

FLOOD INSURANCE STUDY



VOLUME 1 OF 3

HAMILTON COUNTY, INDIANA AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
*ARCADIA, TOWN OF	180496
*ATLANTA, TOWN OF	180371
CARMEL, CITY OF	180081
CICERO, TOWN OF	180320
FISHERS, TOWN OF	180423
HAMILTON COUNTY UNINCORPORATED AREAS	180080
NOBLESVILLE, CITY OF	180082
SHERIDAN, TOWN OF	180516
WESTFIELD, CITY OF	180083



*No Special Flood Hazards Identified

Revised: [TBD]

PRELIMINARY
9/7/2016

Federal Emergency Management Agency



FLOOD INSURANCE STUDY NUMBER
18057CV001C

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: February 19, 2003

Revised Countywide FIS Dates: November 19, 2014

[TBD]

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1
1.1. Purpose of Study	1
1.2. Authority and Acknowledgments	1
1.3. Coordination	4
2.0 AREA STUDIED	5
2.1. Scope of Study	5
2.2. Community Description	8
2.3. Principal Flood Problems	9
2.4. Flood Protection Measures	10
3.0 ENGINEERING METHODS	10
3.1. Hydrologic Analysis	11
3.2. Hydraulic Analysis	20
3.3. Vertical Datum	23
4.0 FLOODPLAIN MANAGEMENT APPLICATIONS	23
4.1. Floodplain Boundaries	24
4.2. Floodways	24
5.0 INSURANCE APPLICATIONS	81
6.0 FLOOD INSURANCE RATE MAP	81
7.0 OTHER STUDIES	83
8.0 LOCATION OF DATA	83
9.0 BIBLIOGRAPHY AND REFERENCES	83
10.0 REVISIONS DESCRIPTION	86
10.1. Morse Levee Reservoir Revision (Date To Be Determined)	86

TABLE OF CONTENTS (CONTINUED)

	<u>Page</u>
<u>FIGURES</u>	
Figure 1: Floodway Schematic	25
Figure 2: FIRM Notes to Users	86
Figure 3: Map Legend for FIRM	89

<u>TABLES</u>	
Table 1: CCO Meeting Dates for Pre-Countywide FIS	4
Table 2: Incorporated Letters of Map Change (February 2003 Countywide Study)	5
Table 3: Incorporated Letters of Map Change (Revised Countywide FIS (November 19, 2014))	6
Table 4: Stream Name Changes	7
Table 5: Streams Studied by Detailed Methods	7
Table 6: Streams Studied by Approximate Methods	7
Table 7: Scope of Study for November 19, 2014 Countywide Update	8
Table 8: Population of Incorporated Cities and Towns in Hamilton County (2010 Census)	9
Table 9: Flood Crest Elevations	10
Table 10: Summary of Discharges	12
Table 11: Summary of Stillwater Elevations	20
Table 12: Channel and Overbank Roughness Factors	21
Table 13: Floodway Data	26
Table 14: Community Map History	82

<u>EXHIBITS</u>	
Exhibit 1 - Flood Profiles	Panel
Anna Kendall Drain	01P – 03P
Bear Creek	04P – 06P
Bee Camp Creek	07P – 09P
Britton Branch	10P
Carmel Creek	11P – 12P
Cheaney Creek	13P – 16P
Cicero Creek	17P – 18P
Clay Creek	19P – 20P
Cool Creek	21P – 26P
Duck Creek	27P – 30P
Fall Creek	31P – 32P

TABLE OF CONTENTS (CONTINUED)

Exhibit 1 - Flood Profiles	Panel
Flatfork Creek	33P – 35P
Henley Creek	36P
Hinkle Creek	37P – 38P
Hot Lick Creek	39P
Ingerman Ditch	40P – 41P
John Edwards Drain	42P – 44P
Jones Ditch	45P – 48P
Kirkendall Creek	49P – 52P
Little Cicero Creek	53P
Little Cool Creek	54P – 55P
Little Eagle Creek	56P – 58P
Long Branch	59P – 60P
Mallery Granger Ditch	61P – 63P
Mill Creek	64P – 65P

TABLE OF CONTENTS – Volume 3

EXHIBITS

Exhibit 1 - Flood Profiles	Panel
Mitchner Ditch	66P – 69P
Mud Creek	70P – 74P
Musselman Ditch	75P – 77P
Sand Creek	78P – 81P
Shoemaker Ditch	82P – 84P
Sly Run	85P – 86P
Sly Run East Fork	87P – 89P
Sly Run West Fork	90P
Spring Mill Run / Well Run	91P – 92P
Stony Creek	93P – 95P
Symons Ditch	96P – 97P
Thorpe Creek	98P – 101P
Vestal Ditch	102P – 105P
West Fork White River	106P – 108P
Wheeler & Wheeler Drain	109P – 110P
William Lehr Ditch	111P – 114P
Williams Creek	115P – 121P
Wilson Ditch	122P – 123P

Exhibit 2 - Flood Insurance Rate Map Index

Flood Insurance Rate Map

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

1.0 INTRODUCTION

1.1. Purpose of Study

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

The Towns of Atlanta and Arcadia do not have special flood hazard areas within their incorporated limits in Hamilton County. However, for the purpose of complete countywide mapping of Hamilton County, these towns are still included in this FIS and FIRMs.

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

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

1.2. Authority and Acknowledgments

The sources of authority for this FIS are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This FIS was prepared to include all jurisdictions within Hamilton County into a countywide-format FIS.

Information on the authority and acknowledgments for each jurisdiction included in this countywide FIS, as compiled from their previously printed FIS reports, is shown below.

Carmel, City of: The hydrologic and hydraulic analyses for the FIS report dated November 19, 1980, were prepared by the U.S. Geological Survey (USGS) for the Federal Insurance Administration (FIA), under Inter-Agency Agreement No. IAA-H-8-76, Project Order No. 11. That work was completed in May 1978.

Cicero, Town of: The hydrologic and hydraulic analyses for the FIS report dated July 1979 were prepared by Clyde E. Williams and Associates, Inc., for the FIA, under Contract No. H-4013. That work was completed in July 1977.

Hamilton County
(Unincorporated Areas): The hydrologic and hydraulic analyses for the original FIS report were prepared by Gannett, Fleming, Corddry, and Carpenter, Inc., for the FIA, under Contract No. H-4804. That work was completed in June 1981.

Noblesville, City of: The hydrologic and hydraulic analyses for the FIS report dated September 1982 were prepared by the U.S. Army Corps of Engineers (USACE), Louisville District, for the FIA, under Inter-Agency Agreement No. IAA-H-10-77, Project Order No. 5. That work was completed in December 1978.

Westfield, City of: The hydrologic and hydraulic analyses for the FIS report dated September 16, 1980, were prepared by the USGS for the FIA, under Inter-Agency Agreement No. IAA-H-8-76, Project Order No. 11. That work was completed in March 1979.

Initial Countywide Study
(February 19, 2003): Updated detailed analyses were supplied by three sources. Updated analyses were prepared by Christopher B. Burke Engineering, Ltd., for FEMA under Contract No. EMW-92-C-3817; this work was completed on June 28, 1996. Christopher B. Burke Engineering, Ltd., for the IDNR; this work was completed in June 1999. Updated analyses were prepared by the USGS, for FEMA, under Inter-Agency Agreement number EMW-91-E-3527,

Project Order No. 2; this work was completed in April 1993. The IDNR performed detailed hydraulic analyses; FEMA accepted these analyses for this countywide FIS.

Revised Countywide Study
(November 19, 2014):

The hydrologic and hydraulic analyses for the revised stream reaches of Hamilton County were performed by United Engineers and Architects, on behalf of the Indiana Department of Natural Resources, under Indiana Public Works Project Number E068100B and by Christopher B. Burke Engineering, Ltd, under Indiana Public Works number E060024. The Indiana Department of Natural Resources managed the production of this study as part of their Cooperating Technical Partner agreement with the Federal Emergency Management Agency dated April 29, 2004, which was defined by the Indiana DNR Mapping Activity Statement 05-09 dated June 23, 2005 and Mapping Activity Statement 09-01 dated September 22, 2009.

The revisions to the hydraulic analysis of the West Fork White River and the new study of Cheeny Creek, were performed by the Indiana Department of Natural Resources. The studies for Clay Creek, Williams Creek, Wheeler & Wheeler Drain and William Lehr Ditch were provided by the Hamilton County Surveyors Office.

Redelineation of the previously effective flood hazard information for this FIS report, correction to the North American Vertical Datum of 1988, and conversion of the unincorporated and incorporated areas of Hamilton County into the Countywide format was performed by United Engineers and Architects, on behalf of the Indiana Department of Natural Resources, under Indiana Public Works Project Number E068100B. The Indiana Department of Natural Resources managed the production of this study as part of their Cooperating Technical Partner agreement with the Federal Emergency Management Agency dated April 29, 2004, which was defined by the Indiana DNR Mapping Activity Statement 05-09 dated June 23, 2005 and funded under agreement number EMC-2005-GR-7022.

The revised countywide FIS report dated November 19, 2014, has been updated to reflect the certification of Morse Reservoir Levee. The mapping revision was performed by Strategic Alliance for Risk Reduction (STARR), under contract HSFEHQ-09-D-0370/TO8 in June, 2016. The levee certification analysis was performed by Citizens Water with the assistance of Christopher B. Burke

Engineering LLC in March 2016. STARR performed a water displacement analysis to estimate areas protected by the levee. This analysis considers the scenario in which the levee in question provides no protection.

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

1.3. Coordination

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

The dates of the initial and final CCO meetings held for the unincorporated areas and incorporated communities within the boundaries of Hamilton County are shown in the following tabulation:

Table 1: CCO Meeting Dates for Pre-Countywide FIS

<u>Community</u>	<u>Initial CCO Date</u>	<u>Final CCO Date</u>
Arcadia, Town of	*	*
Carmel, City of	November 1975	January 30, 1980
Cicero, Town of	March 1976	January 29, 1979
Fishers, Town of	*	*
Hamilton County (Unincorporated Areas)	May 1978	September 16, 1982
Noblesville, City of	February 1976	February 28, 1980
Westfield, Town of	November 1975	February 28, 1980

*Data not available

For the 2003 countywide FIS, an initial CCO meeting held on June 25, 1991, was attended by representatives of CBBEL, Hamilton County, and FEMA. Also, an initial CCO meeting held in November 1990 was attended by representatives of the USGS, the IDNR, and the City of Carmel. A final CCO meeting was held on October 11, 2000.

For the initial revision to the countywide FIS dated November 19, 2014, an initial CCO meeting was held on December 16, 2004, and was attended by IDNR, the Hamilton County Surveyors Office, the Hamilton County Soil & Water District,

the Hamilton County Highway Department, and representatives from the Cities of Noblesville, Carmel and Westfield, as well as the Towns of Fishers, Cicero and Sheridan. The results of the countywide study dated November 19, 2014 were reviewed at the final CCO meeting held on March 17, 2010, and attended by representatives of FEMA, IDNR and representatives from Hamilton County. All problems raised at that meeting have been addressed.

For this revised countywide FIS, dated [TBD], for reflecting the accreditation status of the Morse Reservoir Levee, the initial CCO meeting was held on _____, and was attended by representatives of _____ and the communities. All problems raised at that meeting have been addressed in this study.

2.0 AREA STUDIED

2.1. Scope of Study

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

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

Approximate methods of analysis were used to study those areas having a low development potential or minimal flood hazards as identified during the initial CCO meeting. For November 19, 2014 revision, three new stream reaches were studied using approximate methods. The scope and methods of new approximate studies were proposed and agreed upon by FEMA, the IDNR, and Hamilton County.

Below listed FIS updates also incorporates the determination of letters issued by FEMA resulting in map changes (Letters of Map Change, or LOMC's). All Letters of Map Revision (LOMRs) are summarized in Table 2 and 3. Letters of Map Amendment (LOMAs) incorporated for this study are summarized in the Summary of Map Actions (SOMA) included in the Technical Support Data Notebook (TSDN) associated with this FIS update. Copies of the TSDN may be obtained from the Community Map Repository.

Table 2: Incorporated Letters of Map Change (February 2003 Countywide Study)

<u>Community</u>	<u>Flooding Source/Project Identifier</u>	<u>Date Issued</u>	<u>Type</u>
City of Noblesville	Eller Run Eller Run subdivision	January 10, 1994	LOMR
City of Noblesville	Geist Reservoir Cambridge subdivision, Section 5, Lots 194-210 & 234-236	August 3, 1995	LOMR-F
City of Carmel	Carmel Creek		

Table 2: Incorporated Letters of Map Change (February 2003 Countywide Study)

<u>Community</u>	<u>Flooding Source/Project Identifier</u>	<u>Date Issued</u>	<u>Type</u>
	Williamson Run subdivision	October 31, 1995	LOMR
City of Noblesville	Geist Reservoir Springs of Cambridge subdivision, Section 7, Parcels 1-3	July 8, 1997	LOMR-F
City of Noblesville	Mt. Zion Brook Canal Place subdivision	June 25, 2001	LOMR
Town of Westfield	Kirkendall Creek Brookside	July 19, 2002	LOMR
Town of Westfield	Unnamed Tributary to Little Eagle Creek Countryside	September 24, 2002	LOMR

Table 3: Incorporated Letters of Map Change (Revised Countywide FIS (November 19, 2014))

<u>Flooding Source</u>	<u>Community and Project ID</u>	<u>Date Issued</u>	<u>Type</u>
Long Branch	180081 / 03-05-047P	July 28, 2003	LOMR
UNT Stony Creek	180082 / 03-05-3377P	July 8, 2003	LOMR
Sand Creek	180423 / 03-05-5182P	March 8, 2004	LOMR
Vestal Ditch	180081 / 04-05-1640P	April 13, 2004	LOMR
Mt. Zion Brook	180082 / 04-05-2335P	January 21, 2005	LOMR
Unnamed Tributary Little Eagle Creek	180083 / 05-05-0417P*	March 10, 2005	LOMR
Britton Branch	180423 / 05-05-0633P	September 9, 2005	LOMR
Lion Creek	180081 / 07-05-6032P	April 30, 2008	LOMR
West Fork White River	180423 / 08-05-3257P	September 30, 2008	LOMR
Mud Creek	180080 / 08-05-0876P	January 13, 2009	LOMR
West Fork White River	180081 / 08-05-3255P	October 30, 2008	LOMR
Little Cool Creek	180081 / 08-05-5476P	July 6, 2009	LOMR
Cool Creek / Anna Kendall Drain	180080 / 10-05-2832P	October 22, 2010	LOMR
Stony Creek	180082 / 10-05-3162P	August 20, 2010	LOMR
Anna Kendall Drain	180083 / 11-05-3580P	September 9, 2011	LOMR
Anna Kendall Drain	180083 / 12-05-9297P	August 23, 2013	LOMR
Symons Ditch	180516 / 13-05-7380P	May 31, 2014	LOMR

*05-05-0417P supersedes the September 24, 2002 LOMR listed in Table 2

Please note, there were no new mappable LOMR cases for the areas revised in [TBD] revision.

Table 4: Stream Name Changes

<u>Old Name</u>	<u>New Name</u>	<u>Comment</u>
Britton Branch	Shoemaker Ditch	the portion downstream of 131 st Street
Elwood-Wilson Ditch	Wilson Ditch	entire
North Cool Creek	Cool Creek	profile incorporated into Cool Creek profile

Table 5: Streams Studied by Detailed Methods

Anna Kendall Drain	Long Branch
Bear Creek	Mallery Granger Ditch
Bee Camp Creek	Mill Creek
Britton Branch	Mitchener Ditch
Carmel Creek	Mud Creek
Cheeney Creek	Musselman Ditch
Cicero Creek	Sand Creek
Clay Creek	Shoemaker Ditch
Cool Creek	Sly Run
Duck Creek	Sly Run East Fork
Fall Creek	Sly Run West Fork
Flatfork Creek	Spring Mill Run
Henley Creek	Stony Creek
Hinkle Creek	Symons Ditch
Hot Lick Creek	Thorpe Creek
Ingerman Ditch	Vestal Ditch
John Edwards Drain	Well Run
Jones Ditch	West Fork White River
Kirkendall Creek	Wheeler & Wheeler Drain
Little Cicero Creek	William Lehr Ditch
Little Cool Creek	Williams Creek
Little Eagle Creek	Wilson Ditch

Table 6: Streams Studied by Approximate Methods

Eagle Creek	J. M. Thompson Drain
H. G. Keynon Drain	Mary Wilson Drain
Highway Run	

Table 7: Scope of Study for November 19, 2014 Countywide Update

<u>Stream</u>	<u>Limits of Detailed Study</u>
Bee Camp Creek	Mouth to Hancock County Line
Cheeny Creek	Mouth to I-69
Clay Creek	Mouth to 925' upstream of Private Drive
Cool Creek	Mouth to 126th Street
Fall Creek	Florida Road to Madison County Line
Flatfork Creek	Mouth to Hancock County Line
Ingerman Ditch	Mouth to 660' upstream of Private Drive
John Edwards Drain	Mouth to Spring Mill Road
Jones Ditch	Mouth to 2425' upstream of 206th St
Long Branch	Boone County line to 425' u/s of Private Dr
<u>Stream</u>	<u>Limits of Detailed Study</u>
Shoemaker Ditch	SR 37 to RR
Thorpe Creek	Mouth to Madison County Line
Wilson Ditch	Mouth to SR 38
Vestal Ditch	Mouth to 161st Street
West Fork White River	Claire to Madison County Line
Wheeler & Wheeler Drain	Mouth to 650' u/s of Arbor Grove Blvd.
William Lehr Ditch	Mouth to 146th Street
Williams Creek	Marion County line to Manassas Road
<u>Stream</u>	<u>Limits of Redelineation Study</u>
Carmel Creek	96th Street to 116th Street
Grassy Branch	Mouth to Kinsey Avenue
Kirkendall Creek	Mouth to 1000' u/s of 161st St.
Morse Reservoir	Entire
Williams Creek	Mouth to 136th Street
<u>Stream</u>	<u>Limits of Approximate Study</u>
Eagle Creek	Boone County Line to SR 47
H. G. Keynon Drain	Mouth to Oak Ridge Road
Highway Run	Mouth to Rohner Road
J. M. Thompson Drain	Mouth to 1000' u/s of Catherine Drive
Mary Wilson Drain	Mouth to 161st Street

This countywide revision dated [date] was performed to reflect the certification of Morse Reservoir Levee and estimate areas protected by the levee. This analysis considers the scenario in which the levee in question provides no protection.

2.2. Community Description

Hamilton County is located in central Indiana and is bordered by Tipton County to the north, Madison County to the east, Hancock County to the southeast, Marion County to the south, and Boone and Clinton Counties to the west. Hamilton County

is served by Interstate 69 and 465 and US route 31. According to the Census Bureau, the population of Hamilton County in 2010 was 274,569.

Table 8: Population of Incorporated Cities and Towns in Hamilton County
(2010 Census)

<u>Community</u>	<u>Population</u>
Arcadia, Town of	1,666
Atlanta, Town of	725
Carmel, City of	79,191
Cicero, Town of	4,812
Fishers, Town of	76,794
Noblesville, City of	51,969
Sheridan, Town of	2,665
Westfield, City of	30,068

The climate in Hamilton County ranges from hot and humid in the summertime to cold during the winter season. Average daytime temperatures during the summer fall around 71.7 °F, while winter temperatures average at approximately 29.3 °F. Precipitation for Hamilton County totals an annual amount of 42.85 inches.

2.3. Principal Flood Problems

Major flooding in Hamilton County primarily occurs along the West Fork White River and its tributaries. Major floods principally occur during the winter and spring months, but can occur during any season. Generally, two types of storm events cause flooding. During the winter and spring, storms of moderate intensity and long duration, coupled with frozen ground, cause flooding to occur. During the summer, thunderstorms which have high intensities and relatively short durations can cause floods. Localized flood problems in the incorporated areas are summarized below:

Arcadia, Town of: There are no principal flood problems at this time.

Atlanta, Town of: There are no principal flood problems at this time.

Carmel, City of: Flooding occurs from Cool Creek, Williams Creek, Carmel Creek, West Fork White River and various tributaries to the West Fork White River.

Cicero, Town of: Flooding occurs from Cicero Creek & Morse Reservoir.

Fishers, Town of: Flooding occurs from Fall Creek, West Fork White River and various tributaries to the West Fork White River.

Noblesville, City of: Flooding occurs from West Fork White River and various tributaries. Records of river stages and discharges on the West Fork White River are maintained in the study area from 1947 to the present, by the U. S. Geological Survey. Table 9 lists the flood crest stages and discharges for the past major floods.

Table 9: Flood Crest Elevations

USGS gage West Fork White River at Noblesville Gage Datum 737.75' (NAVD88)

<u>Year</u>	<u>Peak Discharge(cfs)</u>	<u>Gage Height, Feet</u>
1913	*	23.80
1958	24,000	20.55
1964	26,800	21.31
1999	23,300	20.42
2003	20,400	21.86
2005	20,500	21.00

*discharge unknown

Sheridan, Town of: Flooding occurs from Eagle Creek and Symons Ditch.

Westfield, City of: Flooding occurs from Cool Creek, Little Eagle Creek, and various tributaries.

2.4. Flood Protection Measures

There is levee located along the east bank of Morse Reservoir. It is found to be in compliance with 44 CFR 65.10 along the levee segment between the Morse Reservoir Dam spillway and a point on the levee approximately 1,400 feet south of the intersection of Hague Road and 216th Street.

There are two dams in the county, Riverwood Dam and Morse Reservoir Dam, and another major reservoir, Geist Reservoir, lies in the county, although the dam itself is in Marion County. These dams provide only minimal flood protection. No other dikes, flood levee systems or flood control dams exist in the study area, nor are any other planned.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods in Hamilton County, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or

exceeded during any year. Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 1-percent- annual-chance flood in any 50-year period is approximately 40 percent (4 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1. Hydrologic Analysis

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied by detailed methods affecting Hamilton County. Table 10 contains a summary of peak discharges for the 10%, 2%, 1%, and 0.2% annual chance floods, where applicable, for each flooding source studied in detail in Hamilton County.

Stillwater elevations for floods of the selected recurrence intervals for Morse Reservoir are shown in Table 11.

Table 10: Summary of Discharges

<u>Flooding Source and Location</u>	<u>Drainage Area (Square Miles)</u>	<u>Peak Discharge (cfs)</u>			
		<u>10% Annual Chance</u>	<u>2% Annual Chance</u>	<u>1% Annual Chance</u>	<u>0.2% Annual Chance</u>
ANNA KENDALL DRAIN					
At confluence with the West Fork White River	3.32	1,300	1,900	2,400	3,150
Upstream of Bowman Drain	2.30	540	790	1,050	1,400
Upstream of U.S. 31	2.00	490	720	940	1,280
At a point approximately 250 feet downstream of foot trail	1.71	460	680	870	1,180
At a point approximately 500 feet upstream of Oak Ridge Road	1.01	305	440	570	720
BEAR CREEK					
At confluence with Duck Creek	17.20	1,290	1,950	2,300	3,300
Upstream of the Hamilton-Tipton County boundary line	2.70	400	605	720	1,050
BEE CAMP CREEK					
At mouth	2.28	*	*	750	1,100
200' u/s of Olio Road	1.88	*	*	600	900
1335 d/s of Hancock County Line	1.35	*	*	460	650
BRITTON BRANCH					
At a point approximately 1,136 feet upstream of Lantern Road	2.14	550	790	900	1,160
CARMEL CREEK					
At confluence with the West Fork White River	5.5	1,800	2,500	3,200	4,300
Just upstream of State Route 431	4.0	1,500	2,100	2,700	3,700
Just upstream of the CSX Transportation	2.3	780	1,100	1,400	1,950
CHEENEY CREEK					
At mouth	3.37	780	1200	1370	1680
At Hague Road	2.49	600	910	1050	1230
At RR	1.21	325	495	550	670
CICERO CREEK					
At USGS Gage No. 03350500 at Noblesville	216	6,560	9,500	10,900	14,400
Just above Morse Reservoir	135	3,400	5,500	6,700	11,000

<u>Flooding Source and Location</u>	<u>Drainage Area (Square Miles)</u>	<u>Peak Discharge (cfs)</u>			
		<u>10% Annual Chance</u>	<u>2% Annual Chance</u>	<u>1% Annual Chance</u>	<u>0.2% Annual Chance</u>
CLAY CREEK					
At Mouth	1.67	259	436	535	787
At Ditch Road	1.44	230	386	473	697
2500' upstream of 116 th St.	1.05	117	297	365	537
COOL CREEK					
At confluence with the West Fork White River	23.70	3,350	4,800	5,500	6,790
Just downstream of Hinkle Road	22.88	3,500	4,700	5,400	6,650
At confluence with Hot Lick Creek	21.54	3,300	4,500	5,150	6,360
At confluence with Little Cool Creek	15.80	2,720	3,850	4,100	5,170
Just downstream of East 146 th Street	13.84	2,425	3,250	3,720	4,575
At confluence with unnamed tributary at a point approximately 400 feet downstream of East 151 st Street	9.92	1,900	2,550	2,900	3,570
At confluence with unnamed tributary at a point approximately 3,200 feet upstream of East 151 st Street	9.06	1,750	2,350	2,700	3,320
At confluence with unnamed tributary at a point approximately 600 feet downstream of Oak Road	7.81	1,525	2,100	2,425	3,020
Just downstream of State Route 32	3.91	950	1,360	1,440	1,820
Just downstream of East 186 th Street	2.53	690	910	1,040	1,270
Just upstream of of East 191 st Street	2.04	431	743	973	1,200
Just upstream U.S. Route 31	1.61	379	554	722	950
DUCK CREEK					
At confluence with the West Fork White River	105.0	3,900	6,000	7,100	10,000
Just upstream of the Hamilton-Tipton County boundary line	61.5	2,820	4,300	5,100	7,200

<u>Flooding Source and Location</u>	<u>Drainage Area (Square Miles)</u>	<u>Peak Discharge (cfs)</u>			
		<u>10% Annual Chance</u>	<u>2% Annual Chance</u>	<u>1% Annual Chance</u>	<u>0.2% Annual Chance</u>
FALL CREEK					
At Florida Road	186	6,210	9,270	10,700	11,700
At Madison County Line	133	4,800	7,170	8,270	9,020
FLATFORK CREEK					
At mouth	10.57	580	940	1,130	1,710
HENLEY CREEK					
At confluence with Williams Creek	1.20	335	510	690	900
HINKLE CREEK					
At a point approximately 0.98 mile downstream of East 216th Street	20.10	3,550	6,000	7,180	10,340
Just upstream of Deming Road	18.50	3,400	5,700	6,800	9,100
HOT LICK CREEK					
At confluence with Cool Creek	0.40	310	430	540	685
INGERMAN DITCH					
At mouth	4.18	677	1,060	1,260	1,770
At 206 th Street	2.89	467	726	859	1,210
Above UNT	1.41	245	380	449	629
At SR 19	1.04	185	239	339	474
JOHN EDWARDS DRAIN					
At mouth	3.54	691	1,147	1,381	1,933
At Towne Road	2.90	565	940	1,130	1,582
At 161 st Street	2.45	480	790	955	1,337
At Ditch Road	2.13	445	700	845	1,183
At 206th Street	2.20	524	986	1,200	1,660
JONES DITCH					
At mouth	8.90	1,590	2,770	3,400	4,690
At US 31	3.78	709	1,030	1,320	2,210
KIRKENDALL CREEK					
At confluence with Vestal Ditch	4.6	*	*	1,030 ¹	1,550 ²
At Hazeldell Road	3.8	*	*	920	1,360
At a point approximately 600 feet downstream of East 161st Street	3.41	480	730	860	1,260
At confluence with unnamed tributary approximately 1,800 feet upstream of East 161st Street	2.15	395	595	700	935

<u>Flooding Source and Location</u>	<u>Drainage Area (Square Miles)</u>	<u>Peak Discharge (cfs)</u>			
		<u>10% Annual Chance</u>	<u>2% Annual Chance</u>	<u>1% Annual Chance</u>	<u>0.2% Annual Chance</u>
LITTLE CICERO CREEK					
Just above Morse Reservoir	43.30	2,400	3,900	4,600	6,300
LITTLE COOL CREEK					
At confluence with Cool Creek Just downstream	2.68	1,020	1,390	1,530	1,980
of Range Line Road	2.41	940	1,290	1,420	1,800
At a point approximately 1,200 feet upstream of 136th Street	1.40	620	820	930	1,220
Just downstream of U.S. Route 31	0.61	310	410	490	630
LITTLE EAGLE CREEK					
At confluence with unnamed tributary approximately 600 feet upstream from Boone-Hamilton County boundary line	23.3	3,900	6,200	7,300	9,700
At confluence with Bear Creek	22.5	3,800	5,900	7,000	9,200
At confluence with Woodruff Branch	20.2	3,600	5,800	6,600	8,700
At confluence with unnamed tributary, approximately 0.64 mile upstream of Woodruff Branch	15.7	3,100	4,800	5,700	7,400
Just downstream of East 166th Street	15.4	3,100	4,750	5,600	7,300
At confluence with unnamed tributary 800 feet upstream of East 166th Street	11.8	2,600	4,050	4,800	6,300
LITTLE EAGLE CREEK					
At confluence with unnamed tributary 1,500 feet downstream of State Route 32	10.1	2,400	3,700	4,400	5,800
Just upstream of State Route 32	8.9	2,200	3,500	4,100	5,400
Just downstream of Eagletown Road	7.1	1,900	3,100	3,500	4,650
At confluence with unnamed tributary 200 feet upstream of Casey Road	3.7	1,300	2,100	2,500	3,300
LONG BRANCH					
At Boone County Line	2.17	472	694	795	1,030
At 116 th Street	1.71	373	548	628	812
At Shelbourne Road	1.08	259	382	438	567

<u>Flooding Source and Location</u>	<u>Drainage Area (Square Miles)</u>	<u>Peak Discharge (cfs)</u>			
		<u>10% Annual Chance</u>	<u>2% Annual Chance</u>	<u>1% Annual Chance</u>	<u>0.2% Annual Chance</u>
MALLERY GRANGER DITCH					
At confluence with the West Fork White River	2.95	400	600	730	980
Just downstream of 196th Street	2.14	310	470	550	770
At confluence with unnamed tributary, approximately 0.35 mile downstream of James Road	1.80	190	290	360	530
MILL CREEK					
At confluence with Sly Run	3.16	2,350	3,090	3,460	4,340
At a point 400 feet downstream of Westfield Road	2.59	1,080	1,400	1,580	1,900
Just upstream of Westfield Road near Willowview	1.89	690	900	1,000	1,250
MITCHENER DITCH					
At mouth	4.4	*	*	1,260	1,640
At Cherry Tree Road	3.2	*	*	970	1,390
At Deer Ridge Road	2.0	*	*	670	960
At Woodfield Road	1.7	*	*	590	850
At 146th Street	1.4	*	*	510	730
MUD CREEK					
At East 96th Street	39.0	2,150	3,350	3,825	5,000
East 106th Street	37.6	2,100	3,275	3,750	4,900
At Hoosier Road	23.1	1,630	2,450	2,775	3,600
At Brooks School Road	21.4	1,560	2,350	2,650	3,450
At 126th Street	19.2	1,470	2,200	2,460	3,175
At State Route 238	17.8	1,420	2,100	2,350	3,025
At Interstate 69	17.0	1,380	2,050	2,280	2,935
At Cyntheanne Road	14.9	1,290	1,890	2,110	2,700
At Atlantic Road	12.1	1,050	1,540	1,720	2,200
MUSSELMAN DITCH					
At confluence with the West Fork White River	3.98	530	800	950	1,280
At a point approximately 1,245 feet downstream of Creek Road	2.97	450	660	800	1,050
At a point approximately 3,300 feet downstream of Victory Chapel Road	2.16	340	510	610	900

<u>Flooding Source and Location</u>	<u>Drainage Area (Square Miles)</u>	<u>Peak Discharge (cfs)</u>			
		<u>10% Annual Chance</u>	<u>2% Annual Chance</u>	<u>1% Annual Chance</u>	<u>0.2% Annual Chance</u>
SAND CREEK					
At confluence of Mud Creek Just upstream of Interstate Highway 69	11.4	1,140	1,650	1,840	2,350
Just upstream of Marilyn Road	9.7	1,030	1,500	1,670	2,130
Just upstream of State Route 238	7.5	880	1,280	1,430	1,825
Just upstream of East 156th Street	4.5	540	790	880	1,125
	2.5	310	460	510	650
SHOEMAKER DITCH					
At Mouth	5.87	*	*	2,300	3,400
2200' d/s of Lantern Road	4.9	*	*	1,900	2,900
975' u/s of Lantern Road	2.9	*	*	1,100	1,700
SLY RUN					
At a point approximately 650 feet upstream of confluence with Cicero Creek	7.99	2,380	3,200	3,530	4,360
At confluence with Mill Creek	7.82	2,300	3,120	3,450	4,280
SLY RUN					
Just upstream of confluence with Mill Creek 3,000 feet downstream of Mill Creek Road	4.66	1,410	1,850	2,100	2,720
Just downstream of confluence with West Fork	4.28	1,205	1,585	1,770	2,215
Just upstream of confluence with West Fork	3.62	710	950	1,180	1,300
At a point approximately 2,370 feet upstream of Little Chicago Road	1.54	600	800	860	1,100
	1.11	510	680	780	980
SPRING MILL RUN					
At confluence with Williams Creek	2.60	640	830	970	1,290
At a point approximately 750 feet downstream of Howard Johnson Ditch Road	2.34	510	720	870	1,120
At a point approximately 312 feet upstream of Howard Johnson Ditch Road	2.05	500	700	800	1,025

<u>Flooding Source and Location</u>	<u>Drainage Area (Square Miles)</u>	<u>Peak Discharge (cfs)</u>			
		<u>10% Annual Chance</u>	<u>2% Annual Chance</u>	<u>1% Annual Chance</u>	<u>0.2% Annual Chance</u>
STONY CREEK					
At confluence with the West Fork White River	57.2	2,200	3,180	3,600	4,400
At a point approximately 1.4 miles downstream of Private Drive	52.0	2,080	3,010	3,400	4,200
At a point approximately 150 feet downstream of Chapel Drive	48.5	1,990	2,820	3,200	3,960
Just downstream side of Interstate Highway 32	36.5	1,640	2,350	2,700	3,280
SYMONS DITCH					
At a point approximately 0.67 miles downstream Of Eagletown Road	4.71	800	1,510	1,910	3,080
At a point approximately 500 feet downstream Of Eagletown Road	2.93	611	1,140	1,440	2,310
Just downstream of 246 th Street	1.00	302	536	671	1,060
THORPE CREEK					
At mouth	10.4	*	*	3,100	4,600
At 1960' d/s US 238	9.0	*	*	2,700	4,000
At 1700' u/s Cyntheanne Av.	6.4	*	*	1,900	2,800
At Madison County line	3.4	*	*	1,000	1,450
VESTAL DITCH					
At confluence with the West Fork White River	10.7	*	*	2,510	3,580
At 131st Street	10.3	*	*	2,430	3,480
Just downstream of Cherry Tree Road	8.9	*	*	2,190	3,130
Just downstream of confluence with Kirkendall Creek	8.5	*	*	2,090	2,990
At 146th Street	3.9	*	*	1,550 ³	2,230 ⁴
At 161st Street	2.7	*	*	850	1,220
WELL RUN					
At mouth	1.50	440	620	720	950
WEST FORK WHITE RIVER					
At a point approximately 50 feet downstream of State Road 100	1,219	27,000	40,500	46,500	63,500
At USGS Gage No.03349000 at Noblesville	858	20,000	30,000	34,500	46,000

<u>Flooding Source and Location</u>	<u>Drainage Area (Square Miles)</u>	<u>Peak Discharge (cfs)</u>			
		<u>10% Annual Chance</u>	<u>2% Annual Chance</u>	<u>1% Annual Chance</u>	<u>0.2% Annual Chance</u>
WEST FORK WHITE RIVER (contd.)					
At Riverwood Avenue Bridge	839	19,500	29,500	34,000	44,000
Just downstream of State Route 28 Bridge on Hamilton-Madison County boundary line	555	16,000	24,000	27,000	34,000
WHEELER & WHEELER DRAIN					
At Mouth	1.47	200	290	330	*
At Arbor Grove Blvd.	0.97	130	185	210	*
WILLIAM LEHR DITCH					
At Mouth	6.36	990	1,435	1,615	*
At 166th Street	4.4	730	1,065	1,195	*
At 156th Street	3.2	575	830	935	*
At SR 238	1.7	330	475	530	*
At 96 th Street	16.50	1,660	2,860	3,480	5,160
At Simon Dam	14.54	1,500	2,550	3,100	4,600
WILLIAMS CREEK					
Above Clay Creek	10.68	1,180	2,040	2,480	3,680
Above Elliot Creek	8.25	957	1,650	2,000	2,960
Above Almond Ditch	6.71	807	1,390	1,690	2,500
Above Henley Creek	4.82	614	1,050	1,280	1,890
At 141 st Street	2.54	362	621	753	1,110
At 146 th Street	1.79	270	466	570	841
WILSON DITCH					
At Mouth	5.01	455	675	765	1,010
At Pleasant Street	4.66	435	650	735	980
550' u/s of 13th Street	3.73	345	515	585	780
At SR 37	1.95	145	215	240	320

*Data not available

¹For the purpose of floodplain and floodway determinations along Kirkendall Creek, the effects of 410 cfs split flow leaving Kirkendall Creek has been ignored.

²For the purpose of 0.2-percent-annual-chance flood boundary determinations along Kirkendall Creek, the effects of 610 cfs split flow leaving Kirkendall Creek has been ignored.

³This discharge is increased by 410 cfs in the model to show the contribution of the split flow from Kirkendall Creek (floodway computation also uses 1,550 cfs)

⁴This discharge is increased by 610 cfs in the model to show the contribution of the split flow from Kirkendall Creek

Table 11: Summary of Stillwater Elevations

Flooding Source <u>And Location</u>	Elevation (Feet, NAVD 1988)			
	10% Annual <u>Chance</u>	2% Annual <u>Chance</u>	1% Annual <u>Chance</u>	0.2% Annual <u>Chance</u>
MORSE RESERVOIR				
Entire	*	*	813.6	*

The Corps of Engineers HEC-HMS program was used to develop discharge data on the following streams: Bee Camp Creek, Clay Creek, Fall Creek, Ingerman Ditch, Jones Ditch, Long Branch, Shoemaker Ditch, Thorpe Creek, Williams Creek and Wilson Ditch. These data were coordinated with the Indiana Department of Natural Resources, the Natural Resources Conservation Service (formally the Soil Conservation Service), the U. S. Geological Survey and the Louisville District of the U. S. Army Corps of Engineers, through a Memorandum of Understanding dated May 6, 1976. Discharge curves for the 10%, 2%, 1%, and 0.2% annual chance floods were developed for each study stream using several different procedures and compared for consistency.

The levee certification study performed by Citizens Water with the assistance of Christopher B. Burke Engineering LLC in March 2016 for aforementioned levee segment included freeboard, closure, embankment protection, stability, settlement and interior drainage analyses. The drainage analysis revealed no significant flood hazard risk due to interior drainage. It is noted, however, local flooding may occur due to limitations of the drainage network, unrelated to the presence of the levee.

3.2. Hydraulic Analysis

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

Cross sections for the backwater analyses were obtained from a variety of sources including: physical survey data, IDNR contour mapping, USGS topographic mapping and local contour mapping.

Water-surface elevations for floods of the selected recurrence intervals were computed through use of the USACE HEC-RAS step-backwater computer program, the USACE HEC-2 step-backwater computer program, and the USGS E431 step-backwater computer program. For the new approximate and detailed

study reaches, the USACE HEC-RAS program was used. HEC-RAS is an updated version of the HEC-2 program used to perform step-backwater analyses.

Flood profiles were prepared for all streams studied by detailed methods and show computed water-surface elevations to an accuracy of 0.5 feet for floods of the selected recurrence intervals. For this countywide FIS, flood profiles and approved LOMRs have been consolidated into continuous stream reaches and adjusted to reflect the current vertical datum as described in Section 3.3. New profiles have been prepared for the new detailed studies and for the purposes of incorporating the LOMRs described in Section 2.1 above.

Starting water-surface elevations for the West Fork White River were determined using modeling for the West Fork White River in Marion County. Starting elevations for all other streams studied in detail were determined using normal depth.

Channel and overbank roughness factors (Manning’s “n” values) used in the hydraulic computations were chosen by engineering judgment and were based on field observations of the stream and floodplain areas. Channel and overbank roughness factors used in the detailed studies are summarized by stream in Table 12.

Table 12. Channel and Overbank Roughness Factors

<u>Stream</u>	<u>Roughness Coefficients</u>	
	<u>Main Channel</u>	<u>Overbanks</u>
Anna Kendall Drain	0.045 – 0.085	0.060 – 0.085
Bear Creek	0.025 – 0.040	0.030 – 0.090
Bee Camp Creek	0.04	0.041 – 0.120
Britton Branch	0.040 – 0.055	0.050 – 0.080
Carmel Creek	0.030 – 0.065	0.030 – 0.240
Cheeny Creek	0.040 – 0.045	0.050 – 0.120
Cicero Creek	0.045 – 0.050	0.080 – 0.120
Clay Creek	0.04 – 0.06	0.06 – 0.100
Cool Creek	0.040 – 0.060	0.050 – 0.120
Duck Creek	0.029 – 0.035	0.032 – 0.093
Fall Creek	0.060	0.070
Flatfork Creek	0.040	0.050 – 0.120
Henley Creek	0.030 – 0.065	0.030 – 0.240
Hinkle Creek	0.045	0.055 – 0.090
Hot Lick Creek	0.030 – 0.065	0.030 – 0.240
Ingeman Ditch	0.050	0.020 – 0.080
John Edwards Drain	0.035 – 0.045	0.04 – 0.08
Jones Ditch	0.04 – 0.055	0.05 – 0.10
Kirkendall Creek	0.032 – 0.065	0.030 – 0.090
Little Cicero Creek	0.045	0.120
Little Cool Creek	0.040 – 0.060	0.050 – 0.090
Little Eagle Creek	0.035 – 0.055	0.045 – 0.085

Table 12. Channel and Overbank Roughness Factors

<u>Stream</u>	<u>Roughness Coefficients</u>	
	<u>Main Channel</u>	<u>Overbanks</u>
Long Branch	0.04 – 0.055	0.050 – 0.100
Mallery Granger Ditch	0.030 – 0.050	0.045 – 0.080
Mill Creek	0.035 – 0.055	0.050 – 0.090
Mitchener Ditch	0.030 – 0.080	0.030 – 0.150
Mud Creek	0.020 – 0.050	0.040 – 0.090
Musselman Ditch	0.035 – 0.055	0.050 – 0.080
Sand Creek	0.020 – 0.050	0.045 – 0.070
Shoemaker Ditch	0.040	0.040 – 0.120
Sly Run	0.030 – 0.055	0.060 – 0.095
Sly Run East Fork	0.030 – 0.055	0.060 – 0.095
Sly Run West Fork	0.050 – 0.055	0.075 – 0.080
Spring Mill Run	0.040 – 0.060	0.050 – 0.080
Stony Creek	0.080	0.080
Symons Ditch	0.040 – 0.050	0.070 – 0.100
Thorpe Creek	0.040	0.040 – 0.120
Vestal Ditch	0.030 – 0.070	0.040 – 0.070
Well Run	*	*
West Fork White River	0.020 – 0.065	0.030 – 0.240
Wheeler & Wheeler Drain	0.035 – 0.045	0.050 – 0.080
William Lehr Ditch	0.035 – 0.070	0.035 – 0.090
Williams Creek	0.04 – 0.055	0.050 – 0.080
Wilson Ditch	0.040	0.050 – 0.090

*Data not available

For new approximate study areas in the November 19, 2014, analyses were based on field inspection and modeling of the stream reaches using simplified HEC-RAS models. Structural measurements or field surveying was not performed. Cross section geometry was derived from topographic mapping provided by the Hamilton County Surveyors Office with a maximum spacing of 100 feet. Starting elevations were assumed to be normal depth.

The levee certification study performed by Citizens Water with the assistance of Christopher B. Burke Engineering LLC in March 2016 for the aforementioned levee segment included freeboard, closure, embankment protection, stability, settlement and interior drainage analyses. The drainage analysis revealed no significant flood hazard risk due to interior drainage. It is noted, however, that local flooding may occur due to limitations of the drainage network, unrelated to the presence of the levee.

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

3.3. Vertical Datum

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

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

In November 19, 2014 revision, a vertical datum conversion of -0.41 feet was calculated at the centroid of the county and used to convert all elevations in Hamilton County from NGVD29 to NAVD88 using the National Geologic Survey's VERTCON online utility (VERTCON, 2005).

$$(\text{NGVD29} - 0.41 = \text{NAVD88})$$

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

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

4.0 **FLOODPLAIN MANAGEMENT APPLICATIONS**

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

4.1. Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance flood is employed to indicate additional areas of flood risk in the community. For each stream studied by detailed methods, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps provided by Hamilton County. This topographic mapping has a 2-contour interval and was derived from an aerial survey performed in 2005.

The 1- and 0.2-percent-annual-chance floodplain boundaries are shown on the FIRM (Exhibit 2). On this map, the 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A, AE, V, and VE); and the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1- and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

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

4.2. Floodways

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

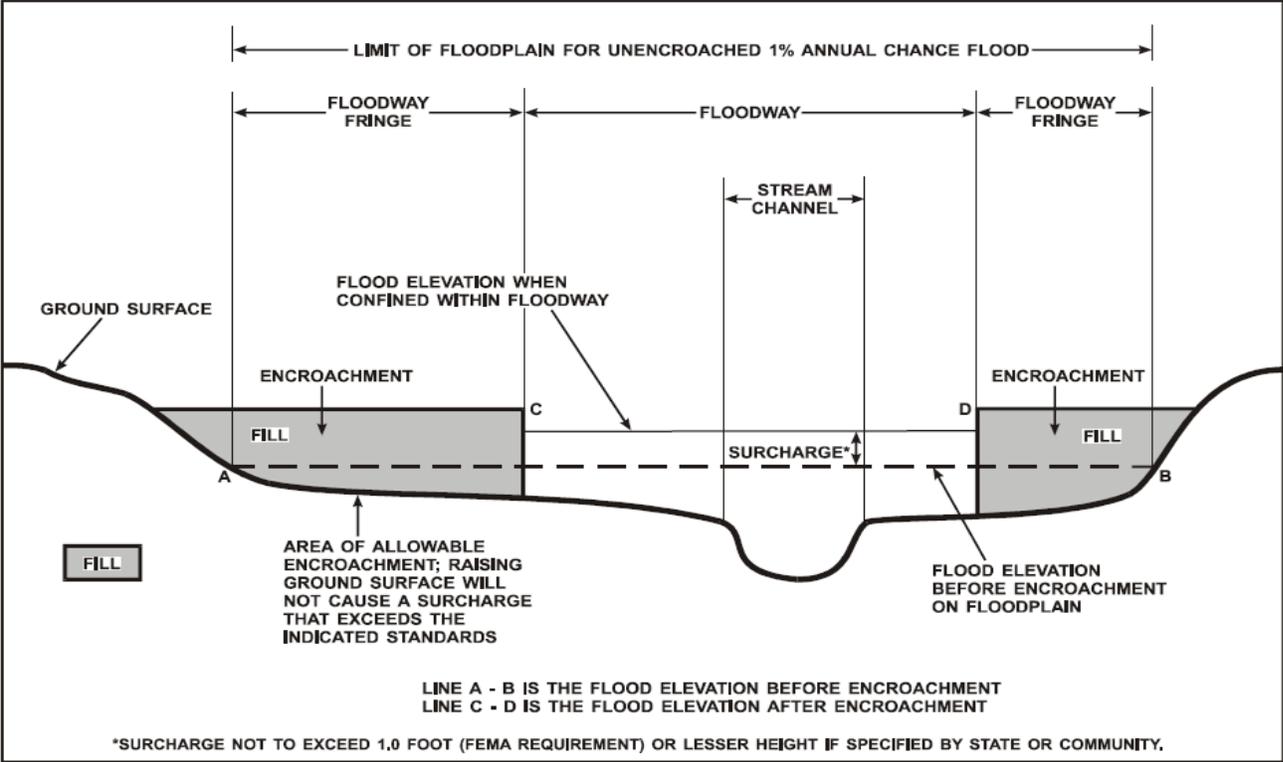
The State of Indiana, however, per Indiana Code IC 14-28-1 and Indiana Administrative Code 312 IAC 10, has designated that encroachment in the floodplain is limited to that which will cause no significant increase in flood height.

As a result, floodways for this study are delineated based on a flood surcharge of less than 0.15 feet. The floodways in this study were approved by the IDNR, and are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodway presented in this FIS report and on the FIRM was computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations have been tabulated for selected cross sections (Table 13). In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent-annual-chance flood more than .14 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1.

Figure 1: Floodway Schematic



FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Anna Kendall Drain								
A	1,531	409 ²	1,835	1.31	868.0	868.0	868.0	0.0
B	2,059	336	958	2.50	868.5	868.5	868.5	0.0
C	2,587	301	1,138	2.11	869.9	869.9	869.9	0.0
D	3,432	241	1,090	2.11	874.3	874.3	874.3	0.0
E	3,907	160	506	4.54	876.5	876.5	876.5	0.0
F	4,805	506	2,624	0.40	883.8	883.8	883.8	0.0
G	6,125	301	1,103	0.95	883.9	883.9	883.9	0.0
H	6,917	288	667	1.57	884.6	884.6	884.6	0.0
I	7,615	115	840	1.12	893.7	893.7	893.7	0.0
J	8,623	201	1,092	0.86	893.8	893.8	893.9	0.1
K	9,943	80	257	3.39	894.3	894.3	894.4	0.1
L	11,606	58	250	3.48	897.1	897.1	897.2	0.1
M	12,877	250	472	1.21	899.7	899.7	899.7	0.0
N	14,277	158 ²	162	3.52	902.9	902.9	903.0	0.1

¹Feet above confluence with Cool Creek

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

ANNA KENDALL DRAIN

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Bear Creek								
A	450	263	532	4.3	787.3	786.4 ²	786.5 ²	0.1
B	1,510	495	766	3.0	788.7	788.7	788.8	0.1
C	2,920	235 ³	324	7.1	791.2	791.2	791.3	0.1
D	3,000	225	911	2.5	792.4	792.4	792.4	0.0
E	4,120	180	374	6.2	794.6	794.6	794.6	0.0
F	5,500	255	683	3.4	798.5	798.5	798.6	0.1
G	7,620	261	543	4.2	802.1	802.1	802.1	0.0
H	9,210	240	593	3.9	805.5	805.5	805.6	0.1
I	9,340	208	1,131	2.0	807.4	807.4	807.5	0.1
J	10,765	214	674	3.0	808.8	808.8	808.9	0.1
K	12,180	395	1,018	2.0	810.2	810.2	810.3	0.1
L	12,300	405	963	2.1	810.3	810.3	810.4	0.1
M	13,720	185	429	4.7	812.2	812.2	812.3	0.1
N	15,085	291	747	2.7	815.0	815.0	815.1	0.1
O	15,200	365	1,186	1.7	816.2	816.2	816.2	0.0
P	15,980	226	766	2.7	816.5	816.5	816.5	0.0
Q	16,715	267	743 ³	2.7	817.1	817.1	817.2	0.1
R	16,820	314	1,317 ³	1.5	818.7	818.7	818.8	0.1
S	18,290	116	233	8.7	818.7	818.7	818.7	0.0
T	18,435	130	375	5.4	820.5	820.5	820.5	0.0
U	19,950	452	1,163	1.7	822.1	822.1	822.2	0.1
V	22,170	249	494	2.7	825.8	825.8	825.9	0.1
W	25,035	160	379	3.5	829.6	829.6	829.7	0.1
X	27,040	145	302	4.3	832.6	832.6	832.7	0.1
Y	27,290	195	424	3.1	834.4	834.4	834.4	0.0
Z	27,980	127	309	4.2	834.7	834.7	834.7	0.0

¹Feet above confluence with Duck Creek

²Elevation computed without consideration of backwater effects from Duck Creek

³Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

HAMILTON COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

BEAR CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Bear Creek (continued)								
AA	30,310 ¹	189 ³	337	3.1	838.1	838.1	838.2	0.1
AB	31,740 ¹	233 ³	505	2.0	840.5	840.5	840.5	0.0
AC	31,840 ¹	343 ³	692	1.5	841.1	841.1	841.1	0.0
AD	32,270 ¹	255	264	3.9	841.7	841.7	841.7	0.0
AE	33,140 ¹	375	575	1.8	842.8	842.8	842.8	0.0
AF	33,500 ¹	280	394	2.6	843.2	843.2	843.2	0.0
AG	33,735 ¹	303	596	1.7	843.7	843.7	843.7	0.0
AH	34,950 ¹	101	206	3.5	844.4	844.4	844.5	0.1
AI	35,850 ¹	100	197	3.7	845.8	845.8	845.9	0.1
Bee Camp Creek								
A	1003 ²	55	154	4.9	788.6	788.6	788.7	0.1
B	1187 ²	71	264	2.8	792.4	792.4	792.5	0.0
C	1443 ²	35	85	9.4	793.3	793.3	793.3	0.0
D	1757 ²	47	138	5.8	796.6	796.6	796.6	0.1
E	2246 ²	194	297	4.3	798.7	798.7	798.8	0.1
F	2894 ²	170	218	5.5	801.7	801.7	801.8	0.1
G	3649 ²	85	200	4.0	805.7	805.7	805.8	0.1
H	4167 ²	67	134	7.7	808.4	808.4	808.5	0.1
I	4371 ²	88	194	5.5	810.1	810.1	810.2	0.1
J	4858 ²	207	633	1.8	814.5	814.5	814.6	0.0
K	5315 ²	120	237	4.5	814.8	814.8	814.8	0.0
L	5646 ²	38	94	7.2	816.3	816.3	816.4	0.1
M	6025 ²	61	149	4.0	819.1	819.1	819.2	0.1
N	6635 ²	41	106	5.6	822.1	822.1	822.1	0.1
O	7097 ²	37	107	6.6	825.0	825.0	825.1	0.1
P	7351 ²	85	149	4.9	826.9	826.9	827.0	0.1

¹Feet above confluence with Duck Creek

²Feet above confluence with Geist Reservoir

³Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

BEAR CREEK – BEE CAMP CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Bee Camp Creek (continued)								
Q	7623 ¹	57	131	6.0	828.3	828.3	828.5	0.1
R	8069 ¹	109	182	4.4	831.1	831.1	831.2	0.1
S	8161 ¹	136	260	3.9	831.5	831.5	831.7	0.1
T	8349 ¹	120	192	4.3	832.2	832.2	832.3	0.1
U	8890 ¹	141	242	4.4	834.5	834.5	834.6	0.1
V	9341 ¹	72	150	4.4	836.2	836.2	836.3	0.1
W	10011 ¹	87	182	3.9	838.9	838.9	839.0	0.1
X	10785 ¹	51	125	5.0	842.2	842.2	842.3	0.1
Y	11438 ¹	116	282	2.9	844.1	844.1	844.2	0.1
Z	11918 ¹	126	224	3.6	845.0	845.0	845.1	0.1
AA	12793 ¹	93	150	3.8	847.8	847.8	847.9	0.1
AB	13415 ¹	56	137	3.9	849.4	849.4	849.5	0.1
Britton Branch								
A	148 ²	236	1,020	0.6	805.0	805.0	805.0	0.0
B	523 ²	298 ³	786	0.8	805.0	805.0	805.0	0.0
C	1068 ²	437	1,210	0.5	805.0	805.0	805.0	0.0
D	1648 ²	267 ³	585	1.1	805.0	805.0	805.0	0.0

¹Feet above confluence with Geist Reservoir

²Feet above 131st Street

³Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

HAMILTON COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

BEE CAMP CREEK – BRITTON BRANCH

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Carmel Creek								
A	0.91	605	1,319	2.4	740.0	740.0	740.1	0.1
B	1.02	1,180	3,611	0.9	740.5	740.5	740.6	0.1
C	1.16	979	2,688	1.2	740.7	740.7	740.8	0.1
D	1.23	1,040 ²	2,504	1.3	740.8	740.8	740.9	0.1
E	1.30	899	1,710	1.9	740.8	740.8	740.9	0.1
F	1.38	589	561	5.7	740.8	740.8	740.9	0.1
G	1.45	412 ²	643	5.0	745.0	745.0	745.0	0.0
H	1.51	635	2,316	1.4	745.7	745.7	745.8	0.1
I	1.60	619	554	5.8	746.3	746.3	746.4	0.1
J	1.66	500	1,029	3.1	747.7	747.7	747.8	0.1
K	1.81	120	646	5.0	750.0	750.0	750.1	0.1
L	1.96	360	619	5.2	751.7	751.7	751.8	0.1
M	2.07	435	625	5.1	753.5	753.5	753.6	0.1
N	2.17	310 ²	658	4.9	756.0	756.0	756.0	0.0
O	2.23	197	650	4.9	757.8	757.8	757.9	0.1
P	2.29	396 ²	1,814	1.8	760.6	760.6	760.6	0.0
Q	2.40	220 ²	740	4.3	761.2	761.2	761.3	0.1
R	2.49	470	1,276	2.5	763.4	763.4	763.5	0.1
S	2.56	380	1,168	2.7	764.4	764.4	764.5	0.1
T	2.63	453	1,092	2.9	765.8	765.8	765.9	0.1
U	2.71	370	3,509	0.8	773.8	773.8	773.9	0.1
V	2.79	405	3,212	0.8	773.8	773.8	773.9	0.1
W	2.84	460	2,537	1.1	773.8	773.8	773.9	0.1
X	2.89	470	2,096	1.3	773.8	773.8	773.9	0.1
Y	2.96	320 ²	1,248	2.2	773.9	773.9	774.0	0.1
Z	3.01	290	974	2.8	774.4	774.4	774.5	0.1
AA	3.06	305	687	3.9	775.0	775.0	775.0	0.0

¹Miles above confluence with West Fork White River

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

CARMEL CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Carmel Creek (Continued)								
AB	3.10	294	800	3.37	775.7	775.7	775.8	0.1
AC	3.13	315	542	4.98	776.6	776.6	776.6	0.0
AD	3.19	410	965	1.40	778.3	778.3	778.3	0.0
AE	3.23	613	1,125	2.10	778.5	778.5	778.5	0.0
AF	3.29	340	1,162	2.07	783.9	783.9	784.0	0.1
AG	3.36	360 ²	927	2.59	784.1	784.1	784.2	0.1
AH	3.42	240	709	3.38	786.4	786.4	786.4	0.0
AI	3.44	210	724	3.32	786.9	786.9	786.9	0.0
AJ	3.48	241 ²	878	2.73	787.9	787.9	788.0	0.1
AK	3.50	170	691	3.47	789.0	789.0	789.1	0.1
AL	3.53	130	621	3.86	790.2	790.2	790.3	0.1
AM	3.61	175 ²	684	2.56	791.2	791.2	791.3	0.1
AN	3.67	169	563	3.11	791.9	791.9	791.9	0.0
AO	3.72	136 ²	446	3.92	792.8	792.8	792.9	0.1
AP	3.76	270	708	2.47	793.9	793.9	793.9	0.0
AQ	3.78	275	2,065	0.85	798.2	798.2	798.2	0.0
AR	3.81	231	1,088	1.61	798.2	798.2	798.2	0.0
AS	3.84	190	914	1.91	798.3	798.3	798.3	0.0
AT	3.89	200	729	2.40	798.5	798.5	798.6	0.1
AU	3.95	215 ²	586	2.99	799.5	799.5	799.6	0.1
AV	3.99	220	464	3.78	800.3	800.3	800.4	0.1
AW	4.00	235	740	2.37	801.2	801.2	801.3	0.1
AX	4.02	275	802	2.18	801.4	801.4	801.4	0.0
AY	4.11	165	455	3.84	803.3	803.3	803.3	0.0
AZ	4.16	115	428	4.09	805.2	805.2	805.2	0.0
BA	4.18	200	687	2.55	805.6	805.6	805.6	0.0
BB	4.22	205	628	2.79	806.1	806.1	806.2	0.1

¹Miles above confluence with West Fork White River

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

CARMEL CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Carmel Creek (Continued)								
BC	4.25	170	421	4.16	807.2	807.2	807.2	0.0
BD	4.27	150	764	2.29	808.3	808.3	808.4	0.1
BE	4.29	185	641	2.73	808.4	808.4	808.5	0.1
BF	4.32	180	813	2.15	808.6	808.6	808.7	0.1
BG	4.40	175 ²	436	4.01	809.4	809.4	809.4	0.0
BH	4.46	190	703	2.49	811.3	811.3	811.4	0.1
BI	4.55	200	589	2.97	812.9	812.9	812.9	0.0
BJ	4.65	250	740	2.36	814.5	814.5	814.5	0.0
BK	4.67	259	1,609	1.09	818.5	818.5	818.6	0.1
BL	4.74	349	1,868	0.94	818.5	818.5	818.6	0.1
BM	4.77	*	*	*	826.2	*	*	*
BN	4.92	*	*	*	826.2	*	*	*
BO	5.04	*	*	*	826.2	*	*	*
BP	5.13	*	*	*	826.2	*	*	*
BQ	5.28	*	*	*	826.2	*	*	*
BR	5.30	*	*	*	826.2	*	*	*
BS	5.34	*	*	*	826.2	*	*	*
BT	5.38	*	*	*	826.3	*	*	*

¹Miles above confluence with West Fork White River

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

*Floodway data not computed

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

CARMEL CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cheeney Creek								
A	0.135	287	494	2.8	741.3	731.7 ²	731.8 ²	0.1
B	0.369	115	305	4.5	741.3	737.5 ²	737.5 ²	0.0
C	0.603	180	356	3.8	743.9	744.0	744.0	0.0
D	0.639	185	317	4.2	744.9	744.9	745.0	0.1
E	0.659	220	354	3.8	746.9	746.9	747.0	0.1
F	0.697	132	374	3.6	748.1	748.1	748.2	0.1
G	0.725	175	358	3.8	749.4	749.4	749.5	0.1
H	0.791	175	599	2.2	751.2	751.2	751.3	0.1
I	0.852	175	500	2.7	751.8	751.8	751.9	0.1
J	0.932	190	507	2.4	753.1	753.1	753.2	0.1
K	1.043	210	570	2.3	755.6	755.6	755.7	0.1
L	1.121	155	373	3.6	756.7	756.7	756.8	0.1
M	1.393	110	364	3.7	761.7	761.7	761.8	0.1
N	1.509	192	501	2.7	763.7	763.7	763.8	0.1
O	1.626	117	365	3.7	766.5	766.5	766.5	0.0
P	1.65	148	363	3.7	766.9	766.9	767.0	0.1
Q	1.709	150	739	1.7	770.3	770.3	770.3	0.0
R	1.766	180	800	1.6	770.6	770.6	770.6	0.0
S	1.849	150	450	2.5	770.9	770.9	770.9	0.0
T	1.938	185	430	3.0	771.8	771.8	771.9	0.1
U	1.997	246	528	2.4	772.8	772.8	772.9	0.1
V	2.111	240	692	1.8	774.6	774.6	774.7	0.1
W	2.173	155	417	2.5	775.1	775.1	775.2	0.1
X	2.205	140	350	3.0	775.6	775.6	775.6	0.0
Y	2.342	135	370	2.8	777.7	777.7	777.8	0.1
Z	2.457	135	370	2.8	779.0	779.0	779.1	0.1

¹Miles above confluence with West Fork White River

²Elevation computed without consideration of backwater effects from West Fork White River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

CHEENEY CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cheeney Creek (Continued)								
AA	2.552	110	199	5.3	780.6	780.6	780.6	0.0
AB	2.621	105	308	3.4	783.0	783.0	783.0	0.0
AC	2.653	160	386	2.7	783.4	783.4	783.5	0.1
AD	2.704	190	449	2.3	784.2	784.2	784.3	0.1
AE	2.726	105	288	3.6	784.6	784.6	784.6	0.0
AF	2.749	186	584	1.8	785.7	785.7	785.8	0.1
AG	2.782	175	427	2.5	786.0	786.0	786.1	0.1
AH	2.918	215	605	1.7	789.1	789.1	789.1	0.0
AI	3.057	95	250	3.2	790.4	790.4	790.5	0.1
AJ	3.24	45	109	6.4	792.6	792.6	792.7	0.1
AK	3.257	105	339	2.1	793.9	793.9	793.9	0.0
AL	3.299	125	308	2.3	794.2	794.2	794.2	0.0
AM	3.319	115	256	2.7	794.3	794.3	794.4	0.1
AN	3.355	136	316	2.2	794.8	794.8	794.9	0.1
AO	3.524	82	544	1.0	802.6	802.6	802.6	0.0
AP	3.557	94	533	1.0	802.6	802.6	802.6	0.0
AQ	3.626	95	415	1.3	802.6	802.6	802.7	0.1
AR	3.679	38	207	2.6	802.7	802.7	802.8	0.1
AS	3.717	56	234	2.4	802.8	802.8	802.9	0.1
AT	3.743	46	214	2.6	802.9	802.9	803.0	0.1
AU	3.769	35	193	2.8	803.0	803.0	803.1	0.1
AV	3.803	55	199	2.8	803.2	803.2	803.3	0.1
AW	3.848	59	224	2.4	803.4	803.4	803.5	0.1
AX	3.88	75	238	2.3	803.5	803.5	803.6	0.1
AY	3.915	94	239	2.3	803.7	803.7	803.8	0.1
AZ	3.968	40	170	3.2	804.1	804.1	804.1	0.0

¹Miles above confluence with West Fork White River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

CHEENEY CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cheeney Creek (Continued)								
BA	4.006 ⁴	40	143	3.8	804.3	804.3	804.4	0.1
BB	4.052 ⁴	47	201	2.7	804.7	804.7	804.8	0.1
Cicero Creek								
A	8,237 ¹	675	4,482	2.4	758.8	758.8	758.9	0.1
B	9,504 ¹	682	4,895	2.2	760.1	760.1	760.2	0.1
C	10,718 ¹	879 ²	5,786	1.9	760.8	760.8	760.9	0.1
D	13,517 ¹	1,226	7,232	1.5	763.2	763.2	763.3	0.1
E	16,262 ¹	1,016 ²	4,224	2.6	764.7	764.7	764.8	0.1
F	19,272 ¹	490	2,754	4.0	767.4	767.4	767.5	0.1
G	25,340 ¹	1,257 ³	3,463	2.8	814.0	814.0	814.0	0.0
H	0 ⁵	1,160 ³	3,468	2.8	815.8	815.8	815.8	0.0
I	2,210 ⁵	361 ²	2,125	3.2	818.2	818.2	818.3	0.1
J	3,590 ⁵	349 ²	2,533	2.6	819.7	819.7	819.8	0.1
K	4,470 ⁵	469	4,321	1.6	820.8	820.8	820.9	0.1
L	5,530 ⁵	501 ²	3,211	2.1	821.2	821.2	821.3	0.1
M	6,200 ⁵	502 ²	3,330	2.0	822.2	822.2	822.3	0.1

¹Feet above confluence with West Fork White River

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

³Widths represent State of Indiana guidelines for floodways behind dams

⁴Miles above confluence with West Fork White River

⁵Feet above Morse Reservoir

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

CHEENEY CREEK – CICERO CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Clay Creek								
A	0.059	84	159	3.4	827.3	827.3	827.4	0.1
B	0.156	117	267	2.0	830.8	830.8	830.9	0.1
C	0.321	48	101	5.3	834.0	834.0	834.1	0.1
D	0.433	110	363	1.5	838.1	838.1	838.2	0.1
E	0.660	170	268	2.1	841.1	841.1	841.1	0.0
F	0.816	162	598	0.8	847.3	847.3	847.4	0.1
G	0.926	84	306	1.2	850.3	850.3	850.4	0.1
H	1.012	25	81	4.5	850.8	850.8	850.9	0.1
I	1.154	60	91	4.0	855.6	855.6	855.7	0.1
J	1.252	75	185	2.1	861.0	861.0	861.1	0.1
K	1.391	74	95	3.9	864.8	864.8	864.9	0.1

¹Miles above confluence with Williams Creek

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

CLAY CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cool Creek								
A	1903	275	1261	4.4	742.1	736.4 ²	736.5	0.1
B	2525	247	1528	3.6	742.1	738.2 ²	738.3	0.1
C	2851	212	1322	4.2	742.1	738.7 ²	738.8	0.1
D	3291	256	1462	3.8	742.1	739.8 ²	739.8	0.0
E	3572	450	2215	2.4	742.1	740.3 ²	740.8	0.1
F	4200	420	2123	2.6	742.1	740.7 ²	740.8	0.1
G	4551	321	1535	3.6	742.1	741.2 ²	741.3	0.1
H	4925	590	2338	2.2	742.1	742.1	742.2	0.1
I	5488	527	1856	3.0	742.9	742.9	742.9	0.0
J	5963	336	1538	3.6	744.0	744.0	744.1	0.1
K	6346	400	1401	3.7	744.9	744.9	745.0	0.1
L	6772	316	1441	3.9	746.0	746.0	746.1	0.1
M	7071	340 ³	2165	2.5	747.8	747.8	747.8	0.0
N	7181	315 ³	1787	3.1	748.0	748.0	748.0	0.0
O	8159	454	2219	2.5	749.2	749.2	749.3	0.1
P	8399	334	1944	2.7	749.6	749.6	749.7	0.1
Q	9041	148	777	7.1	750.4	750.4	750.5	0.1
R	9451	534	3007	1.7	753.8	753.8	753.8	0.0
S	9662	535 ³	2791	1.8	754.2	754.2	754.3	0.1
T	9881	580	2588	2.1	754.3	754.3	754.4	0.1
U	10047	570	2415	2.2	754.6	754.6	754.6	0.0
V	10509	274	1021	5.3	754.7	754.7	754.8	0.1
W	10867	416	1790	3.0	756.2	756.2	756.3	0.1
X	11197	439	1642	3.3	756.7	756.7	756.8	0.1
Y	11576	511	1507	3.6	757.5	757.5	757.6	0.1
Z	11862	513	1905	2.8	758.3	758.3	758.4	0.1

¹Feet above confluence with West Fork White River

²Elevation computed without consideration of backwater effects from West Fork White River

³Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

COOL CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cool Creek (Continued)								
AA	12038	382	1232	4.4	758.6	758.6	758.7	0.1
AB	12244	224	829	6.5	758.8	758.8	758.9	0.1
AC	12456	306	1484	3.6	760.5	760.5	760.6	0.1
AD	12636	317	1629	3.3	761.0	761.0	761.1	0.1
AE	12826	357	1785	3.0	761.6	761.6	761.7	0.1
AF	13603	486	1607	3.4	762.7	762.7	762.8	0.1
AG	13771	494	2099	2.6	764.5	764.5	764.6	0.1
AH	14076	290	1774	3.0	764.8	764.8	764.9	0.1
AI	14841	614	1782	3.0	765.7	765.7	765.8	0.1
AJ	15073	570	2153	2.5	766.1	766.1	766.2	0.1
AK	15320	257	848	6.4	766.2	766.2	766.2	0.0
AL	16547	477 ²	2062	2.5	770.1	770.1	770.2	0.1
AM	16969	445	1607	3.2	770.5	770.6	770.7	0.1
AN	17180	424	1500	3.4	771.1	771.1	771.2	0.1
AO	17722	267	977	5.3	772.3	772.3	772.4	0.1
AP	17953	233	938	5.5	773.2	773.2	773.3	0.1
AQ	18491	363	2708	1.9	776.3	776.3	776.3	0.0
AR	18948	519	2438	2.1	776.5	776.5	776.5	0.0
AS	19102	581 ²	2949	1.7	777.0	777.0	777.1	0.1
AT	19602	508	2069	2.5	777.3	777.3	777.4	0.1
AU	20352	339	1279	4.0	778.7	778.7	778.8	0.1
AV	20882	456	1778	2.9	780.4	780.4	780.5	0.1
AW	21302	406	1474	3.5	781.4	781.4	781.5	0.1
AX	21602	278	1492	3.5	782.1	782.1	782.2	0.1
AY	21712	218	1059	4.9	782.2	782.2	782.3	0.1
AZ	22313	187	828	6.2	784.5	784.5	784.6	0.1

¹Feet above confluence with West Fork White River

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

COOL CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cool Creek (Continued)								
BA	23588	450	3519	1.4	791.1	791.1	791.2	0.1
BB	23968	497	3384	1.5	791.2	791.2	791.3	0.1
BC	24288	388	2332	2.1	791.4	791.4	791.5	0.1
BD	24483	318	1648	3.0	791.5	791.5	791.6	0.1
BE	24913	435	2391	2.1	792.5	792.5	792.6	0.1
BF	25418	437	2110	2.3	793.2	793.2	793.3	0.1
BG	25768	393	2031	2.4	793.8	793.8	793.9	0.1
BH	26858	443	2665	1.9	797.7	797.7	797.7	0.0
BI	27358	506	2560	1.9	798.1	798.1	798.1	0.0
BJ	27858	350	1381	3.6	798.4	798.4	798.5	0.1
BK	28488	585	2115	2.3	800.0	800.0	800.1	0.1
BL	29934	358	1854	2.7	805.3	805.3	805.3	0.0
BM	30519	450 ²	780	5.3	806.2	806.2	806.2	0.0
BN	32109	411	2502	1.6	809.5	809.5	809.5	0.0
BO	34708	357	1686	2.4	814.4	814.4	814.5	0.1
BP	35223	337	1261	3.3	815.4	815.4	815.5	0.1
BQ	35683	614	2644	1.6	816.4	816.4	816.5	0.1
BR	37365	465	2045	1.8	819.2	819.2	819.3	0.1
BS	37770	446	1762	2.1	819.5	819.5	819.6	0.1
BT	38500	147	635	5.9	821.0	821.0	821.1	0.1
BU	39015	505	2144	1.7	822.5	822.5	822.6	0.1
BV	41101	596	2906	1.3	828.5	828.5	828.6	0.1
BW	41586	461	2029	1.8	829.0	829.0	829.1	0.1
BX	42116	621	2236	1.7	829.7	829.7	829.8	0.1
BY	42801	536	1706	2.2	831.6	831.6	831.6	0.0
BZ	45082	428	1984	1.4	839.3	839.3	839.4	0.1

¹Feet above confluence with West Fork White River

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

COOL CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cool Creek (Continued)								
CA	45602	420	1051	2.6	839.8	839.8	839.9	0.1
CB	46611	332	1561	1.7	842.7	842.7	842.8	0.1
CC	46861	262	1128	2.4	842.8	842.8	842.9	0.1
CD	47596	437	1891	1.4	844.3	844.3	844.4	0.1
CE	48991	461	1333	2.0	846.2	846.2	846.3	0.1
CF	50412	294	1048	2.6	849.2	849.2	849.3	0.1
CG	50692	349	1168	2.3	849.9	849.9	850.0	0.1
CH	51077	375	1641	1.6	850.6	850.6	850.7	0.1
CI	51367	535	2404	1.1	850.9	850.9	851.0	0.1
CJ	51877	608	1848	1.5	851.2	851.2	851.3	0.1
CK	52347	433	1376	1.8	851.9	851.9	852.0	0.1
CL	52942	496	1551	1.6	852.8	852.8	852.9	0.1
CM	53890	677	1900	1.3	854.4	854.4	854.5	0.1
CN	56675	591	1462	1.7	860.2	860.2	860.2	0.0
CO	58473	456	2006	0.7	863.1	863.1	863.2	0.1
CP	58823	488	1569	0.9	863.2	863.2	863.2	0.0
CQ	59368	426	1289	1.1	863.3	863.3	863.4	0.1
CR	60118	457	1234	1.2	863.6	863.6	863.7	0.1
CS	60978	477	1052	1.4	864.2	864.2	864.3	0.1
CT	61753	279 ²	698	2.1	865.1	865.1	865.2	0.1
CU	62228	153	458	3.1	866.3	866.3	866.4	0.1
CV	62773	309	945	1.5	867.2	867.2	867.3	0.1
CW	63218	454	1421	1.0	867.4	867.4	867.5	0.1
CX	63663	464 ²	1585	0.9	867.6	867.6	867.7	0.1
CY	64198	434	1315	1.1	867.7	867.7	867.8	0.1
CZ	64848	325 ²	774	1.9	868.2	868.2	868.3	0.1

¹Feet above confluence with West Fork White River

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

COOL CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cool Creek (Continued)								
DA	65458	400	972	1.2	868.9	868.9	869.0	0.1
DB	66160	24 ²	106	11.3	869.6	869.6	869.7	0.1
DC	66590	41 ²	258	4.7	874.4	874.4	874.5	0.1
DD	67790	654 ²	2850	0.4	875.0	875.0	875.1	0.1
DE	68890	570	1306	0.9	875.1	875.1	875.2	0.1
DF	69890	543 ²	1005	1.2	875.7	875.7	875.7	0.0
DG	70870	307 ²	418	2.9	877.4	877.4	877.5	0.1
DH	71260	430	889	1.1	878.9	878.9	879.0	0.1
DI	71549	450	450	1.3	879.3	879.3	879.4	0.1
DJ	71938	289	289	1.9	879.8	879.8	879.9	0.1
DK	72338	261	261	1.7	880.7	880.7	880.8	0.1
DL	73438	286 ²	611	1.6	882.8	882.8	882.9	0.1
DM	74608	14 ²	102	7.1	885.5	885.5	885.5	0.0
DN	74746	14 ²	114	6.3	886.4	886.4	886.5	0.1
DO	75511	151 ²	402	1.8	887.4	887.4	887.5	0.1
DP	76711	205	237	3.0	890.2	890.2	890.2	0.0
DQ	77311	187 ²	317	2.3	891.7	891.7	891.7	0.0

¹Feet above confluence with West Fork White River

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

COOL CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Duck Creek								
A	1,395	867	2,106	3.4	783.0	777.5 ²	777.6	0.1
B	3,090	794	2,529	2.7	783.8	779.3 ²	779.4	0.1
C	4,325	400	1,198	5.7	783.8	780.7 ²	780.8	0.1
D	5,715	525	938	7.3	784.2	784.2	784.3	0.1
E	5,835	570	1,164	5.9	784.9	784.9	784.9	0.0
F	7,310	615	3,556	1.9	786.2	786.2	786.3	0.1
G	8,350	449	1,885	3.6	786.4	786.4	786.5	0.1
H	10,240	552 ³	2,276	2.7	788.0	788.0	788.1	0.1
I	11,100	665	1,950	3.1	788.8	788.8	788.9	0.1
J	12,440	370	810	7.5	791.0	791.0	791.1	0.1
K	12,570	400	857	7.1	792.2	792.2	792.2	0.0
L	13,300	374	1,331	4.6	794.3	794.3	794.4	0.1
M	15,635	280	1,224	5.0	797.8	797.8	797.9	0.1
N	16,920	840	3,689	1.6	799.0	799.0	799.1	0.1
O	17,020	825	3,334	1.8	799.2	799.2	799.3	0.1
P	18,630	760	2,441	2.5	799.6	799.6	799.7	0.1
Q	20,145	599	1,866	3.3	800.6	800.6	800.7	0.1
R	22,300	369 ³	1,292	4.7	802.6	802.6	802.7	0.1
S	23,380	438	1,908	3.2	803.7	803.7	803.8	0.1
T	23,500	548	2,369	2.6	804.8	804.8	804.8	0.0
U	24,660	505	3,146	1.9	805.3	805.3	805.4	0.1
V	25,890	628	3,040	1.9	805.5	805.5	805.6	0.1
W	27,280	552	1,762	3.4	806.0	806.0	806.1	0.1
X	28,550	425	1,754	3.4	807.1	807.1	807.2	0.1
Y	30,000	400	920	6.5	808.3	808.3	808.4	0.1
Z	30,090	425	910	6.6	808.4	808.4	808.5	0.1

¹Feet above confluence with West Fork White River

²Elevation computed without consideration of backwater effects from West Fork White River

³Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

DUCK CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Duck Creek (Continued)								
AA	32,080 ¹	528	2,397	2.2	810.6	810.6	810.7	0.1
AB	33,420 ¹	440	2,038	2.6	811.3	811.3	811.4	0.1
AC	34,935 ¹	708	2,196	2.5	812.4	812.4	812.5	0.1
AD	36,390 ¹	547	1,738	3.1	813.5	813.5	813.6	0.1
AE	38,260 ¹	419	1,347	4.0	815.2	815.2	815.3	0.1
AF	39,080 ¹	410	1,784	3.0	816.2	816.2	816.3	0.1
AG	39,820 ¹	275	889	6.1	816.6	816.6	816.7	0.1
AH	39,950 ¹	275	708	7.6	816.8	816.8	816.8	0.0
AI	40,770 ¹	335 ³	1,717	3.1	818.4	818.4	818.5	0.1
AJ	42,570 ¹	349	1,998	2.7	819.2	819.2	819.3	0.1
AK	44,040 ¹	407	1,527	3.5	819.9	819.9	820.0	0.1
AL	45,600 ¹	418	1,878	2.9	821.0	821.0	821.1	0.1
AM	47,330 ¹	267	1,444	3.5	822.0	822.0	822.1	0.1
AN	48,250 ¹	371	1,717	2.9	822.6	822.6	822.7	0.1
Fall Creek								
A	24.95 ²	1086	3104	3.5	788.5	788.5	788.6	0.1
B	25.19 ²	708	2113	5.2	790.1	790.1	790.2	0.1
C	25.57 ²	552	3473	2.9	792.7	792.7	792.8	0.1
D	26.28 ²	1183	5823	1.7	796.0	796.0	796.1	0.1
E	26.59 ²	825	2783	3.6	796.8	796.8	796.9	0.1

¹Feet above confluence with West Fork White River

²Miles above confluence with West Fork White River

³Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

DUCK CREEK – FALL CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Flatfork Creek								
A	1130	245	547	4.2	791.9	791.9	792.0	0.1
B	1968	275	581	3.7	793.9	793.9	794.1	0.1
C	2776	288	509	3.8	796.6	796.6	796.7	0.1
D	3314	174	388	5.0	799.1	799.1	799.2	0.1
E	4146	80	267	4.9	802.1	802.1	802.2	0.1
F	4656	153	369	5.5	804.2	804.2	804.3	0.1
G	5239	256	561	4.6	806.6	806.6	806.8	0.1
H	5855	49	175	6.6	808.9	808.9	809.0	0.1
I	6096	164	389	5.1	810.3	810.3	810.4	0.1
J	6484	195	510	3.9	811.5	811.5	811.6	0.1
K	6769	336	644	3.2	812.1	812.1	812.2	0.1
L	7469	295	565	4.5	813.7	813.7	813.8	0.1
M	8234	110	313	3.6	815.6	815.6	815.7	0.1
N	8312	105	239	7.4	816.4	816.4	816.4	0.0
O	8611	125	353	4.2	818.8	818.8	818.7	0.0
P	9806	212	549	4.0	821.3	821.3	821.4	0.1
Q	10724	170	397	4.4	823.6	823.6	823.7	0.0
R	11454	340	1499	1.9	830.2	830.2	830.3	0.0
S	11621	334	1501	1.8	830.3	830.3	830.3	0.0
T	12855	87	433	3.9	830.6	830.6	830.7	0.1
U	13919	193	541	3.6	832.0	832.0	832.1	0.1
V	14944	75	221	5.3	834.2	834.2	834.2	0.1
W	15911	178	483	4.1	837.4	837.4	837.5	0.1

¹Feet above confluence with Fall Creek

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

FLATFORK CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Henley Creek								
A	0.07 ¹	220	458	1.51	860.1	860.1	860.2	0.1
B	0.12 ¹	265	338	2.04	860.8	860.8	860.9	0.1
Hinkle Creek								
A	0 ²	862	2,430	3.0	813.5	813.5	813.6	0.1
B	3,326 ²	941	2,031	3.5	819.5	819.5	819.6	0.1
C	5,227 ²	660	1,951	3.7	825.0	825.0	825.1	0.1
D	6,970 ²	991	1,464	4.9	829.4	829.4	829.5	0.1
E	15,160 ²	537 ⁴	3,174	2.1	847.7	850.3	850.4	0.1
F	16,039 ²	437 ⁴	2,980	2.3	848.6	850.5	850.6	0.1
G	17,290 ²	394 ⁴	2,068	3.3	850.7	851.2	851.4	0.2
H	18,600 ²	347	2,110	3.2	852.6	852.9	853.0	0.1
I	19,940 ²	274	1,482	4.6	855.1	855.1	855.2	0.1
J	21,390 ²	420	2,441	2.8	857.4	857.4	857.5	0.1
Hot Lick Creek								
A	0.11 ³	191	201	2.7	769.6	769.6	769.6	0.0
B	0.13 ³	38	74	7.3	771.3	771.3	771.3	0.0
C	0.15 ³	33	75	7.2	772.4	772.4	772.4	0.0
D	0.18 ³	50	138	3.9	775.5	775.5	775.5	0.0
E	0.20 ³	63	135	4.0	775.8	775.8	775.8	0.0
F	0.23 ³	75	117	4.6	777.3	777.3	777.3	0.0
G	0.26 ³	71	103	5.3	779.5	779.5	779.5	0.0

¹Miles above confluence with Williams Creek

²Feet above Morse Reservoir

³Miles above confluence with Cool Creek

⁴Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

**HENLEY CREEK – HINKLE CREEK
HOT LICK CREEK**

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Ingerman Ditch								
A	0.909	205	459	2.8	772.0	772.0	772.0	0.0
B	1.007	150	332	3.8	774.2	774.2	774.3	0.1
C	1.085	175	470	2.7	776.2	776.2	776.3	0.1
D	1.171	106	357	3.5	777.6	777.6	777.7	0.1
E	1.238	156	417	3.0	778.9	778.9	779.0	0.1
F	1.297	165	228	5.5	780.2	780.2	780.3	0.1
G	1.484	193	1128	1.1	789.0	789.0	789.0	0.0
H	1.668	171	646	1.3	789.1	789.1	789.1	0.0
I	1.728	124	411	2.1	789.3	789.3	789.3	0.0
J	1.810	138	393	2.2	789.7	789.7	789.8	0.1
K	1.866	107	400	2.2	790.0	790.0	790.1	0.1
L	2.045	60	118	3.8	792.2	792.2	792.3	0.1
M	2.125	89	191	2.4	794.0	794.0	794.1	0.1
N	2.246	25	104	4.3	796.6	796.6	796.6	0.0

¹Miles above confluence with West Fork White River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

INGERMAN DITCH

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
John Edwards Ditch								
A	0.186	270	624	2.2	881.0	879.9 ²	880.0	0.1
B	0.269	307	703	2.0	881.0	880.6 ²	880.7	0.1
C	0.364	284	728	1.9	881.3	881.3	881.4	0.1
D	0.465	264	554	2.5	882.0	882.0	882.1	0.1
E	0.560	291	570	2.2	882.8	882.8	882.9	0.1
F	0.674	317	508	2.4	883.9	883.9	884.0	0.1
G	0.737	261	504	2.4	884.6	884.6	884.7	0.1
H	0.943	223	591	1.9	888.1	888.1	888.2	0.1
I	0.995	185	451	2.5	888.5	888.5	888.6	0.1
J	1.127	183	447	2.5	890.2	890.2	890.3	0.1
K	1.225	115	396	2.9	891.6	891.6	891.6	0.0
L	1.327	82	226	5.0	892.4	892.4	892.4	0.0
M	1.478	242	507	1.9	894.2	894.2	894.2	0.0
N	1.607	303	608	1.6	895.2	895.2	895.3	0.1
O	1.650	111	300	2.8	895.4	895.4	895.4	0.0
P	1.751	157	352	2.4	896.4	896.4	896.5	0.1
Q	1.878	174	367	2.3	897.2	897.2	897.3	0.1
R	2.030	216	517	1.6	899.2	899.2	899.2	0.0
S	2.170	231	450	1.9	899.6	899.6	899.6	0.0
T	2.320	394	945	0.9	900.3	900.3	900.3	0.0
U	2.503	130	340	2.5	900.9	900.9	901.0	0.1
V	2.712	162	449	1.2	901.4	901.4	901.5	0.1
W	2.830	176	412	1.3	901.5	901.5	901.6	0.1
X	2.927	291	866	0.6	901.6	901.6	901.7	0.1

¹Miles above confluence with Little Eagle Creek

²Elevation without considering backwater effect from Little Eagle Creek

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

JOHN EDWARDS DRAIN

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Jones Ditch								
A	707	457	3641	0.9	861.1	861.1	861.1	0.0
B	2266	535	2034	1.8	861.3	861.3	861.4	0.1
C	3081	369	1697	2.0	861.9	861.9	861.9	0.0
D	3892	416	1934	1.9	862.4	862.4	862.4	0.0
E	5634	482	2082	1.7	864.7	864.7	864.8	0.1
F	6997	400	1835	1.9	865.3	865.3	865.4	0.1
G	9048	519	2666	1.1	867.3	867.3	867.4	0.1
H	10,950	469	1789	1.7	868.7	868.7	868.8	0.1
I	12,011	420	1564	1.1	869.5	869.5	869.6	0.1
J	14,373	344	1602	1.4	871.5	871.5	871.5	0.0
K	17,453	479	2419	0.7	876.3	876.3	876.3	0.0
L	22,300	60	226	5.3	893.8	893.8	893.9	0.1
M	23,986	95	333	3.6	905.2	905.2	905.3	0.1

¹Feet above confluence with Hinkle Creek

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

JONES DITCH

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Kirkendall Creek								
A	625	205	212	4.9	768.0	768.0	768.0	0.0
B	1,050	130	227	4.7	768.9	768.9	769.0	0.1
C	1,545	65	213	4.8	771.2	771.2	771.3	0.1
D	2,280	130	387	2.7	774.3	774.3	774.4	0.1
E	3,180	225	579	1.8	776.7	776.7	776.8	0.1
F	4,185	110	261	3.9	779.7	779.7	779.8	0.1
G	5,560	420 ²	631	1.6	784.8	784.8	784.8	0.0
H	6,540	100	280	3.7	787.1	787.1	787.2	0.1
I	7,670	85 ²	282	3.3	790.4	790.4	790.5	0.1
J	8,625	120	269	3.4	795.1	795.1	795.2	0.1
K	9,860	160	446	1.9	798.4	798.4	798.5	0.1
L	10,490	130 ²	209	4.1	799.8	799.8	799.9	0.1
M	11,520	165	428	3.0	802.9	802.9	803.0	0.1
N	13,200	370 ²	661	2.8	807.9	807.9	807.9	0.0
O	14,100	155 ²	220	5.9	810.4	810.4	810.5	0.1
P	15,300	185	352	3.5	815.5	815.5	815.6	0.1
Q	16,330	245 ²	1,099	1.1	820.8	820.8	820.9	0.1
R	17,100	180	532	1.3	822.3	822.3	822.3	0.0
S	18,220	115	233	3.0	823.1	823.1	823.2	0.1
T	19,670	140	259	2.7	826.9	826.9	826.9	0.0
U	20,840	370 ²	480	1.5	828.6	828.6	828.6	0.0
V	21,355	140	289	2.4	830.9	830.9	830.9	0.0
W	22,500	85 ²	345	2.0	832.9	832.9	832.9	0.0
X	23,870	100	259	2.7	840.5	840.5	840.6	0.1

¹Feet above confluence with Vestal Ditch

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

KIRKENDALL CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Little Cicero Creek								
A	0 ¹	688 ²	1,526	4.1	813.2	813.2	813.2	0.0
B	1,200 ¹	874 ²	1,291	7.0	814.9	814.9	814.9	0.0
C	1,830 ¹	839 ²	2,812	2.4	817.0	817.0	817.0	0.0
D	2,720 ¹	686 ²	713	6.5	818.7	818.7	818.8	0.1
E	3,770 ¹	470 ²	1,259	3.7	822.2	822.2	822.3	0.1
F	5,400 ¹	605 ²	835	5.5	825.4	825.4	825.5	0.1
G	6,315 ¹	554 ²	2,625	1.8	827.5	827.4	827.5	0.1
Little Cool Creek								
A	445 ³	45	246	6.2	807.3	807.3	807.3	0.0
B	746 ³	82	428	3.4	811.6	811.6	811.6	0.0
C	1,294 ³	116	794	1.8	812.0	812.0	812.1	0.1
D	1,588 ³	159	853	1.7	812.2	812.2	812.2	0.0
E	1,745 ³	110	615	2.3	812.2	812.2	812.3	0.1
F	2,274 ³	260	1,069	1.3	813.7	813.7	813.8	0.1
G	2,590 ³	401	1,559	0.9	813.8	813.8	813.9	0.1
H	2,650 ³	443	1,731	0.8	813.9	813.9	814.0	0.1
I	3,289 ³	729	1,663	0.9	813.5	813.5	813.5	0.0
J	4,092 ³	230	423	2.2	815.3	815.3	815.4	0.1
K	5,090 ³	243	414	2.2	819.0	819.0	819.1	0.1
L	6,440 ³	155	281	3.3	823.8	823.8	823.9	0.1
M	6,743 ³	102	179	5.2	827.1	827.1	827.1	0.0
N	7,040 ³	25 ^b	112	8.3	830.6	830.6	830.6	0.0
O	7,150 ³	125 ^b	298	3.1	832.1	832.1	832.1	0.0
P	7,260 ³	126	618	1.5	834.6	834.6	834.6	0.0
Q	7,748 ³	120	314	3.0	835.1	835.1	835.1	0.0
R	8,198 ³	111 ^b	185	2.7	839.8	839.8	839.9	0.1

¹Feet above Morse Reservoir

²Widths represent State of Indiana guidelines for floodways behind dams

³Feet above confluence with Cool Creek

⁴Elevation computed without consideration of backwater effects from Cool Creek

⁵Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

LITTLE CICERO CREEK – LITTLE COOL CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Little Cool Creek (Continued)								
S	8,397 ¹	111	636	0.8	845.0	845.0	845.0	0.0
T	8,762 ¹	210	702	0.7	845.0	845.0	845.0	0.0
Little Eagle Creek								
A	133 ²	727 ³	5,468	1.3	864.3	864.3	864.4	0.1
B	893 ²	236 ³	2,267	3.2	864.4	864.4	864.5	0.1
C	1,319 ²	100	1,073	6.8	866.0	866.0	866.1	0.1
D	1,719 ²	526 ⁴	4,010	1.8	867.1	867.1	867.2	0.1
E	2,219 ²	473	4,007	1.7	867.2	867.2	867.3	0.1
F	2,819 ²	826	5,558	1.3	867.2	867.2	867.3	0.1
G	3,199 ²	718	4,142	1.7	867.3	867.3	867.4	0.1
H	3,449 ²	596	5,111	1.4	867.3	867.3	867.4	0.1
I	3,949 ²	533	3,132	2.2	867.4	867.4	867.5	0.1
J	4,449 ²	550	3,075	2.3	867.5	867.5	867.6	0.1
K	5,399 ²	532	2,700	2.4	868.3	868.3	868.4	0.1
L	6,599 ²	682	1,539	4.3	870.5	870.5	870.6	0.1
M	7,549 ²	674 ⁴	2,675	2.5	873.0	873.0	873.1	0.1
N	7,599 ²	662	3,336	2.0	873.2	873.2	873.3	0.1
O	8,174 ²	524	2,838	2.3	873.8	873.8	873.9	0.1
P	8,824 ²	604	3,246	2.0	874.4	874.4	874.5	0.1
Q	9,474 ²	535	2,465	2.3	874.9	874.9	875.0	0.1
R	10,224 ²	438	1,661	3.4	876.2	876.2	876.3	0.1
S	11,124 ²	840	2,761	2.1	878.5	878.5	878.6	0.1
T	12,174 ²	731	2,778	2.1	880.1	880.1	880.2	0.1
U	13,174 ²	651	2,773	2.0	881.5	881.5	881.6	0.1
V	14,374 ²	567	2,052	2.7	883.5	883.5	883.6	0.1
W	14,854 ²	773	3,007	1.9	885.2	885.2	885.2	0.0

¹Feet above confluence with Cool Creek

²Feet above county boundary

³Width extends beyond county boundary

⁴Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

LITTLE COOL CREEK – LITTLE EAGLE CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Little Eagle Creek (Continued)								
X	15,684	390	1,886	2.5	886.1	886.1	886.1	0.0
Y	16,590	500	1,930	2.5	887.8	887.8	887.8	0.0
Z	16,950	341	1,748	2.7	888.2	888.2	888.2	0.0
AA	18,100	347	1,486	3.2	889.9	889.9	890.0	0.1
AB	19,400	265	963	5.0	892.5	892.5	892.6	0.1
AC	20,400	279	1,278	3.4	894.8	894.8	894.9	0.1
AD	21,150	274	1,739	2.5	895.7	895.7	895.8	0.1
AE	21,701	99	723	5.7	896.0	896.0	896.1	0.1
AF	21,851	365	1,847	2.2	896.6	896.6	896.7	0.1
AG	22,631	411	1,808	2.3	897.1	897.1	897.2	0.1
AH	23,660	490	685	5.1	898.4	898.4	898.4	0.0
AI	24,810	445 ²	1,048	3.3	901.4	901.4	901.5	0.1
AJ	25,710	735 ²	2,472	1.4	903.3	903.3	903.3	0.0
AK	26,210	263	803	4.4	904.0	904.0	904.0	0.0
AL	27,310	720	2,548	1.4	905.9	905.9	906.0	0.1
AM	28,010	319	1,191	2.9	906.4	906.4	906.5	0.1
AN	28,226	466 ²	2,110	1.7	907.9	907.9	907.9	0.0
AO	28,316	387	1,698	2.1	908.0	908.0	908.0	0.0
AP	29,016	235	1,028	3.4	908.5	908.5	908.5	0.0
AQ	29,466	411 ²	1,264	2.8	909.3	909.3	909.4	0.1
AR	30,266	497	1,924	1.8	910.0	910.0	910.1	0.1
AS	31,336	747 ²	1,481	1.7	910.9	910.9	911.0	0.1

¹Feet above county boundary

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

LITTLE EAGLE CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Long Branch								
A	1.345	138	291	2.7	859.9	859.9	859.9	0.0
B	1.465	169	252	3.2	861.9	861.9	862.0	0.1
C	1.576	155	265	3.0	864.1	864.1	864.2	0.1
D	1.634	126	252	3.2	865.6	865.6	865.7	0.1
E	1.761	141	271	2.9	868.3	868.3	868.4	0.1
F	1.877	122	246	3.2	870.1	870.1	870.2	0.1
G	1.943	181	594	1.4	872.6	872.6	872.7	0.1
H	2.084	178	401	2.0	873.9	873.9	873.9	0.0
I	2.341	83	290	2.2	879.1	879.1	879.2	0.1
J	2.607	150	363	1.7	881.3	881.3	881.4	0.1
K	2.753	185	418	1.5	883.5	883.5	883.6	0.1
L	2.907	90	199	3.2	885.0	885.0	885.1	0.1
M	3.009	176	369	1.7	886.4	886.4	886.5	0.1
N	3.129	125	319	2.0	887.4	887.4	887.5	0.1
O	3.229	99	459	1.0	891.7	891.7	891.8	0.1
P	3.315	144	532	0.8	891.8	891.8	891.9	0.1

¹Miles above confluence with Eagle Creek

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

LONG BRANCH

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Mallery Granger Ditch								
A	450	11 ³	68	10.7	765.0	752.6 ²	752.6	0.0
B	676	8 ³	78	9.4	765.0	755.9 ²	756.0	0.1
C	1,621	75	292	2.5	765.0	759.9 ²	760.0	0.1
D	2,175	66 ³	171	4.3	765.0	760.9 ²	761.0	0.1
E	3,047	228 ³	1,813	0.4	776.8	776.8	776.9	0.1
F	4,050	261 ³	803	0.9	776.8	776.8	776.9	0.1
G	4,747	130	149	4.9	778.7	778.7	778.7	0.0
H	5,349	53	119	6.1	781.8	781.8	781.8	0.0
I	5,819	12 ³	58	9.5	783.5	783.5	783.5	0.0
J	6,463	48	141	3.9	785.6	785.6	785.6	0.0
K	8,110	20 ³	63	8.7	789.4	789.4	789.5	0.1
L	9,414	170	231	1.6	795.2	795.2	795.3	0.1
M	10,011	26 ³	112	3.2	796.1	796.1	796.2	0.1
N	10,898	100	99	3.7	798.2	798.2	798.2	0.0
O	11,547	6 ³	37	9.9	801.4	801.4	801.5	0.1
P	11,743	262 ³	633	0.6	802.9	802.9	803.0	0.1
Q	12,619	293	354	1.0	803.0	803.0	803.1	0.1
R	13,622	207 ³	125	2.9	804.9	804.9	804.9	0.0

¹Feet above confluence with West Fork White River

²Elevation computed without consideration of backwater effects from West Fork White River

³Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

MALLERY GRANGER DITCH

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Mill Creek								
A	600	266 ²	728	2.2	768.3	768.3	768.3	0.0
B	996	123	321	4.9	769.1	769.1	769.2	0.1
C	1,218	35 ²	187	8.4	769.9	769.9	770.0	0.1
D	1,271	35 ²	185	8.5	770.4	770.4	770.6	0.2
E	1,942	151	542	2.9	772.9	772.9	773.0	0.1
F	2,342	113	320	4.9	773.4	773.4	773.5	0.1
G	2,742	223	305	5.2	775.6	775.6	775.6	0.0
H	3,102	25	137	11.6	777.7	777.7	777.7	0.0
I	3,153	25 ²	160	9.9	779.5	779.5	779.5	0.0
J	3,277	35 ²	264	6.0	781.1	781.1	781.1	0.0
K	3,874	155	672	2.4	782.1	782.1	782.1	0.0
L	4,428	551 ²	1,047	1.5	782.5	782.5	782.5	0.0
M	4,803	230	420	3.8	784.3	784.3	784.4	0.1
N	5,178	111	292	5.4	787.4	787.4	787.5	0.1
O	6,276	136	404	3.9	794.6	794.6	794.6	0.0
P	6,948	155	645	1.5	799.0	799.0	799.0	0.0
Q	7,026	332 ²	1,644	0.6	800.9	800.9	800.9	0.0
R	7,195	280 ²	1,080	0.9	801.0	801.0	801.0	0.0
S	7,686	121	363	2.8	801.1	801.1	801.1	0.0
T	8,689	98	285	3.5	804.8	804.8	804.9	0.1
U	10,188	235 ²	344	2.9	811.9	811.9	811.9	0.0
V	10,907	273 ²	1,113	0.9	817.9	817.9	817.9	0.0
W	11,508	81	200	5.0	818.3	818.3	818.3	0.0

¹Feet above confluence with Sly Run

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

**TABLE
13**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

MILL CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Mitchener Ditch								
A	1836	303	1554	1.4	742.8	737.5 ²	737.5 ²	0.1
B	2101	254	1035	2.3	742.8	737.5 ²	737.6 ²	0.1
C	3099	131	318	4.0	743.1	739.4 ²	739.4 ²	0.0
D	3735	144	489	4.6	743.9	740.8 ²	740.9 ²	0.1
E	4493	199	605	3.5	744.5	742.1 ²	742.2 ²	0.1
F	5258	354	710	2.4	744.7	743.4 ²	743.5 ²	0.1
G	5912	192	589	2.5	744.7	743.8 ²	743.9 ²	0.1
H	6233	278	619	2.7	744.7	744.0 ²	744.1 ²	0.1
I	6456	346	661	2.6	744.7	744.2 ²	744.3 ²	0.1
J	6995	315	1112	1.1	745.7	745.7	745.9	0.1
K	7296	143	239	6.5	745.6	745.6	745.7	0.1
L	7500	60	159	7.9	747.0	747.0	747.1	0.1
M	8471	312	1217	1.2	750.9	750.9	751.1	0.1
N	9128	197	473	3.0	751.0	751.0	751.1	0.1
O	9993	245	573	2.5	752.2	752.2	752.3	0.1
P	10287	351	682	2.0	752.4	752.4	752.6	0.1
Q	10934	176	284	6.2	753.8	753.8	753.9	0.1
R	11186	95	189	7.5	755.2	755.2	755.3	0.1
S	11700	156	378	3.8	757.5	757.5	757.6	0.1
T	12584	163	492	2.5	763.5	763.5	763.6	0.1
U	13566	132	355	3.3	765.8	765.8	765.8	0.1
V	13925	55	191	5.4	766.2	766.2	766.3	0.1
W	14565	55	174	5.8	768.7	768.7	768.8	0.1
X	15136	225	620	2.4	771.0	771.0	771.2	0.1
Y	15964	*	*	*	773.1	*	*	*
Z	16566	*	*	*	775.0	*	*	*

¹Feet above confluence with West Fork White River

²Elevation computed without consideration of backwater effects from West Fork White River

*Floodway not computed

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

MITCHNER DITCH

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Mitchener Ditch								
AA	17351	*	*	*	777.6	*	*	*
AB	18020	*	*	*	781.0	*	*	*
AC	18276	*	*	*	782.1	*	*	*
AD	18322	*	*	*	783.0	*	*	*
AE	18756	*	*	*	783.7	*	*	*
AF	19428	*	*	*	786.1	*	*	*
AG	19920	*	*	*	788.7	*	*	*
AH	20030	*	*	*	789.2	*	*	*
AI	20161	*	*	*	790.2	*	*	*
AJ	20298	*	*	*	790.5	*	*	*
AK	20536	*	*	*	791.6	*	*	*
AL	20885	*	*	*	792.3	*	*	*
AM	21001	*	*	*	793.2	*	*	*
AN	21265	*	*	*	794.3	*	*	*
AO	22045	*	*	*	797.4	*	*	*
AP	22087	*	*	*	798.2	*	*	*
AQ	22475	*	*	*	798.8	*	*	*
AR	22923	*	*	*	800.5	*	*	*
AS	23578	*	*	*	803.8	*	*	*

¹Feet above confluence with West Fork White River
*Floodway not computed

**TABLE
13**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

MITCHNER DITCH

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Mud Creek								
A	4.361	753	4,583	0.8	781.6	781.6	781.7	0.1
B	4.530	820	4,923	0.8	781.8	781.8	781.9	0.1
C	4.625	895	4,704	0.8	781.8	781.8	781.9	0.1
D	4.895	885	3,746	1.0	782.2	782.2	782.3	0.1
E	5.028	811	2,767	1.4	782.5	782.5	782.6	0.1
F	5.170	760 ²	2,684	1.4	782.7	782.7	782.8	0.1
G	5.382	628	2,527	1.4	782.7	782.7	782.8	0.1
H	5.683	1,075 ²	4,101	0.9	784.0	784.0	784.1	0.1
I	5.801	640	1,266	2.4	784.1	784.1	784.2	0.1
J	5.981	573	1,381	2.1	785.2	785.2	785.2	0.0
K	6.109	653 ²	1,605	1.8	785.4	785.4	785.5	0.1
L	6.214	575 ²	954	3.0	785.5	785.5	785.6	0.1
M	6.339	540 ²	968	2.9	786.9	786.9	786.9	0.0
N	6.494	525	1,398	2.0	787.6	787.6	787.6	0.0
O	6.672	290 ²	751	3.7	787.8	787.8	787.8	0.0
P	6.909	485 ²	1,468	1.9	791.1	791.1	791.2	0.1
Q	7.022	345	1,013	2.7	791.7	791.7	791.8	0.1
R	7.200	505	1,753	1.6	792.2	792.2	792.3	0.1
S	7.550	513	3,861	0.8	794.1	794.1	794.2	0.1
T	7.735	532	2,924	0.9	794.2	794.2	794.3	0.1
U	7.898	551	2,408	1.4	794.4	794.4	794.4	0.0
V	8.134	545	3,312	0.8	794.6	794.6	794.7	0.1
W	8.280	570	898	3.0	794.7	794.7	794.7	0.0
X	8.422	550	1,049	2.5	796.1	796.1	796.1	0.0
Y	8.554	484	594	4.5	797.4	797.4	797.4	0.0
Z	8.902	404 ²	1,086	2.5	801.2	801.2	801.3	0.1

¹Miles above confluence with West Fork White River

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

MUD CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Mud Creek (continued)								
AA	9.107	650	1,562	1.6	802.5	802.5	802.6	0.1
AB	9.262	476 ²	1,429	1.7	803.2	803.2	803.3	0.1
AC	9.426	400	1,061	2.3	804.3	804.3	804.3	0.0
AD	9.532	404	984	2.5	805.4	805.4	805.4	0.0
AE	9.621	252	827	3.0	806.3	806.3	806.4	0.1
AF	9.880	352	1,396	1.8	808.2	808.2	808.3	0.1
AG	9.998	345	1,135	2.2	808.9	808.9	809.0	0.1
AH	10.145	298	871	2.8	810.3	810.3	810.4	0.1
AI	10.287	400	1,179	2.1	812.0	812.0	812.1	0.1
AJ	10.467	366	1,174	2.1	813.5	813.5	813.6	0.1
AK	10.666	357 ²	1,326	1.8	814.9	814.9	815.0	0.1
AL	10.837	370	1,435	1.6	815.1	815.1	815.2	0.1
AM	10.965	325	1,365	1.7	815.6	815.6	815.7	0.1
AN	11.149	428 ²	1,488	1.6	817.4	817.4	817.5	0.1
AO	11.215	528 ²	1,844	1.3	817.7	817.7	817.7	0.0
AP	11.348	380	1,210	1.9	818.0	818.0	818.1	0.1
AQ	11.456	400	1,617	1.5	818.3	818.3	818.4	0.1
AR	11.611	368 ²	1,346	1.8	818.8	818.8	818.9	0.1
AS	11.736	409	1,448	1.6	819.4	819.4	819.5	0.1
AT	11.856	541	1,390	1.7	820.0	820.0	820.1	0.1
AU	12.143	254	972	2.3	824.1	824.1	824.1	0.0
AV	12.333	496 ²	2,182	1.0	826.6	826.6	826.7	0.1
AW	12.711	348	1,694	1.3	827.9	827.9	828.0	0.1
AX	12.793	512	2,471	0.9	828.0	828.0	828.1	0.1
AY	12.840	496	2,926	0.7	828.0	828.0	828.1	0.1
AZ	12.978	307	1,327	1.6	828.1	828.1	828.2	0.1

¹Miles above confluence with West Fork White River

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

MUD CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Mud Creek (continued)								
BA	13.081	310	1,335	1.6	828.4	828.4	828.5	0.1
BB	13.240	332	1,327	1.6	829.0	829.0	829.1	0.1
BC	13.348	332	1,258	1.7	829.4	829.4	829.5	0.1
BD	13.500	404	1,396	1.5	830.0	830.0	830.1	0.1
BE	13.797	319	1,155	1.8	831.5	831.5	831.6	0.1
BF	13.956	355	1,092	1.9	832.4	832.4	832.5	0.1
BG	14.110	410 ²	1,354	1.6	833.4	833.4	833.5	0.1
BH	14.213	283 ²	731	2.9	834.0	834.0	834.0	0.0
BI	14.406	129	602	2.9	836.4	836.4	836.4	0.0
BJ	14.538	193	736	2.3	837.1	837.1	837.2	0.1
BK	14.692	224	895	1.9	837.8	837.8	837.9	0.1
BL	14.828	279	831	2.1	838.5	838.5	838.6	0.1
BM	14.921	211	693	2.5	839.1	839.1	839.2	0.1
BN	15.022	190	783	2.2	839.8	839.8	839.9	0.1
BO	15.117	187	553	3.1	840.2	840.2	840.2	0.0
BP	15.212	263	894	1.9	841.0	841.0	841.0	0.0
BQ	15.390	203	555	3.1	842.0	842.0	842.0	0.0
BR	15.490	294	682	2.5	843.3	843.3	843.3	0.0
BS	15.634	216	902	1.9	844.4	844.4	844.4	0.0

¹Miles above confluence with West Fork White River

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

MUD CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Musselman Ditch								
A	201	35 ³	261	3.6	770.1	764.8 ²	764.9	0.1
B	259	35 ³	254	3.7	770.1	764.9 ²	765.0	0.1
C	333	59	289	3.3	770.1	765.0 ²	765.1	0.1
D	1,172	27 ³	131	7.3	770.1	768.2 ²	768.3	0.1
E	1,822	42	208	4.6	774.0	774.0	774.1	0.1
F	1,848	42	209	4.6	774.0	774.0	774.1	0.1
G	2,329	58	277	3.4	776.2	776.2	776.2	0.0
H	3,981	63	223	4.3	783.0	783.0	783.1	0.1
I	4,731	110	396	2.4	784.4	784.4	784.5	0.1
J	5,829	45 ³	188	4.2	785.6	785.6	785.7	0.1
K	6,579	171	411	1.9	787.0	787.0	787.1	0.1
L	7,065	46	215	3.7	787.5	787.5	787.6	0.1
M	7,086	46 ³	215	3.7	787.5	787.5	787.6	0.1
N	7,783	242 ³	516	1.6	788.7	788.7	788.8	0.1
O	8,501	182 ³	448	1.8	789.1	789.1	789.2	0.1
P	8,533	188 ³	557	1.4	789.7	789.7	789.8	0.1
Q	9,330	260	655	1.2	789.9	789.9	790.0	0.1
R	10,930	173	322	1.9	790.5	790.5	790.6	0.1
S	12,725	242	494	1.2	791.9	791.9	792.0	0.1
T	14,230	211	427	1.4	792.9	792.9	793.0	0.1
U	14,251	211	629	1.0	793.9	793.9	793.9	0.0
V	15,381	286	563	1.1	794.2	794.2	794.3	0.1
W	16,880	292	682	0.9	794.7	794.7	794.8	0.1

¹Feet above confluence with West Fork White River

²Elevation computed without consideration of backwater effects from West Fork White River

³Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

MUSSELMAN DITCH

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Sand Creek								
A	1,494	167	645	2.9	786.7	786.7	786.8	0.1
B	2,688	104	378	4.9	788.2	788.2	788.3	0.1
C	3,384	98	679	2.7	789.7	789.7	789.8	0.1
D	3,575	106	745	2.5	790.0	790.0	790.1	0.1
E	4,113	260	1,227	1.5	790.6	790.6	790.7	0.1
F	4,261	281	1,287	1.4	790.6	790.6	790.7	0.1
G	4,800	353	1,282	1.4	790.6	790.6	790.7	0.1
H	6,267	257	891	2.1	793.2	793.2	793.3	0.1
I	7,709	250	1,436	1.3	797.2	797.2	797.3	0.1
J	8,258	380	1,559	1.2	797.3	797.3	797.4	0.1
K	9,483	252	611	3.0	798.0	798.0	798.1	0.1
L	9,932	330	761	2.4	799.8	799.8	799.8	0.0
M	11,231	200	1,014	1.8	803.1	803.1	803.2	0.1
N	12,271	186	753	2.4	803.8	803.8	803.9	0.1
O	13,575	108 ²	817	3.0	805.5	805.5	805.6	0.1
P	14,900	220	963	1.7	807.3	807.3	807.4	0.1
Q	15,523	251	1,160	1.4	807.7	807.7	807.8	0.1
R	16,738	193	767	2.2	808.7	808.7	808.8	0.1
S	18,401	400	1,269	1.3	810.5	810.5	810.6	0.1
T	19,314	641	1,912	0.9	810.9	810.9	811.0	0.1
U	20,339	230	697	2.4	811.4	811.4	811.5	0.1
V	21,120	650	1,109	1.5	812.1	812.1	812.2	0.1
W	21,674	365 ²	1,140	1.5	812.5	812.5	812.6	0.1
X	22,577	276	860	1.9	814.3	814.3	814.4	0.1
Y	23,718	150	570	2.5	815.9	815.9	816.0	0.1
Z	24,251	336	1,095	1.3	816.4	816.4	816.4	0.0

¹Feet above confluence with Mud Creek

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

SAND CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Sand Creek (continued)								
AA	25,075	815	2,884	0.5	816.5	816.5	816.6	0.1
AB	26,020	890	2,893	0.5	816.6	816.6	816.7	0.1
AC	28,380	940	1,656	0.9	816.9	816.9	817.0	0.1
AD	29,188	80 ²	567	4.0	817.4	817.4	817.5	0.1
AE	29,642	78	232	3.8	819.8	819.8	819.8	0.0
AF	30,777	190	552	1.6	821.7	821.7	821.8	0.1
AG	31,585	101	333	2.7	822.3	822.3	822.3	0.0
AH	32,261	325	938	0.9	822.8	822.8	822.9	0.1
AI	33,000	270	861	1.0	823.0	823.0	823.1	0.1
AJ	34,378	210	510	1.7	823.5	823.5	823.6	0.1
AK	35,376	96	238	3.7	825.1	825.1	825.2	0.1
AL	35,878	49	199	4.4	826.8	826.8	826.8	0.0
AM	36,427	145	410	2.2	827.8	827.8	827.8	0.0
AN	36,865	130	361	2.4	828.3	828.3	828.4	0.1
AO	37,662	70	677	1.7	830.6	830.6	830.7	0.1
AP	38,264	160	368	1.4	830.9	830.9	831.0	0.1
AQ	39,463	230	528	1.0	831.5	831.5	831.6	0.1
AR	40,007	115	289	1.8	831.8	831.8	831.9	0.1
AS	40,603	213	357	1.4	832.4	832.4	832.5	0.1
AT	41,205	450	657	0.8	832.8	832.8	832.9	0.1
AU	42,456	100	101	5.1	834.0	834.0	834.0	0.0
AV	43,412	120	254	2.0	836.9	836.9	837.0	0.1
AW	44,637	310	401	1.3	838.5	838.5	838.6	0.1

¹Feet above confluence with Mud Creek

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

**TABLE
13**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

SAND CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Shoemaker Ditch								
A	1120	102 ³	473	7.0	746.0	735.5 ²	735.6	0.1
B	1413	250	852	5.1	746.0	736.5 ²	736.6	0.1
C	1562	225	593	7.4	746.0	736.6 ²	736.7	0.1
D	1896	216	780	5.7	746.0	738.0 ²	738.0	0.1
E	2237	325	1013	4.4	746.0	738.7 ²	738.9	0.1
F	2780	355	860	4.7	746.0	738.7 ²	738.9	0.1
G	3594	138 ³	360	9.7	746.0	744.7 ²	744.6	0.0
H	3791	178 ³	1567	2.5	751.4	751.4	751.4	0.0
I	4218	279	1904	2.2	751.5	751.5	751.5	0.0
J	4822	244	1078	3.9	751.6	751.6	751.6	0.0
K	5041	179	622	6.1	751.7	751.7	751.8	0.0
L	5215	160	335	7.9	752.1	752.1	752.2	0.1
M	5504	99	317	8.4	754.1	754.1	754.1	0.1
N	5728	139	452	8.5	755.5	755.5	755.6	0.0
O	6878	239	644	7.4	761.1	761.1	761.2	0.1
P	8037	243	624	6.7	766.0	766.0	766.1	0.1
Q	8377	240	679	6.5	767.4	767.4	767.5	0.1
R	8485	200	398	9.3	767.9	767.9	768.0	0.1
S	8584	160	389	8.8	768.6	768.6	768.8	0.1
T	9237	182	574	6.7	772.5	772.5	772.6	0.1
U	10100	177	546	6.8	776.2	776.2	776.3	0.1
V	10959	124	453	7.7	782.9	782.9	783.0	0.1
W	11456	108	394	7.7	782.9	782.9	783.0	0.1
X	12446	130	456	4.5	786.3	786.3	786.4	0.1
Y	12906	67	242	6.4	787.3	787.3	787.4	0.1

¹Feet above confluence with West Fork White River

²Elevation computed without consideration of backwater effects from West Fork White River

³Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

SHOEMAKER DITCH

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Shoemaker Ditch (Continued)								
Z	13521	210	629	4.1	789.2	789.2	789.3	0.1
AA	13667	236	690	3.3	789.4	789.4	789.5	0.1
AB	13722	92 ²	299	7.0	789.3	789.3	789.4	0.1
AC	13891	123 ²	683	2.8	792.0	792.0	792.0	0.0
AD	14101	125 ²	612	3.5	792.1	792.1	792.1	0.0
AE	14209	286	1578	1.4	793.7	793.7	793.7	0.0
AF	14799	268	1213	2.1	793.8	793.8	793.8	0.0
AG	15331	74	196	3.4	793.9	793.9	794.0	0.0
AH	15964	129	223	5.9	795.5	795.5	795.6	0.1
AI	16283	81	173	5.9	797.3	797.3	797.4	0.1
AJ	16370	74	167	4.5	797.8	797.8	797.9	0.1
AK	16444	50	105	7.0	797.8	797.8	797.9	0.1
AL	16705	55 ²	158	4.5	799.2	799.2	799.2	0.1
AM	16844	97	586	1.3	804.2	804.2	804.2	0.0
AN	16918	74 ²	413	1.7	804.2	804.2	804.2	0.0

¹Feet above confluence with West Fork White River

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

SHOEMAKER DITCH

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Sly Run								
A	1,552	900 ²	3,231	1.1	762.7	762.7	762.8	0.1
B	2,851	337 ²	1,285	2.7	763.6	763.6	763.7	0.1
C	4,150	430 ²	1,267	2.7	766.0	766.0	766.1	0.1
D	4,800	180 ²	469	4.5	767.5	767.5	767.6	0.1
E	5,797	261	632	3.3	772.8	772.8	772.9	0.1
F	6,901	186	613	3.4	777.5	777.5	779.6	0.1
G	7,598	185 ²	486	4.3	780.6	780.6	780.7	0.1
H	8,100	181	425	4.9	784.3	784.3	784.3	0.0
I	9,002	180 ²	555	3.8	789.5	789.5	789.5	0.0
J	10,201	173	397	4.6	795.0	795.0	795.1	0.1
K	11,199	85 ²	373	4.9	799.9	799.9	800.0	0.1
L	12,302	181	409	4.5	804.3	804.3	804.4	0.1
M	13,232	37 ²	186	9.5	809.2	809.2	809.2	0.0
N	13,248	37 ²	231	7.7	810.3	810.3	810.4	0.1
O	13,443	120	420	4.2	812.0	812.0	812.0	0.0
P	13,638	299 ²	1,227	1.4	812.8	812.8	812.8	0.0
Q	13,670	229	915	1.9	813.5	813.5	813.5	0.0
R	14,414	200	732	2.4	814.4	814.4	814.5	0.1
S	14,964	183	519	3.4	816.2	816.2	816.2	0.0
T	15,360	100	531	3.3	818.0	818.0	818.1	0.1
U	15,861	188	597	3.0	819.9	819.9	820.0	0.1

¹Feet above confluence with Cicero Creek

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

SLY RUN

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Sly Run East Fork								
V	16,115 ¹	350	622	2.8	820.8	820.8	820.9	0.1
W	16,812 ¹	160	362	3.3	823.7	823.7	823.8	0.1
X	17,614 ¹	125	371	3.2	827.4	827.4	827.5	0.1
Y	18,411 ¹	130 ³	394	3.0	829.7	829.7	829.8	0.1
Z	19,071 ¹	122	263	4.5	832.2	832.2	832.2	0.0
AA	19,140 ¹	414	1,132	1.0	835.0	835.0	835.0	0.0
AB	19,462 ¹	160	535	2.2	835.1	835.1	835.1	0.0
AC	19,863 ¹	135 ³	310	3.8	835.9	835.9	836.0	0.1
AD	20,560 ¹	147 ³	338	3.5	839.9	839.9	840.0	0.1
AE	21,960 ¹	190	459	1.9	847.5	847.5	847.6	0.1
AF	22,762 ¹	155	336	2.6	851.4	851.4	851.5	0.1
AG	23,660 ¹	190	427	2.0	856.9	856.9	856.9	0.0
AH	24,304 ¹	22 ³	104	8.3	861.2	861.2	861.3	0.1
AI	24,510 ¹	233 ³	759	1.1	863.1	863.1	863.1	0.0
AJ	24,563 ¹	233	1,338	0.6	865.6	865.6	865.6	0.0
AK	25,460 ¹	155	286	3.0	865.7	865.7	865.7	0.0
AL	26,764 ¹	140 ³	340	2.5	872.2	872.2	872.3	0.1
Sly Run West Fork								
A	1,310 ²	205	356	2.2	822.2	822.2	822.3	0.1
B	1,760 ²	131 ³	218	3.6	824.8	824.8	824.9	0.1
C	1,920 ²	321 ³	1,425	0.5	829.2	829.2	829.2	0.0

¹Feet above confluence with Cicero Creek

²Feet above confluence with Sly Run

³Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

SLY RUN EAST FORK – SLY RUN WEST FORK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Spring Mill Run								
A	750	143	213	4.5	797.2	797.2	797.3	0.1
B	1,188	71 ²	234	4.1	800.8	800.8	800.9	0.1
C	1,325	71	237	4.1	800.8	800.8	800.9	0.1
D	1,489	55	180	5.4	801.5	801.5	801.5	0.0
E	1,843	46	170	5.7	803.8	803.8	803.9	0.1
F	2,138	50	156	6.2	805.7	805.7	805.8	0.1
G	3,242	134	260	3.7	811.8	811.8	811.8	0.0
H	4,741	94	199	4.9	819.6	819.6	819.7	0.1
I	5,143	47	134	7.3	822.2	822.2	822.2	0.0
J	5,539	103	266	3.3	825.8	825.8	825.8	0.0
K	5,761	115 ²	378	2.3	826.6	826.6	826.7	0.1
L	5,803	115 ²	781	1.1	830.2	830.2	830.2	0.0
M	5,850	91	381	2.1	830.2	830.2	830.2	0.0
N	6,632	40	116	6.9	832.5	832.5	832.6	0.1
O	7,102	113	301	2.7	837.1	837.1	837.2	0.1
P	7,672	419 ²	330	2.4	839.2	839.2	839.3	0.1
Q	7,693	386 ²	751	1.1	843.8	843.8	843.8	0.0
R	8,010	59	204	3.9	843.8	843.8	843.8	0.0
S	8,327	68	177	4.5	844.8	844.8	844.9	0.1
T	9,024	82	154	5.2	848.2	848.2	848.3	0.1
U	9,478	50	171	4.2	851.0	851.0	851.1	0.1

¹Feet above confluence with Williams Creek

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

SPRING MILL RUN

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Stony Creek								
A	0.40	1,042	4,441	0.8	756.0	749.8 ²	749.9	0.1
B	0.88	163 ³	1,162	3.1	756.0	752.3 ²	752.4	0.1
C	0.89	200	1,065	3.4	756.0	753.6 ²	753.7	0.1
D	1.20	599	3,510	1.0	756.4	756.4	756.5	0.1
E	1.42	202	1,162	2.9	757.9	757.9	758.0	0.1
F	1.48	170	981	3.9	758.7	758.7	758.8	0.1
G	1.62	216	1,245	2.7	759.8	759.8	759.8	0.0
H	2.66	447	1,954	2.1	765.0	765.0	765.1	0.1
I	2.69	447	2,050	2.0	765.2	765.2	765.3	0.1
J	3.66	687	2,113	2.2	769.1	769.1	769.2	0.1
K	4.29	912 ³	2,651	1.2	772.1	772.1	772.2	0.1
L	4.32	780 ³	2,254	1.4	773.2	773.2	773.3	0.1
M	5.60	777 ³	3,197	0.8	779.1	779.1	779.2	0.1
N	6.32	543	2,318	1.2	780.1	780.1	780.2	0.1

¹Miles above confluence with West Fork White River

²Elevation computed without consideration of backwater effects from West Fork White River

³Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

STONY CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Symons Ditch								
A	12,296	334	910	4.2	918.7	918.7	918.8	0.1
B	13,193	475	1360	2.4	919.5	919.5	919.6	0.1
C	13,896	320	772	3.8	919.8	919.8	919.9	0.1
D	14,863	530	1208	2.4	920.6	920.6	920.7	0.1
E	15,861	321	779	3.3	921.7	921.7	921.8	0.1
F	17,359	229	546	4.1	923.6	923.6	923.7	0.1
G	18,132	228	293	4.0	924.9	924.9	925.0	0.1

¹Feet above confluence with Little Cicero Creek

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

SYMONS DITCH

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Thorpe Creek								
A	440	94	546	5.7	787.2	787.2	787.3	0.1
B	690	134	625	4.3	789.1	789.1	789.1	0.0
C	1000	135	677	4.0	789.7	789.7	789.7	0.0
D	2094	258	793	3.4	791.3	791.3	791.4	0.1
E	3481	196	660	4.1	794.4	794.4	794.5	0.1
F	5286	200	599	4.5	799.0	799.0	799.1	0.1
G	6944	226	695	3.9	804.8	804.8	804.9	0.1
H	8837	330	1150	2.4	809.3	809.3	809.4	0.1
I	10269	144	327	5.8	812.2	812.2	812.3	0.1
J	11237	201	675	2.8	816.3	816.3	816.4	0.1
K	11434	269	1251	1.4	819.2	819.2	819.2	0.0
L	12201	261	1009	1.7	819.3	819.3	819.4	0.1
M	13726	272	477	4.2	821.0	821.0	821.1	0.1
N	14904	253	748	2.5	825.7	825.7	825.8	0.1
O	16181	165	418	4.6	828.8	828.8	828.9	0.1
P	16805	179	608	3.1	830.8	830.8	830.9	0.1
Q	17967	300	697	2.7	833.1	833.1	833.2	0.1
R	18271	186	589	3.2	833.7	833.7	833.8	0.1
S	18501	214	978	1.9	835.8	835.8	835.8	0.0
T	19083	424	1757	1.1	836.1	836.1	836.1	0.0
U	20153	456	1221	1.6	836.6	836.6	836.7	0.1
V	21124	146	298	3.4	837.7	837.7	837.8	0.1
W	22177	177	413	2.4	840.0	840.0	840.1	0.1
X	22914	285	289	3.5	841.3	841.3	841.4	0.1
Y	23556	275	557	1.8	842.7	842.7	842.8	0.1
Z	24294	177	422	2.4	843.8	843.8	843.9	0.1

¹Feet above confluence with Geist Reservoir

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

THORPE CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Thorpe Creek AA	24875 ¹	325	747	1.3	845.6	845.6	845.7	0.1
Vestal Ditch A	0.765 ²	249	842	3.0	746.3	746.3	746.4	0.1
B	0.899 ²	381	1491	1.7	747.1	747.1	747.2	0.1
C	1.265 ²	1083	1920	1.3	749.4	749.4	749.5	0.1
D	1.429 ²	1127	1773	1.4	750.5	750.5	750.6	0.1
E	1.693 ²	231	1405	1.7	752.9	752.9	753.0	0.1
F	1.796 ²	205	688	3.5	754.2	754.2	754.3	0.1
G	1.895 ²	157	654	3.7	755.3	755.3	755.4	0.1
H	2.008 ²	429	2464	1.0	755.7	755.7	755.8	0.1
I	2.111 ²	400	1865	1.2	755.8	755.8	755.9	0.1
J	2.220 ²	366	957	2.4	756.1	756.1	756.2	0.1
K	2.363 ²	480	649	3.6	758.9	758.9	758.9	0.0
L	2.647 ²	340	671	3.3	762.4	762.4	762.5	0.1
M	2.731 ²	103 ³	511	4.3	764.5	764.5	764.5	0.0
N	2.829 ²	214	991	2.2	766.5	766.5	766.5	0.1
O	3.353 ²	388	1163	1.3	769.2	769.2	769.2	0.0
P	3.699 ²	660	2211	0.5	770.2	770.2	770.2	0.1
Q	4.007 ²	423	960	0.9	771.2	771.2	771.2	0.0
R	4.312 ²	850	2780	0.3	773.8	773.8	773.9	0.1
S	4.776 ²	650	714	1.2	774.5	774.5	774.6	0.0
T	4.951 ²	438	505	1.7	775.7	775.7	775.7	0.0

¹Feet above confluence with Geist Reservoir

²Miles above confluence with West Fork White River

³Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

HAMILTON COUNTY, IN
AND INCORPORATED AREAS

FLOODWAY DATA

THORPE CREEK – VESTAL DITCH

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Well Run								
V	9,874 ¹	41	110	6.6	853.9	853.9	854.0	0.1
W	10,328 ¹	130	195	3.7	859.7	859.7	859.8	0.1
West Fork White River								
A	250.99 ²	1,639	20,617	4.6	739.4	739.5	739.5	0.1
B	251.49 ²	1,300	556	3.2	740.3	740.3	740.3	0.0
C	252.41 ²	2,131 ³	20,365	2.3	741.5	741.5	741.6	0.1
D	253.21 ²	1,904	11,985	3.8	742.5	742.5	742.6	0.1
E	253.39 ²	1,707 ³	12,815	3.5	742.9	742.9	743.0	0.1
F	254.17 ²	2,284	18,950	2.4	744.4	744.4	744.5	0.1
G	254.79 ²	1,302 ³	14,344	3.1	745.3	745.3	745.4	0.1
H	255.89 ²	2,336	14,253	3.2	747.0	747.0	747.1	0.1
I	258.43 ²	2,350	*	*	*	*	*	*
J	258.96 ²	2,512 ³	25,964	1.7	754.9	754.9	755.0	0.1
K	259.87 ²	3,010	31,040	1.4	755.5	755.5	755.5	0.0
L	261.04 ²	4,200 ³	28,288	1.6	756.0	756.0	756.1	0.1
M	261.91 ²	1,300	15,122	2.8	757.6	757.6	757.7	0.1
N	262.47 ²	1,068	10,551	3.3	758.7	758.7	758.8	0.1
O	263.09 ²	900	10,150	3.4	760.4	760.4	760.5	0.1
P	263.72 ²	870	8,191	4.2	762.9	762.9	763.0	0.1
Q	264.23 ²	1,000	11,214	3.1	764.1	764.1	764.2	0.1
R	265.07 ²	1,388 ³	14,500	2.4	765.9	765.9	766.0	0.1
S	266.02 ²	850 ³	8,755	3.9	767.6	767.6	767.7	0.1
T	266.46 ²	1,675 ³	12,858	2.7	768.8	768.8	768.9	0.1
U	266.92 ²	1,075	12,502	2.8	769.5	769.5	769.6	0.1
V	267.78 ²	1,450	12,480	2.8	771.2	771.2	771.3	0.1

¹Feet above confluence with Williams Creek

²Miles above mouth

³Floodway width may differ from FIRM. Please see FIRM for regulatory width

*Information not computed

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

WELL RUN – WEST FORK WHITE RIVER

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
West Fork White River (Cont.)								
W	268.40	814	8542	2.9	772.5	772.5	772.6	0.1
X	269.34	1181	10630	3.3	776.7	776.7	776.8	0.1
Y	269.83	1650	16230	2.1	778.4	778.4	778.4	0.0
Z	270.34	1722	19299	1.8	779.4	779.4	779.4	0.0
AA	271.34	1858	17246	2.0	780.2	780.2	781.2	0.0
AB	271.62	2405	21650	1.6	781.9	781.9	781.9	0.0
AC	271.77	2694 ²	22088	1.6	782.2	782.2	782.3	0.1
AD	272.17	2807	19844	1.7	783.3	783.3	783.4	0.1
AE	272.56	3474	24857	1.4	784.2	784.2	784.2	0.0
AF	273.24	2361	17570	1.8	785.9	785.9	785.9	0.0
AG	273.57	1368	12569	2.5	787.2	787.2	787.3	0.1
AH	273.75	1508	14402	2.2	788.1	788.1	788.1	0.0
AI	273.91	1607 ²	14646	2.2	788.7	788.7	788.8	0.1
AJ	273.94	1691	16212	2.0	788.8	788.8	788.9	0.1
AK	274.69	1581	12051	2.6	790.8	790.8	790.9	0.1
AL	275.1	967	10212	3.1	792.6	792.6	792.7	0.1
AM	275.5	1589 ²	14968	2.1	794.0	794.0	794.1	0.1
AN	276.07	944	9566	3.3	795.8	795.8	795.9	0.1
AO	276.7	1747	16280	1.9	798.1	798.1	798.2	0.1
AP	277.37	1898	18326	1.7	799.5	799.5	799.6	0.1
AQ	277.89	1811	15834	2.0	800.7	800.7	800.8	0.1
AR	278.64	1122	10040	2.8	803.1	803.1	803.2	0.1

¹Miles above mouth

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

WEST FORK WHITE RIVER

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Wheeler & Wheeler Drain								
A	968	47	104	3.2	762.8	762.8	762.8	0.0
B	1538	40	77	4.3	765.4	765.4	765.4	0.0
C	1788	31	61	5.5	767.6	767.6	767.6	0.0
D	2208	28	69	4.8	771.4	771.4	771.4	0.0
E	2368	39	84	3.9	772.5	772.5	772.5	0.0
F	2578	27	56	5.9	774.0	774.0	774.0	0.1
G	3340	23	54	6.1	780.2	780.2	780.2	0.0
H	4044	24 ²	71	4.7	784.2	784.2	784.3	0.1
I	4137	23	98	3.4	784.7	784.7	784.8	0.1
J	4405	29	138	2.4	787.6	787.6	787.7	0.1
K	5889	35	75	4.4	794.5	794.5	794.5	0.1
L	6119	90	330	0.6	799.2	799.2	799.2	0.0
M	6443	90	281	0.8	799.3	799.3	799.3	0.0
N	6652	90	318	0.7	800.0	800.0	800.1	0.1
O	6976	36	119	1.8	800.0	800.0	800.1	0.1
P	7357	36	100	2.1	800.2	800.2	800.3	0.1
Q	7532	17	36	5.8	800.1	800.1	800.2	0.1
R	7712	12	30	7.1	802.0	802.0	802.0	0.0

¹Feet above confluence with Stony Creek

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

WHEELER & WHEELER DRAIN

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
William Lehr Ditch								
A	2780	221	507	3.2	779.3	779.3	779.4	0.1
B	3360	39	148	10.9	783.3	783.3	783.3	0.0
C	3670	47	270	6.0	787.3	787.3	787.3	0.0
D	4290	37	258	6.3	790.0	790.0	790.0	0.0
E	4751	73	481	3.4	793.2	793.2	793.3	0.1
F	5495	179	691	2.3	794.0	794.0	794.1	0.1
G	5895	200	663	2.4	794.2	794.2	794.3	0.1
H	6385	109	321	5.0	794.6	794.6	794.7	0.1
I	6845	103	413	2.9	795.7	795.7	795.8	0.1
J	8209	295	1104	1.1	798.3	798.3	798.4	0.1
K	8739	306	920	1.3	798.4	798.4	798.5	0.1
L	9219	407	753	1.6	798.6	798.6	798.7	0.1
M	9989	374	990	1.2	799.1	799.1	799.2	0.1
N	10489	514 ²	1116	0.8	799.2	799.2	799.3	0.1
O	10999	210 ²	448	2.1	799.4	799.4	799.5	0.1
P	11509	220	503	1.9	799.9	799.9	800.0	0.1
Q	12194	189	570	1.6	800.3	800.3	800.4	0.1
R	12694	325	913	1.0	800.5	800.5	800.6	0.1
S	13264	368	1046	0.9	800.6	800.6	800.7	0.1
T	14230	180	450	2.1	801.6	801.6	801.7	0.1
U	15636	186	527	1.8	803.3	803.3	803.3	0.0
V	16256	497	554	1.7	803.6	803.6	803.7	0.0
W	17545	411	1333	0.4	805.3	805.3	805.3	0.1
X	18085	432	604	0.9	805.3	805.3	805.4	0.1

¹Feet above confluence with Stony Creek

²Floodway width may differ from FIRM. Please see FIRM for regulatory width

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

WILLIAM LEHR DITCH

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
William Lehr Ditch (Continued)								
Y	18355 ¹	398	601	0.9	805.4	805.4	805.4	0.1
Z	18855 ¹	252	398	1.3	805.5	805.5	805.6	0.1
AA	19305 ¹	204	367	1.4	805.8	805.8	805.8	0.0
AB	20286 ¹	202	373	1.4	806.6	806.6	806.6	0.0
Williams Creek								
A	5.463 ²	251	957	3.2	794.5	794.5	794.6	0.1
B	5.718 ²	216	1440	2.2	797.5	797.5	797.5	0.0
C	6.073 ²	283	648	4.8	801.2	801.2	801.2	0.0
D	6.304 ²	160	796	3.5	804.8	804.8	804.9	0.1
E	6.541 ²	184	822	3.4	809.6	809.6	809.6	0.0
F	6.762 ²	88	480	5.2	811.9	811.9	812.0	0.1
G	6.983 ²	298	930	2.7	815.5	815.5	815.6	0.1
H	7.319 ²	185	681	3.6	819.5	819.5	819.6	0.1
I	7.544 ²	352	847	2.9	822.5	822.5	822.6	0.1
J	7.777 ²	191	694	3.6	825.4	825.4	825.5	0.1
K	7.994 ²	348	1211	1.7	828.8	828.8	828.9	0.1
L	8.203 ²	186	646	3.1	830.4	830.4	830.5	0.1
M	8.588 ²	260	643	3.1	835.6	835.6	835.7	0.1
N	8.924 ²	211	577	3.5	839.0	839.0	839.1	0.1
O	9.128 ²	200	705	2.8	841.8	841.8	841.9	0.1
P	9.453 ²	149	402	3.2	844.5	844.5	844.6	0.1
Q	9.617 ²	306	1427	0.9	849.0	849.0	849.0	0.0
R	9.855 ²	152	440	2.9	849.4	849.4	849.5	0.1

¹Feet above confluence with Stony Creek

²Miles above confluence with West Fork White River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

WILLIAM LEHR DITCH – WILLIAMS CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Williams Creek (Continued)								
S	10.052	273	854	1.5	852.4	852.4	852.4	0.0
T	10.324	179	484	2.6	854.1	854.1	854.2	0.1
U	10.420	159	394	3.3	854.9	854.9	855.0	0.1
V	10.598	203	518	2.5	856.9	856.9	857.0	0.1
W	10.765	370	741	1.7	858.4	858.4	858.5	0.1
X	11.000	63	201	3.8	862.0	862.0	862.0	0.0
Y	11.091	108	249	3.0	862.9	862.9	863.0	0.1
Z	11.205	226	428	1.8	863.8	863.8	863.9	0.1
AA	11.291	259	500	1.5	864.4	864.4	864.5	0.1
AB	11.502	160	290	2.6	865.8	865.8	865.9	0.1
AC	11.659	52	157	4.8	867.4	867.4	867.5	0.1
AD	11.747	95	165	4.6	868.2	868.2	868.3	0.1
AE	11.826	140	300	2.5	869.5	869.5	869.6	0.1
AF	11.990	122	423	1.8	872.8	872.8	872.9	0.1
AG	12.236	122	270	2.8	874.3	874.3	874.4	0.1
AH	12.693	171	487	1.2	880.8	880.8	880.9	0.1
AI	12.814	128	274	2.1	881.6	881.6	881.7	0.1
AJ	12.976	211	752	1.4	883.6	883.6	883.7	0.1
AK	13.260	45	115	2.5	886.7	886.7	886.8	0.1
AL	13.322	30	94	3.1	888.4	888.4	888.5	0.1
AM	13.439	164	522	0.6	891.2	891.2	891.2	0.0
AN	13.608	58	200	1.5	895.3	895.3	895.3	0.0
AO	13.723	20	38	7.8	895.6	895.6	895.6	0.0

¹Miles above confluence with West Fork White River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

WILLIAMS CREEK

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Wilson Ditch								
A	69	104	300	2.6	756.0	752.1 ²	752.2	0.1
B	309	58	104	7.4	756.0	753.0 ²	753.0	0.0
C	766	64	224	3.4	756.0	755.1 ²	755.2	0.1
D	1123	68	233	3.3	756.0	755.7 ²	755.8	0.1
E	1232	80	247	3.0	756.0	756.0	756.1	0.1
F	1444	71	277	2.7	756.3	756.3	756.4	0.1
G	1554	71	250	2.9	757.2	757.2	757.3	0.1
H	1996	83	323	2.3	757.6	757.6	757.7	0.1
I	2161	163	639	1.2	757.8	757.8	757.9	0.1
J	2527	358	2260	0.3	757.9	757.9	758.0	0.1
K	2914	242	1584	0.5	757.9	757.9	758.0	0.1
L	3325	305	492	1.5	757.9	757.9	758.0	0.1
M	3425	189	463	1.6	758.2	758.2	758.3	0.1
N	3613	114	159	3.8	758.3	758.3	758.4	0.1
O	3762	59	147	4.1	758.7	758.7	758.7	0.0
P	3839	70	200	3.0	759.2	759.2	759.3	0.1
Q	4352	39	153	3.9	759.8	759.8	759.9	0.1
R	4626	41	134	4.5	760.3	760.3	760.4	0.1
S	4936	86	133	4.5	761.2	761.2	761.3	0.1
T	5013	99	155	3.8	761.5	761.5	761.6	0.1
U	5096	208	362	1.6	763.0	763.0	763.1	0.1
V	5199	155	421	1.4	763.1	763.1	763.2	0.1
W	5366	102	314	1.9	763.2	763.2	763.3	0.1
X	5445	113	314	1.9	763.9	763.9	764.0	0.1
Y	5508	112	326	1.8	764.0	764.0	764.1	0.1
Z	5686	79	285	2.1	764.1	764.1	764.2	0.1

¹Feet above confluence with Stony Creek

²Elevation computed without consideration of backwater effects from Stony Creek or West Fork White River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

WILSON DITCH

FLOODING SOURCE		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Wilson Ditch (Continued)								
AA	5895	55	144	4.1	764.2	764.2	764.3	0.1
AB	6093	40	161	3.6	764.7	764.7	764.8	0.1
AC	6359	41	165	1.5	765.1	765.1	765.2	0.1
AD	6713	42	158	1.6	765.2	765.2	765.3	0.1
AE	6820	49	171	1.4	765.3	765.3	765.4	0.1
AF	7774	151	561	0.3	765.9	765.9	766.0	0.1
AG	8289	214	482	0.3	765.9	765.9	766.0	0.1
AH	8654	31	55	3.0	766.1	766.1	766.2	0.1
AI	9010	38	55	3.0	767.0	767.0	767.0	0.0
AJ	9380	30	37	4.4	769.1	769.1	769.1	0.0
AK	9672	34	37	4.0	770.8	770.8	770.8	0.0
AL	9770	35	125	1.2	775.1	775.1	775.1	0.0
AM	9944	37	130	1.1	775.1	775.1	775.2	0.1
AN	10182	60	138	1.1	775.4	775.4	775.4	0.0
AO	10441	45	56	2.6	775.5	775.5	775.5	0.0
AP	10569	80	49	3.0	775.8	775.8	775.8	0.0

¹Feet above confluence with Stony Creek

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

FLOODWAY DATA

WILSON DITCH

5.0 INSURANCE APPLICATIONS

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

Zone A

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

Zone AE

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

Zone X

Zone X is the flood insurance risk zone that corresponds to areas outside the 0.2-percent-annual-chance floodplain, areas within the 0.2-percent-annual-chance floodplain, and 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

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

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

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

The current FIRM presents flooding information for the entire geographic area of Hamilton County. Previously, separate FIRMs were prepared for each identified flood prone incorporated community and for the unincorporated areas of the county. Historical data relating to the maps prepared for each community are presented in Table 14.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
^{1,2} Arcadia, Town of	August 16, 1988	N/A	August 16, 1988	
^{1,2} Atlanta, Town of	N/A	N/A	N/A	
Carmel, City of	August 9, 1974	March 5, 1976 March 10, 1978	May 19, 1981	
Cicero, Town of	February 1, 1974	June 11, 1976 October 21, 1977	January 2, 1980	
Fishers, Town of	June 30, 1976	N/A	February 19, 1987	
Hamilton County (Unincorporated Areas)	December 13, 1974	December 23, 1977	August 15, 1983	January 16, 1987
Noblesville, City of	May 24, 1974	June 25, 1976 September 16, 1977 August 4, 1978	March 2, 1981	September 4, 1982
¹ Sheridan, Town of	N/A	N/A	N/A	
Westfield, City of	February 1, 1974	May 28, 1976	March 16, 1981	March 11, 1983

¹The community does not have map history prior to first countywide mapping

²No Special Flood Hazard Areas Identified

TABLE 14

FEDERAL EMERGENCY MANAGEMENT AGENCY

**HAMILTON COUNTY, IN
AND INCORPORATED AREAS**

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

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

8.0 LOCATION OF DATA

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

9.0 BIBLIOGRAPHY AND REFERENCES

1. Federal Emergency Management Agency, Flood Insurance Study, Boone County, Indiana (Unincorporated Areas), Washington, D.C., March 30, 1998.
2. Federal Emergency Management Agency, Flood Insurance Study, City of Carmel, Hamilton County, Indiana, Washington, D.C., November 1980.
3. Federal Emergency Management Agency, Flood Insurance Study, Hancock County, Indiana (Unincorporated Areas), Washington, D.C., October 15, 1982.
4. Federal Emergency Management Agency, Flood Insurance Study, Madison County, Indiana (Unincorporated Areas), Washington, D.C., February 1, 1994.
5. Federal Emergency Management Agency, Flood Insurance Study, Tipton County, Indiana (Unincorporated Areas), Washington, D.C., September 1, 1988.
6. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, City of Noblesville, Hamilton County, Indiana, Washington, D.C., September 1980.
7. Citizen's Water, Morse Reservoir Levee Design Criteria Certification Report, Revised, March 2016.
8. Geobytes City Distance Tool. Accessed at <http://www.geobytes.com/CityDistanceTool.htm>.
9. Indiana Administrative Code 310 IAC 10 Flood Plain Management accessed at <http://www.in.gov/legislative/iac/T03120/A00100.PDF>
10. Indiana Code IC 14-28-1, Flood Control Act, accessed at <http://www.in.gov/legislative/ic/code/title14/ar28/ch1.html>
11. Indiana Department of Natural Resources, Division of Water, Coordinated Discharges of Selected Streams in Indiana, accessed at http://www.in.gov/dnr/water/surface_water/coordinated_discharges/index.html

12. Indiana Department of Natural Resources, Division of Water, General Guidelines For The Hydrologic-Hydraulic Assessment Of Floodplains In Indiana, December 2002.
13. Indiana Department of Natural Resources, Division of Water, Special Flood Plain Mapping, Topographic Maps for Hamilton County, Indiana, Scale 1:2,400, Contour Interval 2 feet, 1967.
14. Indiana Department of Natural Resources, Division of Water, West Fork White River, Noblesville, Marion-Hamilton County, Indiana, Scale 1:2,400, Contour Interval 2 feet, sheets 6 and 9 of 24, prepared by Clyde E. Williams & Associates, 1971.
15. Indiana Department of Natural Resources, Flood Plain Topographic Maps, Scale: 1:2,400, Contour Interval 2 feet: Carmel, Indiana, 1977.
16. Indiana Department of Natural Resources, Revised Floodway Mapping for Mud and Sand Creeks, Hamilton County, Indiana, Scale 1:4,800, Contour Interval 2 feet, June 1999.
17. Knipe, David, and Rao, A. R. Estimation of Peak Discharges of Indiana Streams by Using the Log Pearson III Distribution, Purdue University, School of Civil Engineering, Joint Transportation Research Program, Project No. C-36-620, File No. 9-8-15, 2005.
18. Mid-States Engineering Co., Inc., Aerial Photographs, Scale 1:9,600: Carmel, Indiana, April 1976.
19. MSE Corporation, Flood Plain Study for Mitchener Legal Drain, Hamilton County, Indiana, unpublished, August 1990.
20. National Oceanic and Atmospheric Administration, National Climatic Data Center, Monthly Station Normals of Temperature, Precipitation, and Heating and Cooling Days, 1971-2000, Climatology of the United States No. 81, 2002.
21. "Population Counts, Estimates and Projections", STATS Indiana, Indiana Business Research Center, Indiana University Kelley School of Business, accessed at www.stats.indiana.edu/pop_totals_topic_page.html.
22. Schneider Engineering Corporation, Flood Plain Study for Mitchener Ditch, to be included in Federal Emergency Management Agency, Flood Insurance Study, Hamilton County, Indiana.
23. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-River Analysis System, Davis, California, September 1998.
24. U.S. Department of Transportation, Federal Highway Administration, Hydraulic Design of Highway Culverts, Report No. FHWA-IP-85-15, Normann, J.M., Houghtalen, R.J., Johnston, W.J., September 1985.

25. U.S. Federal Highway Administration Report No. FHWA-RD-IP-86-108, Bridge Waterways Analysis Model; Research Report, J.O. Shearman, W.H. Kirby, V.R. Schneider, and H.N. Flippo, 1986.
26. U.S. Federal Highway Administration Report No. FHWA-RD-IP-89-027, User's Manual for WSPRO - A Computer Model for Water Surface Profile Computations, J.O. Shearman, 1986.
27. U.S. Geological Survey, Open-File Report 76-499, Computer Applications for Step-Backwater and Floodway Analyses Users' Manual, J.O. Shearman, 1976.
28. U.S. Geological Survey, Surface-Water Data for Indiana, Peak-Flow Data for Hamilton County. <http://nwis.waterdata.usgs.gov/in/nwis/peak>.
29. U.S. Department of the Interior, Geological Survey, 7.5 Minute Series Topographic Maps, Scale 1:24,000, Contour Intervals of 5 and 10 Feet: Arcadia, Indiana, 1961; Carmel, Indiana, 1952, photorevised 1967; Fishers, Indiana, 1952, photorevised 1967; Frankton, Indiana, 1962; Lapel, Indiana, 1953, photorevised 1967; McCordsville, Indiana, 1952, photorevised 1962; Noblesville, Indiana, 1953, photorevised 1960; Omega, Indiana, 1961; Riverwood, Indiana, 1953, photorevised 1969; Sheridan, Indiana, 1961; Westfield, Indiana, 1953, photorevised 1969.
30. U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of Hamilton County, Indiana, November 1978.
31. U.S. Army Corps of Engineers, Flood Plain Information Report, White River and Tributaries, Hamilton County, Indiana, June 1977.
32. U.S. Water Resources Council, Guidelines for Determining Flood Flow Frequency, Bulletin No. 17 of the Hydrology Committee, March 1976.
33. U.S. Army Corps of Engineers, Hydrologic Engineering Center, Flood Flow Frequency Analysis, Users Manual, Davis, California, June 1976.
34. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-1 Flood Hydrograph Package, Users Manual, Davis, California, January 1973.
35. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water-Surface Profiles, Users Manual, Computer Program 723-X6-L202A, Davis, California, December 1968 with updates, 1976.
36. U.S. Geological Survey, Open File Report 76-499, Computer Applications for Step-Backwater and Floodway Analyses Users' Manual, J.O. Shearman, 1976.

37. U.S. Army Corps of Engineers, Louisville District, Flood Plain Information Report-White River and Tributaries, Hamilton County, Indiana, June 1977.
38. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, City of Noblesville, Indiana, August 1978.
39. U.S. Army Corps of Engineers, Flood Plain Information Report, White River, Hamilton and Madison Counties, Indiana, March 1979.

10.0 **REVISIONS DESCRIPTION**

This section has been added to provide information regarding revisions since the original FIS report and FIRM were printed. Future revisions may be made that do not result in the republishing of the FIS report. All users are advised to contact the Community Map Repository to obtain the most up-to-date flood hazard data.

10.1. Morse Levee Reservoir Revision (Date To Be Determined)

The countywide study was revised to reflect the certification of Morse Reservoir Levee. The countywide FIS report has been updated to reflect the changes. Please refer to the relevant sections within this report for details.

The Notes to Users Section and the Map Legend have been revised to reflect the latest FEMA standards. These are shown below as Figure 2 and Figure 3.

Figure 2: FIRM Notes to Users

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877- 336-2627) or visit the FEMA Map Service Center website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates, refer to Table 14 in this FIS Report.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

PRELIMINARY FIS REPORT: FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination Officer's meeting, or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.

The map is for use in administering the NFIP. It may not identify all areas subject to flooding, particularly from local drainage sources of small size. Consult the community map repository to find updated or additional flood hazard information."

This is a required paragraph in the latest Notes to Users figure.

BASE FLOOD ELEVATIONS: For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables within this FIS Report. Use the flood elevation data within the FIS Report in conjunction with the FIRM for construction and/or floodplain management.

FLOODWAY INFORMATION: Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the FIS Report for this jurisdiction.

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction.

PROJECTION INFORMATION: The projection used in the preparation of the map was State Plane Ohio South FIPS 3402. The horizontal datum was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

ELEVATION DATUM: Flood elevations on the FIRM are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/> or contact the National Geodetic Survey at the following address:

*NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242*

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community.

BASE MAP INFORMATION: Base map information shown on the FIRM was derived from the 2011 Indiana Orthophotography (IndianaMap Framework Data www.indianamap.org). This information was photogrammetrically compiled at a scale of 1:2400 from aerial photography dated Spring 2011.

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

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

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Hamilton County, IN, corresponding revisions to the FIRM Index will be incorporated within the FIS Report to reflect the effective dates of those panels. Please refer to Table 14 of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for Hamilton County, IN, effective To Be Determined.

ACCREDITED LEVEE NOTES TO USERS:

Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit www.fema.gov/national-flood-insurance-program.

FLOOD RISK REPORT: A Flood Risk Report (FRR) may be available for many of the flooding sources and communities referenced in this FIS Report. The FRR is provided to increase public awareness of flood risk by helping communities identify the areas within their jurisdictions that have the greatest risks. Although non-regulatory, the information provided within the FRR can assist communities in assessing and evaluating mitigation opportunities to reduce these risks. It can also be used by communities developing or updating flood risk mitigation plans. These plans allow communities to identify and evaluate opportunities to reduce potential loss of life and property. However, the FRR is not intended to be the final authoritative source of all flood risk data for a project area; rather, it should be used with other data sources to paint a comprehensive picture of flood risk.

Figure 3: Map Legend for FIRM

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



Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)

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

Figure 3: Map Legend for FIRM

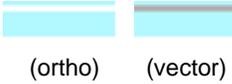
	<p>Regulatory Floodway determined in Zone AE.</p>
<p>OTHER AREAS OF FLOOD HAZARD</p>	
	<p>Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.</p>
	<p>Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.</p>
	<p>Area with Reduced Flood Risk due to Levee: Areas where an accredited levee, dike, or other flood control structure has reduced the flood risk from the 1% annual chance flood. See Notes to Users for important information.</p>
<p>OTHER AREAS</p>	
 <div data-bbox="251 888 457 972" style="border: 1px solid black; padding: 2px; display: inline-block;"> <p>NO NOSCREEN</p> </div>	<p>Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.</p> <p>Unshaded Zone X: Areas of minimal flood hazard.</p>
<p>FLOOD HAZARD AND OTHER BOUNDARY LINES</p>	
	<p>Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)</p>
	<p>Limit of Study</p>
	<p>Jurisdiction Boundary</p>
	<p>Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet</p>
<p>GENERAL STRUCTURES</p>	
 <p><i>Aqueduct</i> <i>Channel</i> <i>Culvert</i> <i>Storm Sewer</i></p>	<p>Channel, Culvert, Aqueduct, or Storm Sewer</p>
 <p><i>Dam</i> <i>Jetty</i> <i>Weir</i></p>	<p>Dam, Jetty, Weir</p>

Figure 3: Map Legend for FIRM

	Levee, Dike, or Floodwall
	Bridge

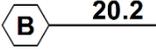
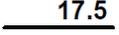
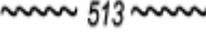
REFERENCE MARKERS	
	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
	Coastal Transect
	Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation.
	Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.
	Base Flood Elevation Line
ZONE AE (EL 16)	Static Base Flood Elevation value (shown under zone label)
ZONE AO (DEPTH 2)	Zone designation with Depth
ZONE AO (DEPTH 2) (VEL 15 FPS)	Zone designation with Depth and Velocity

Figure 3: Map Legend for FIRM

BASE MAP FEATURES	
	River, Stream or Other Hydrographic Feature
	Interstate Highway
	U.S. Highway
	State Highway
	County Highway
	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
	Railroad
	Horizontal Reference Grid Line
	Horizontal Reference Grid Ticks
	Secondary Grid Crosshairs
Land Grant	Name of Land Grant
7	Section Number
R. 43 W. T. 22 N.	Range, Township Number
4276 ⁰⁰⁰ mE	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80° 16' 52.5"	Corner Coordinates (Latitude, Longitude)