Rocky River

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
NORTH BRANCH ROCKY RIVER (Continued)								
Z	9,909	55	476	9.8	944.1	944.1	944.3	0.2
AA	10,082	60	537	8.6	944.9	944.9	945.6	0.7
AB	10,647	60	512	9.4	948.5	948.5	948.9	0.4
AC	10,736	70	558	9.0	949.2	949.2	949.5	0.3
AD	10,966	90	671	7.9	950.0	950.0	950.7	0.7
AE	11,208	90	662	7.8	950.9	950.9	951.5	0.6
AF	12,300	106	596	8.9	955.0	955.0	955.9	0.9
AG	12,768	130	681	8.4	957.5	957.5	958.1	0.6
AH	12,991	150	776	8.3	958.3	958.3	959.1	0.8
AI	13,724	120	863	7.0	961.4	961.4	962.2	0.8
AJ	13,988	140	974	6.4	962.3	962.3	962.9	0.6
AK	14,325	190	1,064	6.1	962.9	962.9	963.6	0.7
AL	15,803	330	868	8.7	966.7	966.7	967.0	0.3
AM	16,699	100	529	10.2	969.5	969.5	970.2	0.7
AN	17,040	100	603	9.2	972.1	972.1	972.6	0.5
AO	17,187	100	581	9.5	972.7	972.7	973.4	0.7
AP	17,881	110	730	7.9	977.1	977.1	977.5	0.4
AQ	18,015	110	669	8.3	977.6	977.6	977.9	0.3
AR	18,210	120	726	8.0	978.6	978.6	978.9	0.3
AS	19,173	210	1,031	5.6	981.5	981.5	982.1	0.6
AT	19,687	210	729	7.7	982.8	982.8	983.6	0.8
AU	20,280	150	659	8.1	986.4	986.4	986.9	0.5
AV	20,606	80	443	9.9	988.6	988.6	989.1	0.5
AW	20,767	80	484	8.4	990.5	990.5	990.6	0.1

[1] Stream distance in feet above confluence with West Branch Rocky River

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
NORTH BRANCH ROCKY RIVER (Continued)								
AX	20,881	78	478	8.4	991.3	991.3	991.6	0.3
AY	21,142	60	405	9.9	993.2	993.2	993.6	0.4
AZ	21,242	60	436	9.2	993.8	993.8	994.6	0.8
BA	21,587	55	445	9.0	997.0	997.0	997.3	0.3
BB	21,904	65	500	8.2	998.6	998.6	999.0	0.4
BC	22,181	60	468	8.6	999.7	999.7	1,000.2	0.5
BD	22,520	60	416	10.0	1,002.1	1,002.1	1,002.1	0.0
BE	22,855	75	575	7.8	1,004.0	1,004.0	1,004.6	0.6
BF	23,101	70	548	7.9	1,004.5	1,004.5	1,005.4	0.9
BG	23,403	70	504	8.8	1,005.7	1,005.7	1,006.6	0.9
BH	23,578	70	513	8.8	1,006.6	1,006.6	1,007.3	0.7
BI	23,710	110	833	6.1	1,008.1	1,008.1	1,008.9	0.8
BJ	24,403	121	661	7.8	1,009.2	1,009.2	1,010.2	1.0
BK	24,636	114	601	7.7	1,009.8	1,009.8	1,010.8	1.0
BL	24,882	110	748	7.1	1,011.0	1,011.0	1,011.7	0.7
BM	25,288	100	549	9.0	1,011.7	1,011.7	1,012.6	0.9
BN	25,965	60	403	11.0	1,015.3	1,015.3	1,015.8	0.5
BO	26,071	50	413	10.1	1,016.3	1,016.3	1,016.7	0.4
BP	26,133	50	378	11.2	1,016.5	1,016.5	1,016.9	0.4
BQ	26,352	70	501	9.2	1,018.7	1,018.7	1,018.9	0.2
BR	26,446	100	715	7.1	1,019.7	1,019.7	1,019.8	0.1
BS	28,638	175	1,116	5.2	1,021.9	1,021.9	1,022.9	1.0
BT	30,398	122	745	6.5	1,023.7	1,023.7	1,024.6	0.9
BU	30,537	115	847	5.7	1,024.2	1,024.2	1,025.1	0.9

[1] Stream distance in feet above confluence with West Branch Rocky River

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
NORTH BRANCH ROCKY RIVER (Continued)								
BV	31,263	150	894	6.3	1,025.1	1,025.1	1,025.9	0.8
BW	31,709	150	1,052	5.4	1,026.0	1,026.0	1,026.6	0.6
BX	31,949	120	748	6.9	1,026.0	1,026.0	1,026.7	0.7

[1] Stream distance in feet above confluence with West Branch Rocky River

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
PLUM CREEK								
A	13	44	296	6.7	1,061.1	1,061.1	1,061.4	0.3
B	146	44	337	5.9	1,061.5	1,061.5	1,061.9	0.4
C	253	49	422	4.6	1,062.0	1,062.0	1,062.4	0.4
D	362	40	338	6.0	1,062.3	1,062.3	1,062.6	0.3
E	577	36	255	7.6	1,063.2	1,063.2	1,063.5	0.3
F	601	30	253	7.6	1,063.5	1,063.5	1,063.6	0.1
G	634	40	349	5.8	1,064.2	1,064.2	1,064.9	0.7
H	705	50	377	5.6	1,064.3	1,064.3	1,065.0	0.7
I	828	50	425	5.0	1,064.8	1,064.8	1,065.4	0.6
J	1,174	47	389	5.0	1,065.2	1,065.2	1,066.0	0.8
K	1,323	45	399	5.3	1,065.4	1,065.4	1,066.3	0.9
L	1,512	60	533	3.8	1,066.0	1,066.0	1,066.9	0.9
M	1,536	60	521	4.0	1,066.0	1,066.0	1,067.0	1.0
N	1,613	50	451	4.8	1,066.4	1,066.4	1,067.3	0.9
O	1,754	40	366	5.4	1,066.5	1,066.5	1,067.4	0.9
P	2,222	44	332	5.9	1,067.4	1,067.4	1,068.2	0.8
Q	2,474	40	299	6.6	1,067.8	1,067.8	1,068.7	0.9
R	3,027	45	366	5.3	1,069.9	1,069.9	1,070.3	0.4
S	3,800	40	371	5.2	1,071.2	1,071.2	1,071.9	0.7
T	3,993	74	506	3.8	1,071.5	1,071.5	1,072.4	0.9
U	4,877	85	378	7.7	1,073.7	1,073.7	1,074.4	0.7
V	5,325	140	498	3.7	1,074.5	1,074.5	1,075.4	0.9
W	6,404	140	665	2.7	1,076.9	1,076.9	1,077.3	0.4
X	6,480	140	776	2.3	1,077.9	1,077.9	1,078.0	0.1
Y	7,482	140	707	2.3	1,078.9	1,078.9	1,079.5	0.6
Z	7,983	140	571	2.8	1,079.9	1,079.9	1,080.8	0.9

[1] Stream distance in feet above a point 450 feet downstream of Plum Creek Parkway

Table 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

MEDINA COUNTY, OH
AND INCORPORATED AREAS

FLOODWAY DATA

PLUM CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
PLUM CREEK (Continued)								
AA	11,430	70	254	3.5	1,090.8	1,090.2	1,091.2	1.0
AB	12,004	46	218	3.6	1,090.8	1,090.3	1,091.2	0.9
AC	12,637	55	258	3.4	1,092.5	1,092.5	1,092.6	0.1
AD	13,337	40	229	3.9	1,094.6	1,094.6	1,094.8	0.2
AE	13,978	25	137	6.5	1,098.4	1,098.4	1,099.0	0.6
AF	14,077	58	292	3.0	1,098.9	1,098.9	1,099.8	0.9
AG	14,183	30	302	3.0	1,102.2	1,102.2	1,103.2	1.0
AH	14,486	30	302	3.0	1,102.2	1,102.2	1,103.2	1.0
AI	15,239	16	58	10.9	1,104.0	1,104.0	1,104.0	0.0
AJ	15,528	16	93	6.8	1,105.3	1,105.3	1,106.3	1.0
AK	16,176	21	117	5.4	1,110.5	1,110.5	1,111.5	1.0
AL	16,342	100	473	1.3	1,114.4	1,114.4	1,114.6	0.2
AM	17,294	49	91	6.9	1,117.1	1,117.1	1,117.1	0.0
AN	17,852	150	255	2.5	1,120.9	1,120.9	1,120.9	0.0

[1] Stream distance in feet above a point 450 feet downstream of Plum Creek Parkway

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
PLUM CREEK (LIVERPOOL TOWNSHIP)								
A	153	50	302	5.5	827.5	827.5	827.6	0.1
B	576	50	289	5.7	828.4	828.4	828.8	0.4
C	926	60	354	5.1	828.8	828.8	829.6	0.8
D	1,006	90	467	4.1	829.6	829.6	830.5	0.9
E	1,043	90	493	3.7	829.6	829.6	830.6	1.0
F	1,185	120	710	2.8	830.9	830.9	831.4	0.5
G	3,352	140	711	3.0	831.7	831.7	832.7	1.0
H	3,742	150	759	2.7	832.0	832.0	833.0	1.0
I	3,831	140	771	3.1	832.3	832.3	833.3	1.0
J	4,508	120	476	4.4	833.2	833.2	834.1	0.9
K	4,668	110	581	3.7	833.5	833.5	834.3	0.8
L	4,747	110	565	4.0	833.7	833.7	834.5	0.8
M	5,678	130	395	5.4	834.7	834.7	835.5	0.8
N	5,810	130	406	5.4	834.8	834.8	835.8	1.0
O	6,268	120	403	5.6	835.8	835.8	836.6	0.8
P	6,430	120	444	5.2	836.7	836.7	837.0	0.3
Q	6,566	120	460	5.1	837.0	837.0	837.3	0.3
R	7,113	120	450	4.5	837.7	837.7	838.6	0.9
S	7,261	170	850	2.5	839.3	839.3	840.1	0.8
T	8,383	210	930	2.4	839.7	839.7	840.7	1.0
U	8,981	180	725	2.6	840.1	840.1	841.0	0.9
V	9,508	170	571	3.5	841.0	841.0	841.6	0.6
W	9,802	170	519	3.6	841.8	841.8	842.2	0.4
X	10,041	170	440	4.5	842.2	842.2	842.6	0.4
Y	10,159	170	549	3.9	843.2	843.2	844.1	0.9

[1] Stream distance in feet above a point 100 feet downstream of Crocker Road

Table 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

MEDINA COUNTY, OH
AND INCORPORATED AREAS

FLOODWAY DATA

PLUM CREEK (LIVERPOOL TOWNSHIP)

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
PLUM CREEK (LIVERPOOL TOWNSHIP) (Continued)								
Z	11,266	150	581	3.9	844.9	844.9	845.6	0.7
AA	11,793	100	412	4.8	845.8	845.8	846.6	0.8
AB	11,965	84	445	4.5	847.3	847.3	848.3	1.0
AC	12,104	120	532	4.1	847.9	847.9	848.5	0.6
AD	12,355	140	740	3.4	848.1	848.1	848.8	0.7
AE	12,431	180	967	2.4	848.4	848.4	849.4	1.0
AF	12,697	150	580	2.8	848.6	848.6	849.5	0.9
AG	12,800	120	589	3.1	849.0	849.0	849.7	0.7
AH	13,663	110	575	3.5	849.7	849.7	850.4	0.7
AI	13,846	110	557	3.4	849.9	849.9	850.6	0.7
AJ	14,949	130	467	2.6	850.6	850.6	851.5	0.9
AK	15,314	120	406	3.0	851.0	851.0	851.8	0.8
AL	16,409	132	526	2.9	853.0	853.0	853.9	0.9
AM	17,098	100	373	3.7	854.6	854.6	855.4	0.8
AN	17,695	100	410	3.3	855.7	855.7	856.6	0.9
AO	18,050	100	382	3.5	856.7	856.7	857.4	0.7
AP	19,729	74	304	3.6	860.6	860.6	861.0	0.4
AQ	19,828	50	239	4.3	861.1	861.1	861.4	0.3
AR	20,241	50	218	4.6	861.8	861.8	862.5	0.7
AS	20,439	60	240	4.2	862.3	862.3	863.1	0.8
AT	20,639	60	251	4.1	863.1	863.1	863.6	0.5
AU	20,896	60	228	4.5	863.8	863.8	864.3	0.5
AV	21,327	60	254	4.2	864.5	864.5	865.4	0.9
AW	21,486	60	250	4.1	864.9	864.9	865.8	0.9

[1] Stream distance in feet above a point 100 feet downstream of Crocker Road

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
PLUM CREEK (LIVERPOOL TOWNSHIP) (Continued)								
AX	21,872	60	238	4.5	866.3	866.3	866.9	0.6
AY	22,273	70	262	4.1	867.1	867.1	868.0	0.9
AZ	23,218	80	262	4.2	869.6	869.6	870.6	1.0
BA	23,747	70	256	4.4	871.4	871.4	872.0	0.6
BB	24,755	60	253	4.1	873.8	873.8	874.7	0.9
BC	24,951	35	178	5.2	874.6	874.6	875.3	0.7
BD	25,072	35	178	5.2	875.0	875.0	875.7	0.7
BE	25,209	35	192	4.8	875.3	875.3	876.2	0.9
BF	25,302	40	191	4.9	875.8	875.8	876.5	0.7
BG	25,363	50	232	4.3	876.5	876.5	877.4	0.9
BH	26,673	35	179	5.0	880.7	880.7	881.3	0.6
BI	26,829	40	318	3.1	884.5	884.5	885.3	0.8

[1] Stream distance in feet above a point 100 feet downstream of Crocker Road

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
RIVER STYX								
A	1,700	332	1,587	1.7	960.3	960.3	960.8	0.5
B	3,790	559	1,797	1.5	961.3	961.3	962.1	0.8
C	4,670	397	1,199	2.3	961.4	961.4	962.4	1.0
D	6,025	215	891	4.5	963.4	963.4	963.9	0.5
E	7,400	460	1,997	1.1	963.8	963.8	964.8	1.0
F	8,675	223	1,009	2.1	964.8	964.8	965.2	0.4
G	9,916	300	1,098	1.9	964.9	964.9	965.7	0.8
H	11,770	325	934	2.3	965.5	965.5	966.5	1.0
I	13,200	170	547	3.9	966.7	966.7	967.4	0.7
J	14,580	120	712	3.0	967.8	967.8	968.8	1.0
K	16,150	710	2,164	1.0	971.5	971.5	972.4	0.9
L	17,180	208	628	3.4	971.6	971.6	972.6	1.0
M	18,580	121	482	4.4	974.7	974.7	975.4	0.7
N	20,548	300	587	3.1	976.8	976.8	977.6	0.8
O	21,600	113	428	4.2	977.8	977.8	978.8	1.0
P	22,990	60	343	5.2	981.6	981.6	982.3	0.7
Q	24,090	93	450	4.0	983.3	983.3	984.1	0.8
R	25,150	138	549	3.3	984.9	984.9	985.7	0.8
S	26,050	137	660	3.2	986.3	986.3	987.0	0.7
T	27,100	186	853	2.5	987.2	987.2	987.9	0.7
U	28,350	175	743	2.9	987.8	987.8	988.8	1.0
V	30,840	125	494	4.3	992.7	992.7	993.4	0.7

[1] Stream distance in feet above Medina County Line

Table 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

MEDINA COUNTY, OH
AND INCORPORATED AREAS

FLOODWAY DATA

RIVER STYX

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
THE INLET								
A	114,481	1045	3,788	1.1	990.3	990.3	991.2	0.9
B	114,650	600	2,473	1.6	990.6	990.6	991.5	0.9
C	116,617	800	3,280	1.2	990.7	990.7	991.6	0.9
D	120,308	185	652	4.1	991.4	991.4	992.3	0.9
E	122,987	39	229	6.3	994.0	994.0	994.3	0.3
F	123,152	56	227	6.4	995.1	995.1	995.2	0.1
G	124,338	60	303	4.8	999.5	999.5	999.6	0.1

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

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
TOMMY RUN								
A	538	95	516	4.5	1,039.3	1,039.3	1,039.9	0.6
B	1,125	83	494	4.8	1,046.5	1,046.5	1,046.5	0.0
C	1,900	147	298	7.9	1,055.5	1,055.5	1,055.5	0.0
D	2,800	78	411	5.7	1,067.0	1,067.0	1,067.2	0.2
E	7,000	163	525	4.5	1,113.5	1,113.5	1,114.5	1.0
F	7,700	68	284	8.3	1,121.9	1,121.9	1,121.9	0.0
G	9,200	70	248	9.5	1,136.8	1,136.8	1,137.3	0.5
H	10,150	77	301	7.8	1,143.6	1,143.6	1,144.0	0.4

[1] Stream distance in feet above Medina County Line

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
TRIBUTARY TO EAST FORK EAST BRANCH BLACK RIVER								
A	26	23	71	4.0	897.3	895.9 [2]	896.1 [2]	0.2
B	161	25	117	2.4	900.5	900.5	900.5	0.0
C	341	22	79	3.5	900.7	900.7	900.8	0.1
D	575	19	62	4.4	901.4	901.4	901.5	0.1
E	852	22	86	3.2	903.4	903.4	903.5	0.1
F	1,272	19	64	4.3	904.7	904.7	904.8	0.1
G	1,642	17	63	4.3	906.9	906.9	907.0	0.1
H	1,913	23	67	4.1	908.2	908.2	908.2	0.0
I	2,050	22	64	4.3	908.8	908.8	908.9	0.1
J	2,419	23	82	3.3	910.4	910.4	910.4	0.0
K	2,671	17	83	3.3	912.1	912.1	912.2	0.1

[1] Stream distance in feet above confluence with East Fork [2] Elevation computed without considering backwater effects from East Fork

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
TRIBUTARY P-3								
A	40	24	207	1.2	1,077.8	1,077.2	1,078.2	1.0
B	140	26	178	1.4	1,077.8	1,077.2	1,078.2	1.0
C	280	42	133	1.9	1,077.8	1,077.2	1,078.2	1.0
D	520	11	55	4.6	1,077.8	1,077.3	1,078.3	1.0
E	630	13	57	4.4	1,077.8	1,077.7	1,078.6	0.9
F	860	8	35	7.2	1,078.6	1,078.6	1,079.6	1.0
G	1,000	10	48	5.2	1,079.9	1,079.9	1,080.9	1.0
H	1,930	9	34	7.2	1,093.9	1,093.9	1,094.9	1.0
I	2,190	10	34	7.4	1,096.0	1,096.0	1,096.7	0.7
J	2,560	10	34	7.4	1,098.5	1,098.5	1,099.3	0.8
K	3,020	10	36	7.0	1,101.0	1,101.0	1,102.0	1.0
L	3,130	8	25	9.9	1,103.2	1,103.2	1,103.6	0.4

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

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
TRIBUTARY P-8								
A	4,400	21	61	9.8	1,108.9	1,108.9	1,108.9	0.0
B	4,710	62	306	2.0	1,112.7	1,112.7	1,113.6	0.9
C	4,959	25	164	3.7	1,112.8	1,112.8	1,113.6	0.8
D	5,098	56	264	2.3	1,112.9	1,112.9	1,113.9	1.0
E	5,498	55	216	2.8	1,113.1	1,113.1	1,114.1	1.0
F	5,898	50	177	3.4	1,113.6	1,113.6	1,114.3	0.7
G	6,298	47	148	4.0	1,114.4	1,114.4	1,114.7	0.3
H	6,698	45	133	4.5	1,115.2	1,115.2	1,115.4	0.2
I	7,098	44	126	4.8	1,116.2	1,116.2	1,116.3	0.1
J	7,498	43	124	4.8	1,117.2	1,117.2	1,117.2	0.0

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

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
UNNAMED TRIBUTARY								
A	0.08	30	348	2.8	994.7	994.7	994.7	0.0
B	0.22	58	376	2.6	994.7	994.7	995.2	0.5
C	0.66	80	254	3.0	1,007.9	1,007.9	1,007.9	0.0
D	0.81	50	248	3.1	1,021.1	1,021.1	1,021.7	0.6
E	0.92	30	98	7.9	1,027.8	1,027.8	1,027.8	0.0

[1] Stream distance in miles above confluence with Chippewa Creek

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
WEST BRANCH ROCKY RIVER								
A	1,150	534	2,964	2.9	784.4	784.4	785.4	1.0
B	2,610	1,300	4,160	1.9	785.4	785.4	786.4	1.0
C	4,100	1,450	5,601	1.4	785.7	785.7	786.7	1.0
D	5,350	652	1,623	4.9	785.9	785.9	786.8	0.9
E	7,560	832	3,433	2.3	788.9	788.9	789.8	0.9
F	8,785	507	2,297	3.4	789.8	789.8	790.8	1.0
G	11,400	260	1,252	6.3	792.6	792.6	793.5	0.9
H	12,380	723	2,393	3.3	795.2	795.2	795.9	0.7
I	13,400	1,100	4,458	1.8	796.0	796.0	796.9	0.9
J	14,515	1,574	4,331	1.8	796.3	796.3	797.2	0.9
K	15,700	1,186	3,697	2.1	797.2	797.2	797.7	0.5
L	17,240	354	1,291	6.1	798.6	798.6	798.7	0.1
M	18,600	615	2,964	2.7	800.0	800.0	800.9	0.9
N	19,400	276	1,567	5.0	800.1	800.1	801.1	1.0
O	20,725	415	1,756	4.5	801.8	801.8	802.6	0.8
P	21,860	182	1,025	7.7	803.0	803.0	804.0	1.0
Q	23,370	173	1,295	6.1	805.8	805.8	806.7	0.9
R	25,500	189	1,412	5.6	810.0	810.0	810.8	0.8
S	26,790	91	722	10.2	812.6	812.6	813.3	0.7
T	27,860	117	1,103	6.7	817.1	817.1	817.1	0.0
U	29,720	101	952	7.7	820.2	820.2	821.0	0.8
V	30,490	106	920	8.0	822.6	822.6	823.3	0.7
W	31,400	98	903	8.2	824.8	824.8	825.8	1.0
X	32,200	135	1,154	6.4	826.8	826.8	827.8	1.0
Y	33,550	229	1,364	5.4	829.7	829.7	830.7	1.0

[1] Stream distance in feet above Medina County boundary

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
WEST BRANCH ROCKY RIVER (Continued)								
Z	34,400	244	1,539	3.6	831.1	831.1	832.0	0.9
AA	36,500	135	905	6.2	838.1	838.1	838.9	0.8
AB	37,850	99	703	7.9	842.0	842.0	842.7	0.7
AC	38,780	93	729	7.6	846.0	846.0	846.6	0.6
AD	40,160	114	657	8.5	850.9	850.9	851.4	0.5
AE	41,220	233	1,643	3.4	856.5	856.5	857.1	0.6
AF	44,110	359	1,695	3.3	863.1	863.1	864.0	0.9
AG	45,565	83	642	8.7	868.1	868.1	868.9	0.8
AH	47,650	151	1,003	5.2	872.5	872.5	873.3	0.8
AI	49,575	94	640	8.1	875.7	875.7	876.6	0.9
AJ	51,570	271	1,502	3.5	879.9	879.9	880.8	0.9
AK	53,180	533	1,732	3.0	881.0	881.0	882.0	1.0
AL	54,020	437	1,599	3.2	881.7	881.7	882.7	1.0
AM	55,340	444	1,827	2.8	882.9	882.9	883.7	0.8
AN	56,161	80	888	5.9	883.9	883.9	884.7	0.8
AO	57,600	257	1,056	4.9	886.2	886.2	887.0	0.8
AP	58,340	286	1,444	3.6	887.1	887.1	888.1	1.0
AQ	60,650	241	1,445	3.6	890.7	890.7	891.6	0.9
AR	62,800	609	3,075	1.7	892.2	892.2	893.2	1.0
AS	64,800	410	2,483	1.9	893.4	893.4	894.3	0.9
AT	66,970	565	2,897	1.6	894.3	894.3	895.3	1.0
AU	68,100	680	3,268	1.4	894.5	894.5	895.5	1.0
AV	69,900	203	1,113	4.2	895.8	895.8	896.7	0.9
AW	71,660	412	2,059	2.3	897.2	897.2	898.2	1.0

[1] Stream distance in feet above Medina County boundary

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
WEST BRANCH ROCKY RIVER (Continued)								
AX	74,100	91	947	4.9	898.9	898.9	899.9	1.0
AY	75,250	290	2,050	2.3	900.5	900.5	901.4	0.9
AZ	90,000	136	701	3.4	918.7	918.7	919.6	0.9
BA	93,100	227	1,103	2.1	921.3	921.3	922.2	0.9
BB	93,550	120	543	5.2	921.5	921.5	922.4	0.9
BC	93,741	85	436	6.7	922.9	922.9	923.0	0.1
BD	94,012	80	470	3.4	923.2	923.2	923.9	0.7
BE	94,581	60	344	4.2	923.5	923.5	924.3	0.8
BF	95,137	44	317	4.3	924.2	924.2	924.9	0.7
BG	95,866	44	275	4.8	925.4	925.4	925.9	0.5
BH	96,119	46	300	4.4	926.0	926.0	926.4	0.4
BI	96,458	44	288	4.6	926.6	926.6	926.9	0.3
BJ	96,548	58	358	4.1	926.9	926.9	927.2	0.3
BK	97,130	47	315	4.2	927.8	927.8	928.0	0.2
BL	98,078	48	283	4.7	929.1	929.1	929.3	0.2
BM	98,209	56	295	4.5	929.5	929.5	929.6	0.1
BN	98,532	56	324	4.1	930.2	930.2	930.3	0.1
BO	98,722	53	319	4.2	930.3	930.3	930.6	0.3
BP	99,186	54	296	4.5	931.1	931.1	931.4	0.3
BQ	99,841	49	249	5.3	932.4	932.4	932.6	0.2
BR	100,023	58	268	5.5	933.1	933.1	933.2	0.1
BS	100,929	43	258	5.3	935.6	935.6	935.8	0.2
BT	101,325	40	263	5.1	936.4	936.4	936.6	0.2
BU	101,826	41	258	5.2	937.5	937.5	937.7	0.2

[1] Stream distance in feet above Medina County boundary

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
WEST BRANCH ROCKY RIVER (Continued)								
BV	102,246	39	254	5.4	938.6	938.6	938.7	0.1
BW	102,409	28	209	6.4	938.8	938.8	939.0	0.2
BX	102,591	26	190	7.0	939.4	939.4	939.6	0.2
BY	102,631	30	227	5.9	940.8	940.8	940.8	0.0
BZ	103,182	36	243	5.5	942.0	942.0	942.2	0.2
CA	103,321	44	319	4.3	942.9	942.9	943.0	0.1
CB	103,499	35	238	5.6	943.0	943.0	943.2	0.2
CC	103,644	35	227	5.9	943.4	943.4	943.5	0.1
CD	103,719	32	228	5.8	944.0	944.0	944.2	0.2
CE	103,850	39	294	4.5	945.1	945.1	945.4	0.3
CF	104,918	37	236	4.4	946.2	946.2	946.4	0.2
CG	105,116	43	267	3.9	946.6	946.6	946.8	0.2
CH	105,265	41	256	4.1	946.9	946.9	947.1	0.2
CI	106,093	40	199	5.4	948.6	948.6	948.7	0.1
CJ	106,278	30	174	6.0	949.1	949.1	949.2	0.1
CK	106,794	30	165	3.8	950.1	950.1	950.4	0.3
CL	108,860	30	128	4.9	954.7	954.7	954.8	0.1
CM	108,939	30	121	5.2	955.3	955.3	955.4	0.1
CN	109,504	36	156	4.0	957.3	957.3	957.3	0.0
CO	109,611	35	154	4.1	957.8	957.8	957.8	0.0
CP	110,069	30	118	5.3	959.0	959.0	959.0	0.0
CQ	110,257	30	131	4.8	959.8	959.8	959.9	0.1
CR	110,517	35	159	4.2	960.6	960.6	960.7	0.1
CS	110,632	33	169	3.7	962.4	962.4	962.5	0.1

[1] Stream distance in feet above Medina County boundary

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
WEST BRANCH ROCKY RIVER (Continued)								
CT	111,007	38	165	4.0	963.0	963.0	963.1	0.1
CU	111,090	45	190	3.5	963.6	963.6	963.6	0.0
CV	111,432	50	206	3.4	964.0	964.0	964.1	0.1
CW	111,547	45	180	3.8	964.4	964.4	964.8	0.4
CX	111,771	40	201	3.4	964.8	964.8	965.2	0.4
CY	111,824	40	228	2.9	965.5	965.5	966.3	0.8
CZ	111,872	45	206	3.4	965.6	965.6	966.4	0.8

[1] Stream distance in feet above Medina County boundary

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
WEST FORK								
AF	69,860	427	2,545	1.7	876.9	876.9	877.9	1.0
AG	71,470	88	876	5.0	878.9	878.9	879.7	0.8
AH	72,710	83	985	4.4	881.3	881.3	882.2	0.9
AI	74,467	120	1,239	3.5	884.5	884.5	885.2	0.7
AJ	75,655	200	1,592	2.8	885.2	885.2	886.2	1.0
AK	77,410	182	1,219	3.6	886.4	886.4	887.4	1.0
AL	78,910	189	1,036	4.2	888.1	888.1	889.0	0.9
AM	80,730	154	1,041	4.2	891.8	891.8	892.6	0.8
AN	81,842	92	921	4.8	894.2	894.2	894.7	0.5
AO	83,830	149	1,048	4.2	896.1	896.1	896.5	0.4
AP	85,770	91	610	7.2	899.6	899.6	900.4	0.8
AQ	87,830	210	1,385	3.2	903.8	903.8	904.8	1.0

[1] Stream distance in feet above confluence with East Branch Black River

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
WOLF CREEK								
A	1,000	130	848	2.9	1,013.9	1,013.9	1,014.7	0.8
B	1,920	270	1,923	1.3	1,014.5	1,014.5	1,015.4	0.9
C	4,200	300	1,770	1.4	1,016.9	1,016.9	1,017.8	0.9
D	6,500	360	1,806	1.4	1,017.5	1,017.5	1,018.5	1.0
E	7,450	717	3,605	0.5	1,017.7	1,017.7	1,018.7	1.0
F	9,235	350	1,308	1.3	1,017.9	1,017.9	1,018.9	1.0
G	10,280	320	796	2.1	1,019.3	1,019.3	1,020.2	0.9
H	11,375	302	698	2.4	1,022.6	1,022.6	1,023.6	1.0
I	13,755	146	444	3.8	1,025.2	1,025.2	1,026.0	0.8
J	14,800	435	980	1.7	1,026.3	1,026.3	1,027.2	0.9
K	16,200	311	470	3.6	1,027.9	1,027.9	1,028.9	1.0
L	17,930	103	409	3.2	1,032.7	1,032.7	1,033.7	1.0
M	18,450	95	412	3.2	1,033.7	1,033.7	1,034.7	1.0
N	20,750	157	487	2.7	1,036.8	1,036.8	1,037.7	0.9
O	22,100	66	314	4.2	1,041.1	1,041.1	1,042.1	1.0

[1] Stream distance in feet above Medina County Line

5.0 INSURANCE APPLICATION

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	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	The flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.
Zone X	The flood insurance risk zone that corresponds to areas outside the 0.2-percent-annual-chance floodplain, areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by levees. No BFEs or base flood depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP (FIRM)

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

The FIRM for Medina County is, for insurance purposes, the principal result of the FIS. This map (published separately) contains the official delineation of flood insurance zones and BFE lines. BFE lines show the locations of the expected whole-foot water-surface elevations of the base flood. This map is developed in accordance with the latest flood insurance map preparation guidelines published by FEMA.

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 base flood elevations or average depths. Insurance agents use the zones and base flood elevations for existing conditions 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-chance-annual floodplains. Floodways for the 1-percent-annual-chance flood extent and the locations of selected cross-sections used in the hydraulic analyses and floodway computations are shown where applicable.

The countywide FIRM presents flooding information for the entire geographic area of Medina County. Previously, separate FIRMs were prepared for each incorporated community with special flood hazard areas identified and for the unincorporated areas of the county. Historical data relating to the maps prepared for each community are presented in Table 10.

7.0 OTHER STUDIES

Because it is based on more up-to-date analyses, this FIS supersedes previously printed FISs for Medina County, Ohio. This FIS also supersedes the Flood Boundary and Floodway Maps for Medina County that were printed as part of previous FISs. The information on the Flood Boundary and Floodway Maps have been added to the FIRM accompanying this FIS. This report either supersedes or is compatible with all previous studies published on the streams studies in this report and should be considered authoritative for the purposes of the NFIP.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting the FEMA, Mitigation Division, 536 South Clark Street, Sixth Floor, Chicago, Illinois 60605.

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

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISION DATE(S)	FIRM EFFECTIVE DATE	FIRM REVISION DATE(S)
Brunswick, City of	November 2, 1973	May 28, 1976	January 2, 1981	December 2, 2003
[1] Chippewa Lake, Village of	N/A	None	N/A	None
[1] Briarwood Beach, Village of	March 15, 1974	April 23, 1976	August 19, 1985	None
[1] Chippewa-on-the-Lake, Village of	March 22, 1974	June 4, 1976	May 25, 1984	None
Gloria Glens Park, Village of	March 15, 1974	April 23, 1976	August 19, 1985	None
Lodi, Village of	March 15, 1974	May 28, 1976	August 4, 2008	None
Medina, City of	March 22, 1974	December 27, 1974	September 30, 1988	None
Medina County (Unincorporated Areas)	January 10, 1975	April 15, 1977	August 15, 1983	December 2, 2003
Seville, Village of	March 15, 1974	June 4, 1976	April 15, 1986	None
* Spencer, Village of	N/A	None	N/A	None
Wadsworth, City of	March 1, 1974	June 4, 1976	September 4, 1985	None
Westfield Center, Village of	August 4, 2008	None	August 4, 2008	None

* No special flood hazard areas identified

[1] The Villages of Briarwood Beach and Chippewa-on-the-Lake have been combined to form the Village of Chippewa Lake

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

MEDINA COUNTY, OH
AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

9.0 BIBLIOGRAPHY AND REFERENCES

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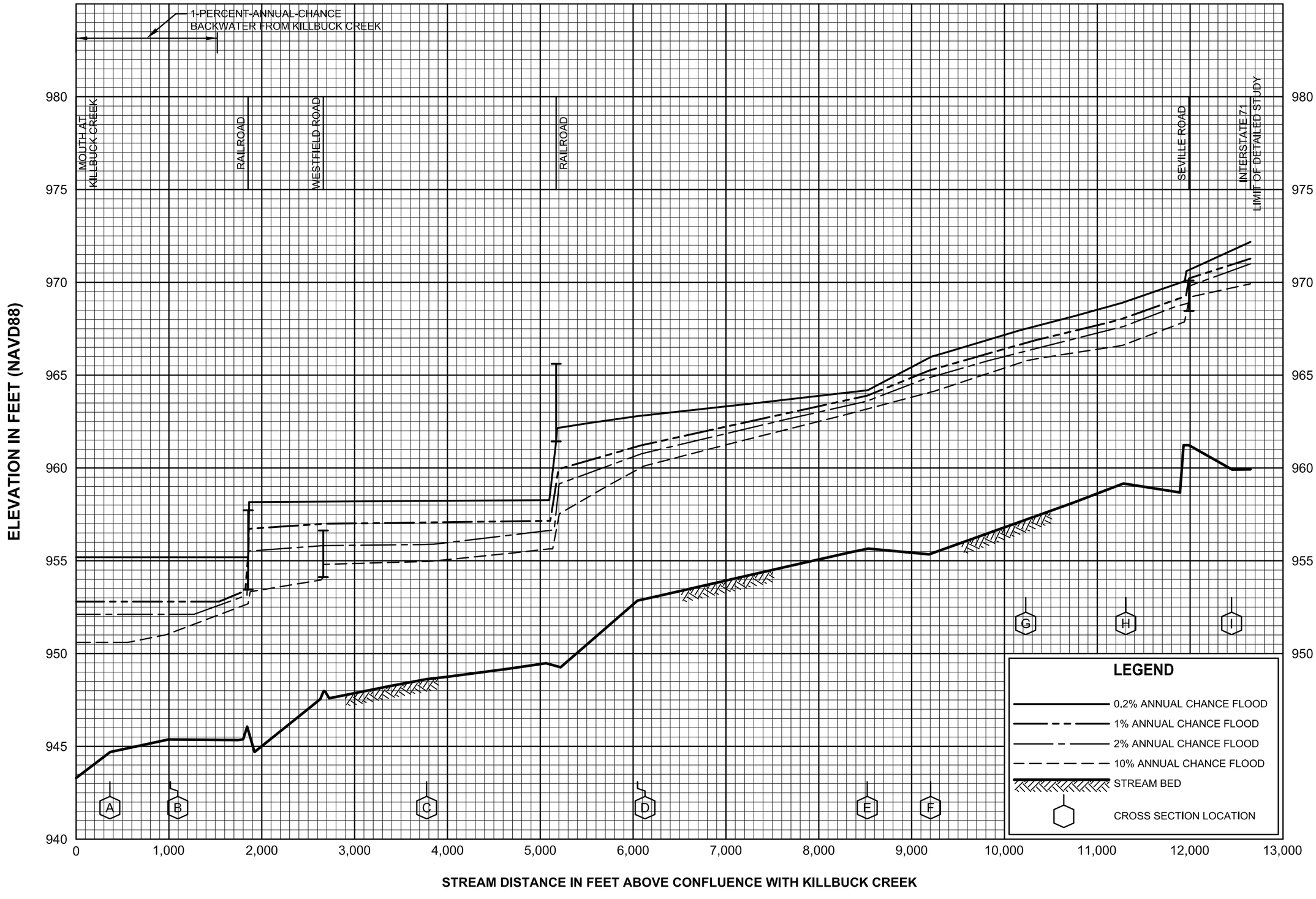


FLOOD PROFILES

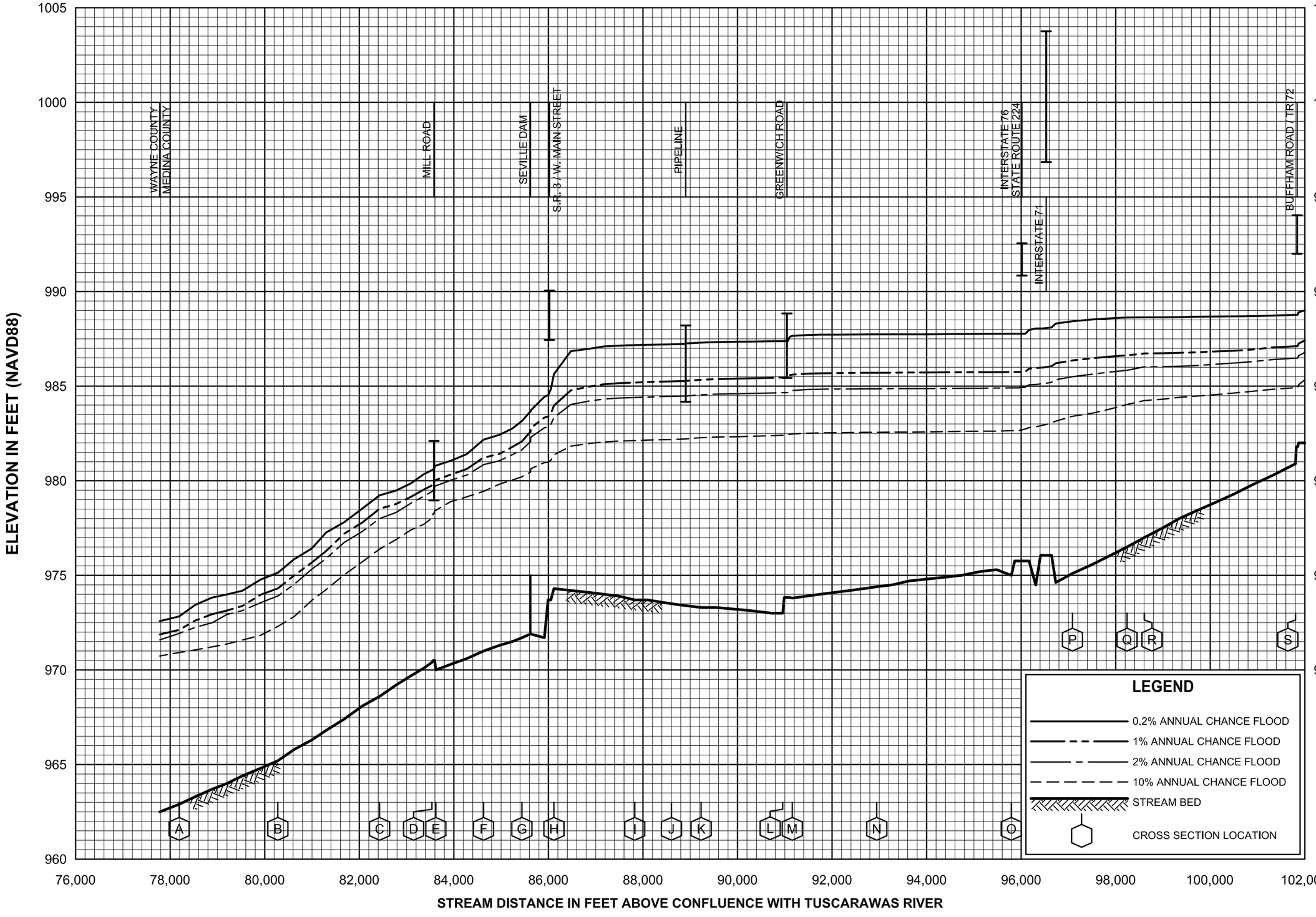
CAMEL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

MEDINA COUNTY, OH

AND INCORPORATED AREAS

01P



FLOOD PROFILES

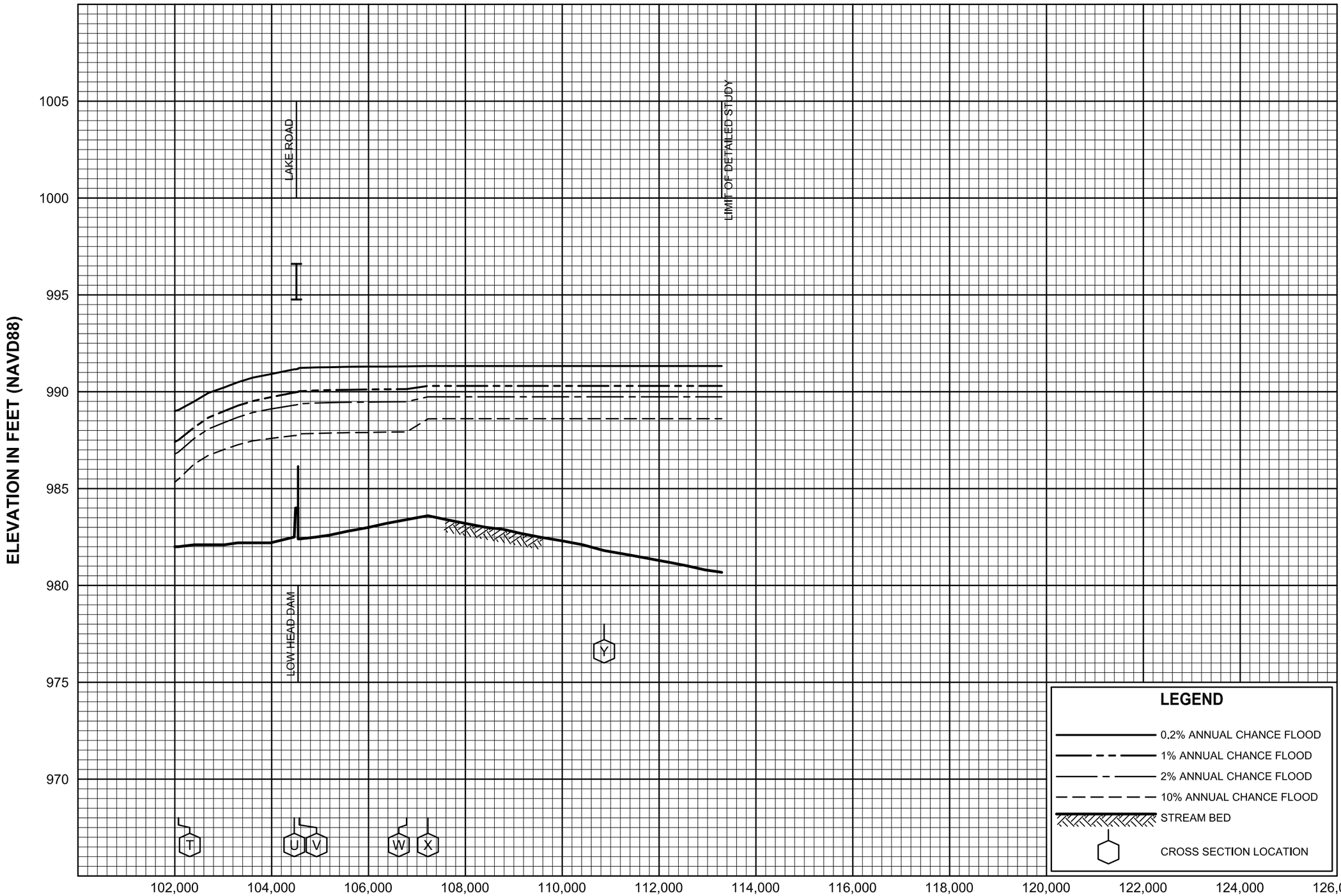
CHIPPEWA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

MEDINA COUNTY, OH

AND INCORPORATED AREAS

02P



FLOOD PROFILES

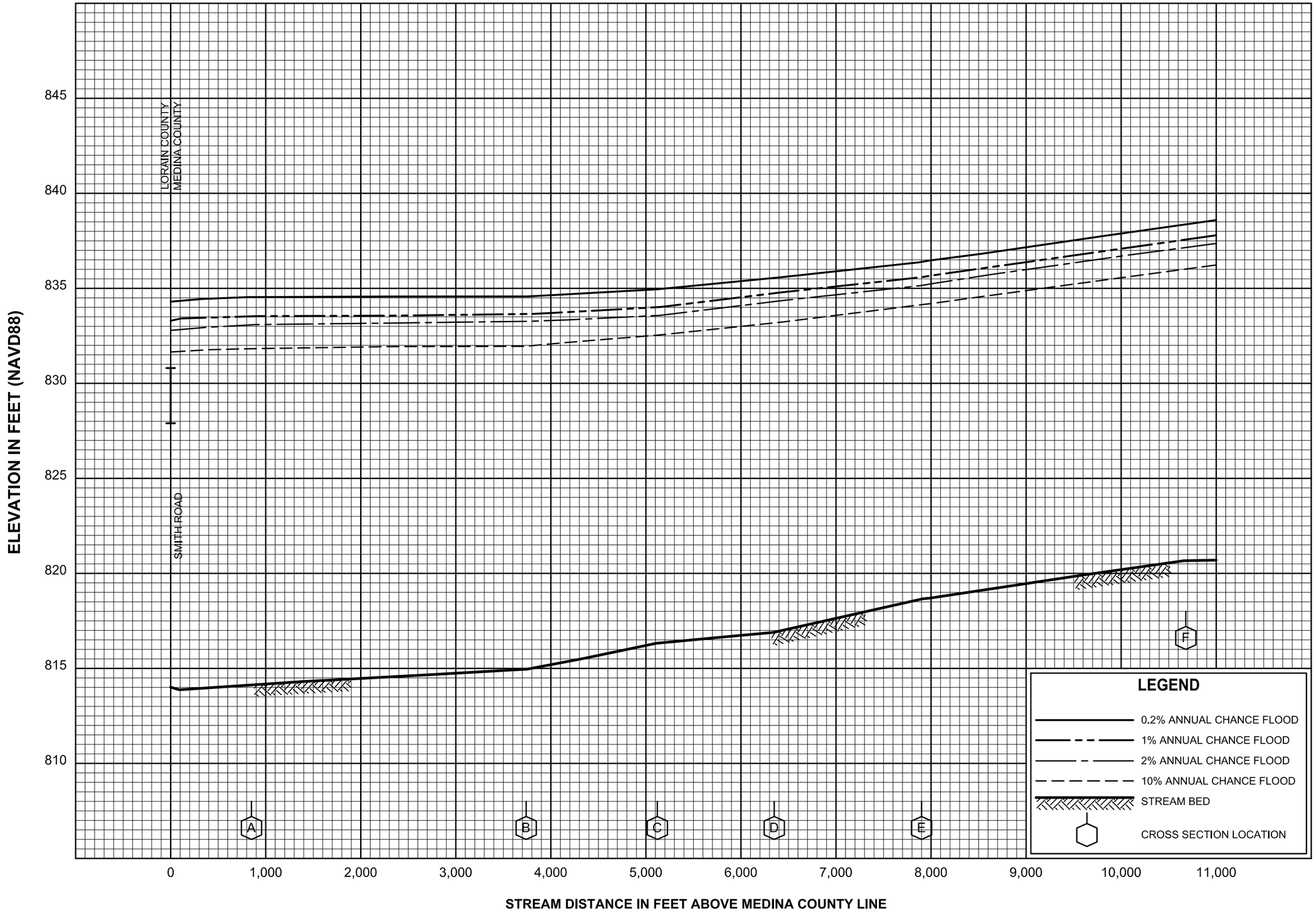
CHIPPEWA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

MEDINA COUNTY, OH

AND INCORPORATED AREAS

03P



FLOOD PROFILES

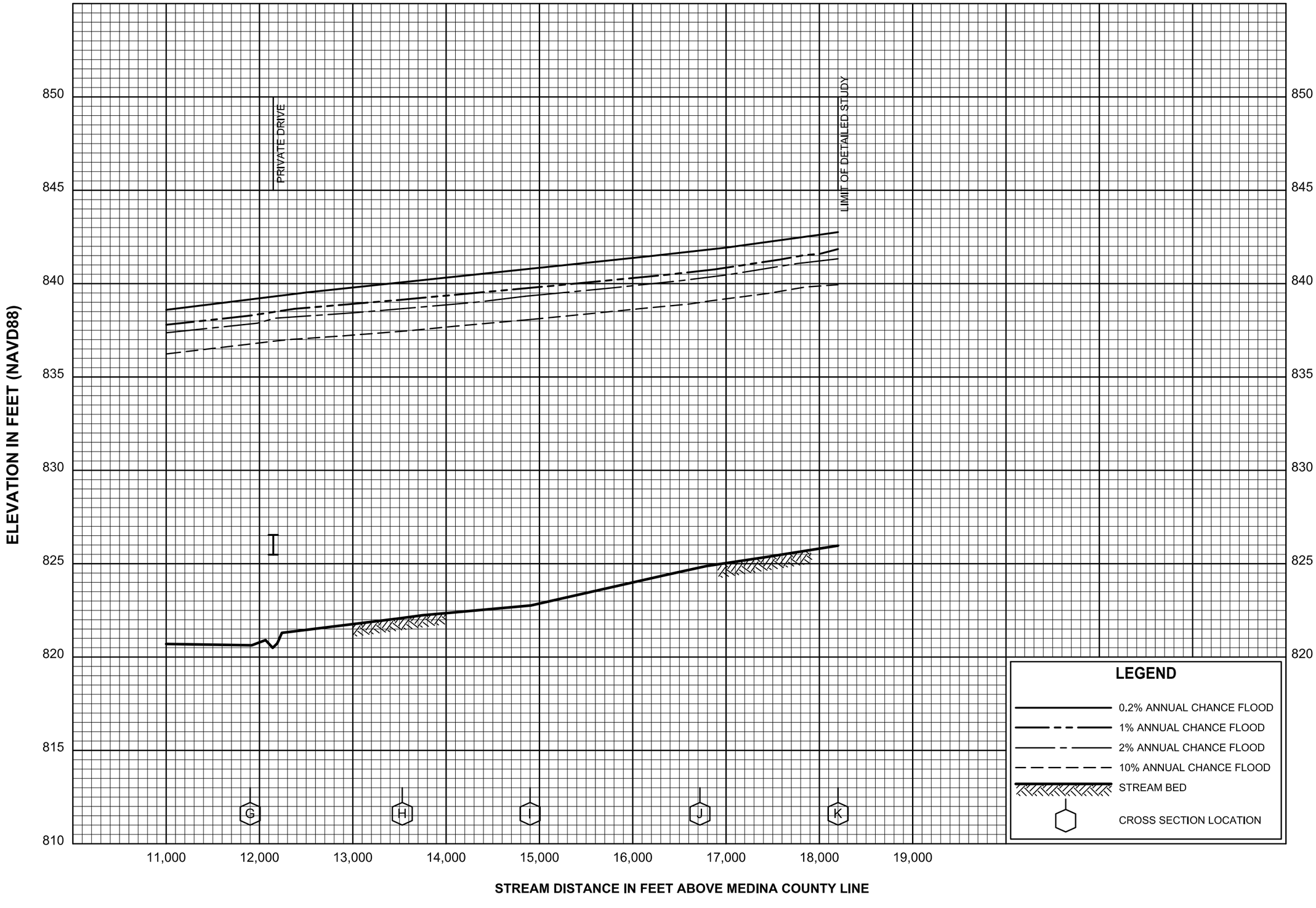
EAST BRANCH BLACK RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MEDINA COUNTY, OH

AND INCORPORATED AREAS

04P



FLOOD PROFILES

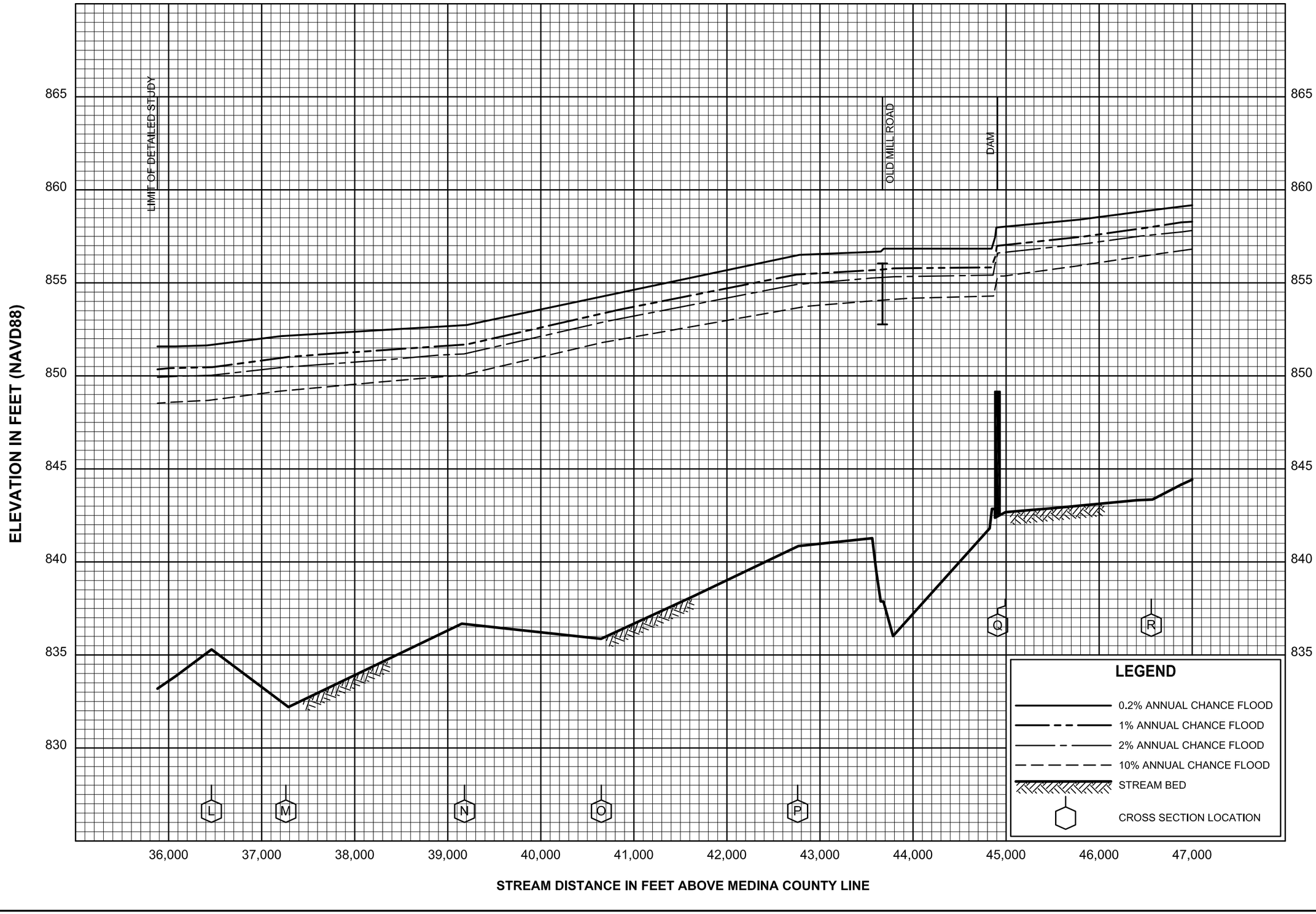
EAST BRANCH BLACK RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MEDINA COUNTY, OH

AND INCORPORATED AREAS

05P



FLOOD PROFILES

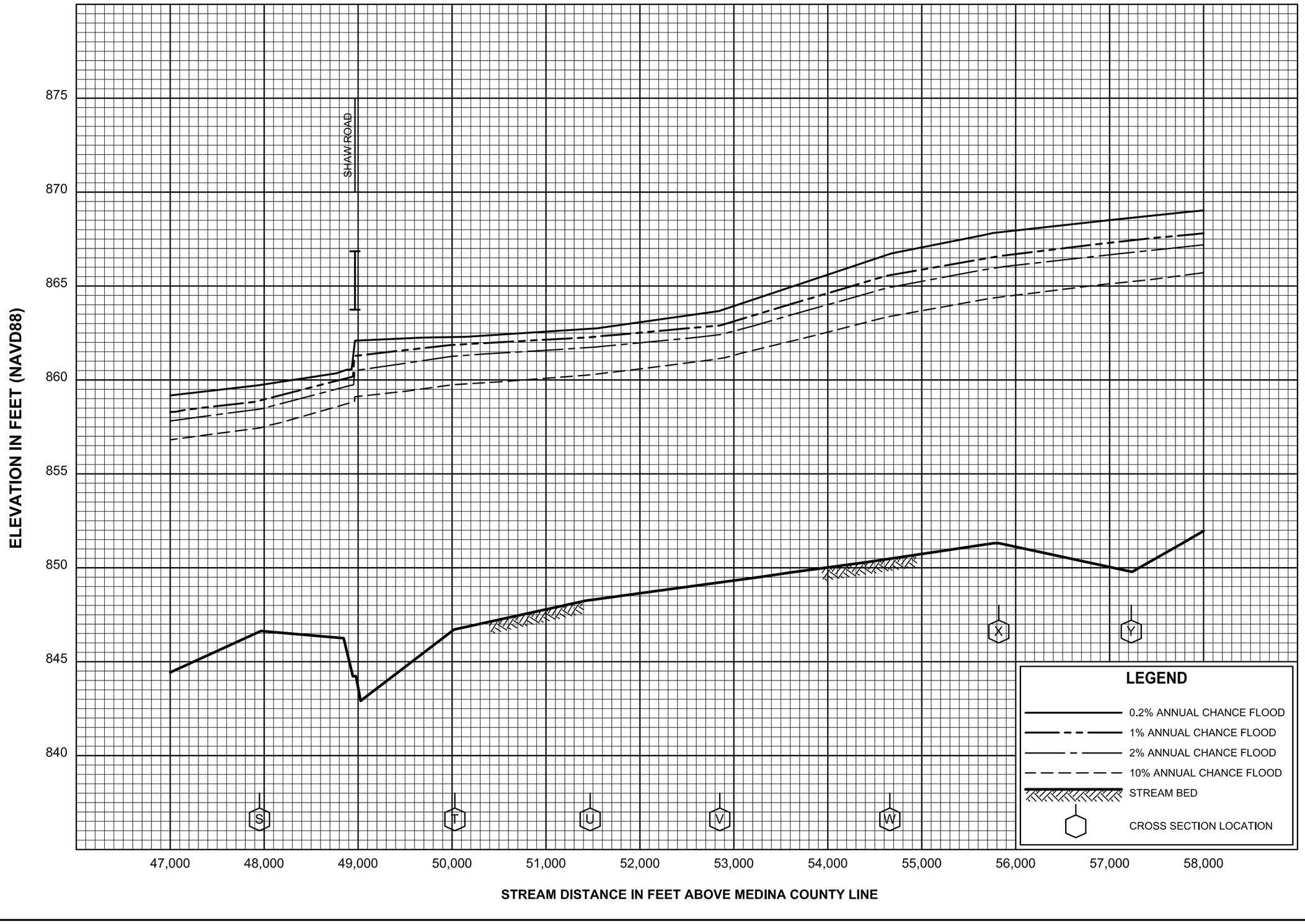
EAST BRANCH BLACK RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MEDINA COUNTY, OH

AND INCORPORATED AREAS

06P



FLOOD PROFILES

EAST BRANCH BLACK RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MEDINA COUNTY, OH

AND INCORPORATED AREAS

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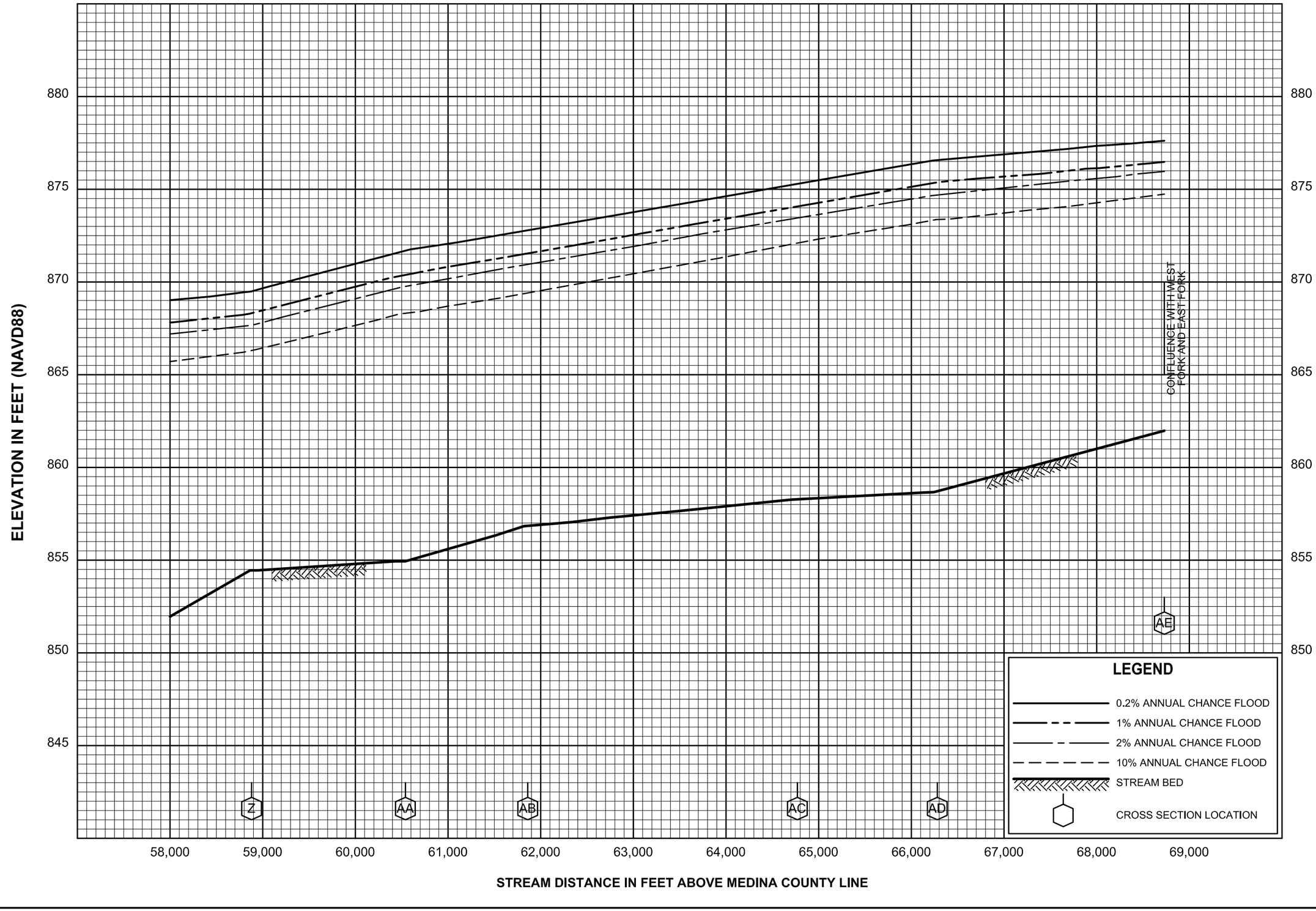

FLOOD PROFILES

EAST BRANCH BLACK RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MEDINA COUNTY, OH

AND INCORPORATED AREAS

08P