

FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 1



BRANCH COUNTY, MICHIGAN

(ALL JURISDICTIONS)

COMMUNITY NAME	COMMUNITY NUMBER	COMMUNITY NAME	COMMUNITY NUMBER
ALGANSEE, TOWNSHIP OF	260994	KINDERHOOK, TOWNSHIP OF	260361
BATAVIA, TOWNSHIP OF*	261047	MATTESON, TOWNSHIP OF	260911
BETHEL, TOWNSHIP OF*	261048	NOBLE, TOWNSHIP OF*	261052
BRONSON, CITY OF*	261049	OVID, TOWNSHIP OF	260362
BRONSON, TOWNSHIP OF	261050	QUINCY, TOWNSHIP OF	260997
BUTLER, TOWNSHIP OF	261051	QUINCY, VILLAGE OF	261055
CALIFORNIA, TOWNSHIP OF	260998	SHERWOOD, TOWNSHIP OF	261020
COLDWATER, CITY OF	260813	SHERWOOD, VILLAGE OF	261054
COLDWATER, TOWNSHIP OF	260826	UNION CITY, VILLAGE OF	261053
GILEAD, TOWNSHIP OF*	260360	UNION, TOWNSHIP OF	261016
GIRARD, TOWNSHIP OF	261044		

*No Special Flood Hazard Areas Identified



FEMA

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FLOOD INSURANCE STUDY NUMBER

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Version Number 2.4.3.5

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Volume 1

Exhibits

Flood Profiles	<u>Panel</u>
Cold Creek	01-03 P
Coldwater River	04-05 P
County Drain 15	06-07 P
County Drain 40	08-09 P
Little Swan Creek	10-11 P
Sauk River	12-17 P
South Lake Drain	18 P

Published Separately

Flood Insurance Rate Map (FIRM)

FLOOD INSURANCE STUDY REPORT

BRANCH COUNTY, MICHIGAN

SECTION 1.0 – INTRODUCTION

1.1 The National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a voluntary Federal program that enables property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

For decades, the national response to flood disasters was generally limited to constructing flood-control works such as dams, levees, sea-walls, and the like, and providing disaster relief to flood victims. This approach did not reduce losses nor did it discourage unwise development. In some instances, it may have actually encouraged additional development. To compound the problem, the public generally could not buy flood coverage from insurance companies, and building techniques to reduce flood damage were often overlooked.

In the face of mounting flood losses and escalating costs of disaster relief to the general taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances, and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection.

The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act of 1994 and the Flood Insurance Reform Act of 2004. The NFIP is administered by the Federal Emergency Management Agency (FEMA), which is a component of the Department of Homeland Security (DHS).

Participation in the NFIP is based on an agreement between local communities and the Federal Government. If a community adopts and enforces floodplain management regulations to reduce future flood risks to new construction and substantially improved structures in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses. The community's floodplain management regulations must meet or exceed criteria established in accordance with Title 44 Code of Federal Regulations (CFR) Part 60, *Criteria for Land Management and Use*.

SFHAs are delineated on the community's Flood Insurance Rate Maps (FIRMs). Under the NFIP, buildings that were built before the flood hazard was identified on the community's FIRMs are generally referred to as "Pre-FIRM" buildings. When the NFIP was created, the U.S. Congress recognized that insurance for Pre-FIRM buildings would be prohibitively expensive if the premiums were not subsidized by the Federal Government. Congress also recognized that most of these floodprone buildings were built

by individuals who did not have sufficient knowledge of the flood hazard to make informed decisions. The NFIP requires that full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved on or after the effective date of the initial FIRM for the community or after December 31, 1974, whichever is later. These buildings are generally referred to as “Post-FIRM” buildings.

1.2 Purpose of this Flood Insurance Study Report

This Flood Insurance Study (FIS) Report revises and updates information on the existence and severity of flood hazards for the study area. The studies described in this report developed flood hazard data to assist communities in efforts to implement sound floodplain management.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive than the minimum Federal requirements. Contact your State NFIP Coordinator to ensure that any higher State standards are included in the community’s regulations.

1.3 Jurisdictions Included in the Flood Insurance Study Project

This FIS Report covers the entire geographic area of Branch County, Michigan.

The jurisdictions that are included in this project area, along with the Community Identification Number (CID) for each community and the United States Geological Survey (USGS) 8-digit Hydrologic Unit Code (HUC-8) sub-basins affecting each, are shown in Table 1. The FIRM panel numbers that affect each community are listed. If the flood hazard data for the community is not included in this FIS Report, the location of that data is identified.

The location of flood hazard data for participating communities in multiple jurisdictions is also indicated in the table.

Jurisdictions that have no identified SFHAs as of the effective date of this study are indicated in the table. Changed conditions in these communities (such as urbanization or annexation) or the availability of new scientific or technical data about flood hazards could make it necessary to determine SFHAs in these jurisdictions in the future.

•

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Alganssee, Township of	260994	04050001 04100003	26023C0214C 26023C0220C 26023C0250B ² 26023C0350C 26023C0375B ²	
Batavia, Township of ¹	261047	04050001	26023C0160C 26023C0170B ² 26023C0180B ² 26023C0181C 26023C0183C 26023C0190B ² 26023C0191C 26023C0193C	
Bethel, Township of ¹	261048	04050001	26023C0170B ² 26023C0190B ² 26023C0193C 26023C0300B ² 26023C0325C	
Bronson, City of ¹	261049	04050001	26023C0165C 26023C0170B ² 26023C0300B ²	
Bronson, Township of	261050	04050001	26023C0145C 26023C0165C 26023C0170B ² 26023C0275B ² 26023C0300B ²	
Butler, Township of	261051	04050001	26023C0100B 26023C0125B ² 26023C0202C 26023C0210C 26023C0250B ²	
California, Township of	260998	04050001 04100003	26023C0350C 26023C0375B ²	
Coldwater, City of	260813	04050001	26023C0183C 26023C0184C 26023C0191C 26023C0192C 26023C0201C 26023C0203C 26023C0204C 26023C0211C 26023C0212C	

¹ No Special Flood Hazard Areas Identified

² Panel Not Printed

Table 1: Listing of NFIP Jurisdictions (continued)

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Coldwater, Township of	260826	04050001	26023C0181C 26023C0182C 26023C0183C 26023C0184C 26023C0191C 26023C0192C 26023C0193C 26023C0194B ² 26023C0201C 26023C0202C 26023C0203C 26023C0204C 26023C0211C 26023C0212C 26023C0213B ² 26023C0214C	
Gilead, Township of ¹	260360	04050001	26023C0300B ² 26023C0325C	
Girard, Township of	261044	04050001	26023C0075C 26023C0100B 26023C0181C 26023C0182C 26023C0201C 26023C0202C	
Kinderhook, Township of	260361	04050001	26023C0325C 26023C0350C	
Matteson, Township of	260911	04050001	26023C0135C 26023C0145C 26023C0155C 26023C0160C 26023C0165C 26023C0170B ²	
Noble, Township of ¹	261052	04050001	26023C0275B ² 26023C0300B ²	
Ovid, Township of	260362	04050001	26023C0193C 26023C0194B ² 26023C0213B ² 26023C0214C 26023C0325C 26023C0350C	

¹ No Special Flood Hazard Areas Identified

² Panel Not Printed

Table 1: Listing of NFIP Jurisdictions (*continued*)

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Quincy, Township of	260997	04050001	26023C0202C 26023C0204C 26023C0210C 26023C0212C 26023C0214C 26023C0220C 26023C0250B ²	
Quincy, Village of	261055	04050001	26023C0210C 26023C0220C 26023C0250B ²	
Sherwood, Township of	261020	04050001	26023C0025C 26023C0050B 26023C0135C 26023C0155C 26023C0160C	
Sherwood, Village of	261054	04050001	26023C0050B 26023C0155C	
Union City, Village of	261053	04050001	26023C0050B	
Union, Township of	261016	04050001	26023C0050B 26023C0075C 26023C0160C 26023C0180B ² 26023C0181C	

¹ No Special Flood Hazard Areas Identified

² Panel Not Printed

1.4 Considerations for using this Flood Insurance Study Report

The NFIP encourages State and local governments to implement sound floodplain management programs. To assist in this endeavor, each FIS Report provides floodplain data, which may include a combination of the following: 10-, 4-, 2-, 1-, and 0.2-percent annual chance flood elevations (the 1-percent-annual-chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1-percent-annual-chance and 0.2-percent-annual-chance floodplains; and 1-percent-annual-chance floodway. This information is presented on the FIRM and/or in many components of the FIS Report, including Flood Profiles, Floodway Data tables, Summary of Non-Coastal Stillwater Elevations tables, and Coastal Transect Parameters tables (not all components may be provided for a specific FIS).

This section presents important considerations for using the information contained in this FIS Report and the FIRM, including changes in format and content. Figures 1, 2, and 3 present information that applies to using the FIRM with the FIS Report.

- Part or all of this FIS Report may be revised and republished at any time. In addition, part of this FIS Report may be revised by a Letter of Map Revision (LOMR), which does not involve republication or redistribution of the FIS Report. Refer to Section 6.5 of this FIS Report for information about the process to revise

the FIS Report and/or FIRM.

It is, therefore, the responsibility of the user to consult with community officials by contacting the community repository to obtain the most current FIS Report components. Communities participating in the NFIP have established repositories of flood hazard data for floodplain management and flood insurance purposes. Community map repository addresses are provided in Table 30, "Map Repositories," within this FIS Report.

- New FIS Reports are frequently developed for multiple communities, such as entire counties. A countywide FIS Report incorporates previous FIS Reports for individual communities and the unincorporated area of the county (if not jurisdictional) into a single document and supersedes those documents for the purposes of the NFIP.

The initial Countywide FIS Report for Branch County became effective on April 19, 2010. Refer to Table 27 for information about subsequent revisions to the FIRMs.

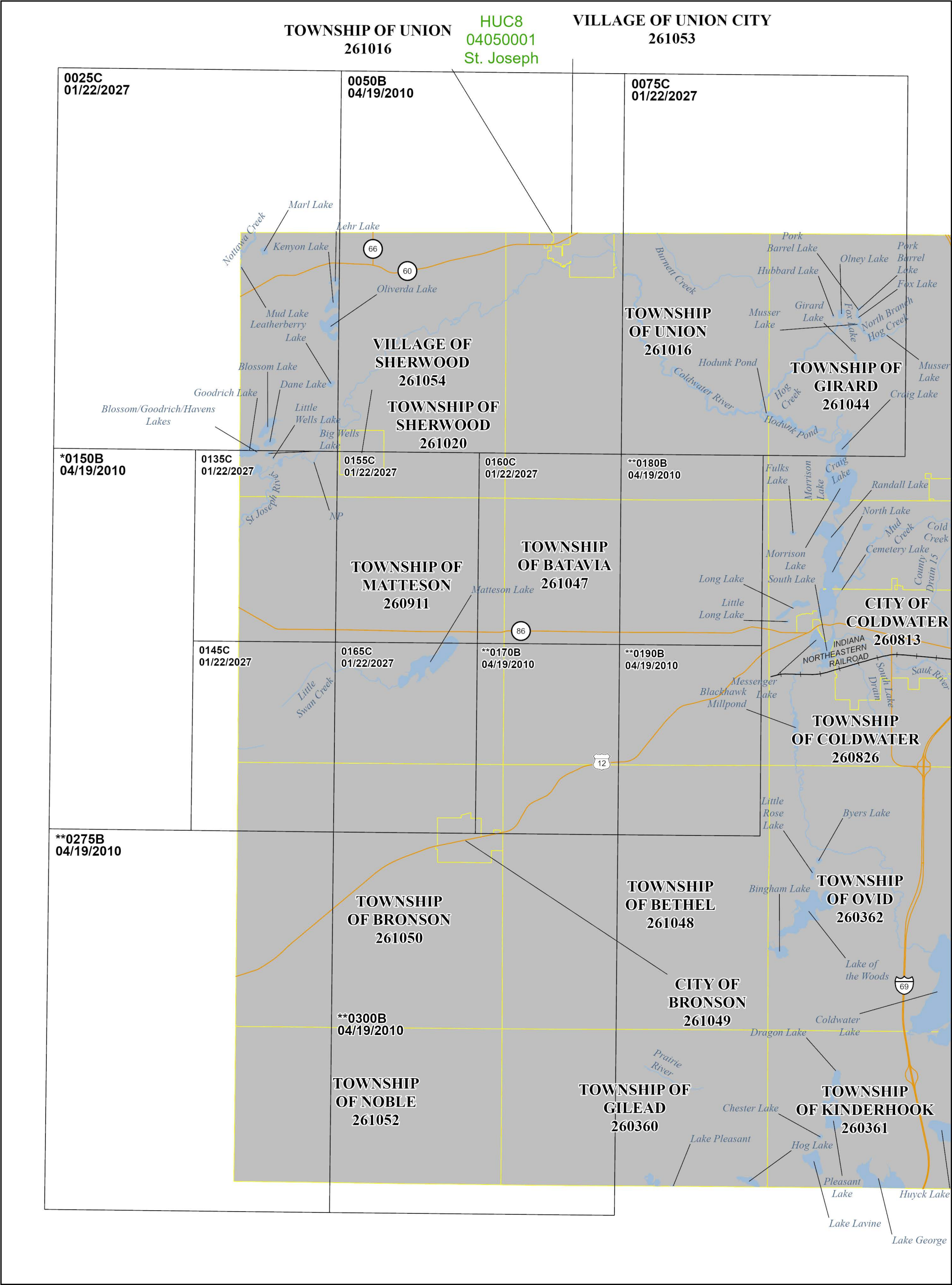
- Selected FIRM panels for the community may contain information (such as floodways and cross sections) that was previously shown separately on the corresponding Flood Boundary and Floodway Map (FBFM) panels. In addition, former flood hazard zone designations have been changed as follows:

<u>Old Zone</u>	<u>New Zone</u>
A1 through A30	AE
V1 through V30	VE
B	X (shaded)
C	X (unshaded)

- FEMA has developed a *Guide to Flood Maps* (FEMA 258) and online tutorials to assist users in accessing the information contained on the FIRM. These include how to read panels and step-by-step instructions to obtain specific information. To obtain this guide and other assistance in using the FIRM, visit the FEMA Web site at www.fema.gov/flood-maps/tutorials.

The FIRM Index in Figure 1 shows the overall FIRM panel layout within Branch County, and also displays the panel number and effective date for each FIRM panel in the county. Other information shown on the FIRM Index includes community boundaries, flooding sources, watershed boundaries, and USGS HUC-8 codes.

Figure 1. FIRM Index



1 inch = 11,379 feet 1:136,549

0 5,000 10,000 20,000 30,000 feet

Map Projection:
NAD 1983 StatePlane Michigan South FIPS 2113 Feet
Vertical Datum: NAVD88

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT [HTTPS://MSC.FEMA.GOV](https://MSC.FEMA.GOV)

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP INDEX

BRANCH COUNTY, MICHIGAN, ALL JURISDICTIONS

PAGE 1 OF 2

PANELS PRINTED:

0025, 0050, 0075, 0135, 0145, 0155, 0160, 0165

ATTENTION: The corporate limits shown on this FIRM Index are based on the best information available at the time of publication. As Such, they may be more current than those shown on FIRM panels issued before January 22, 2027.

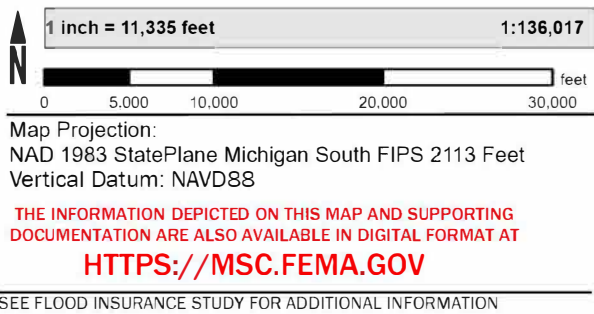
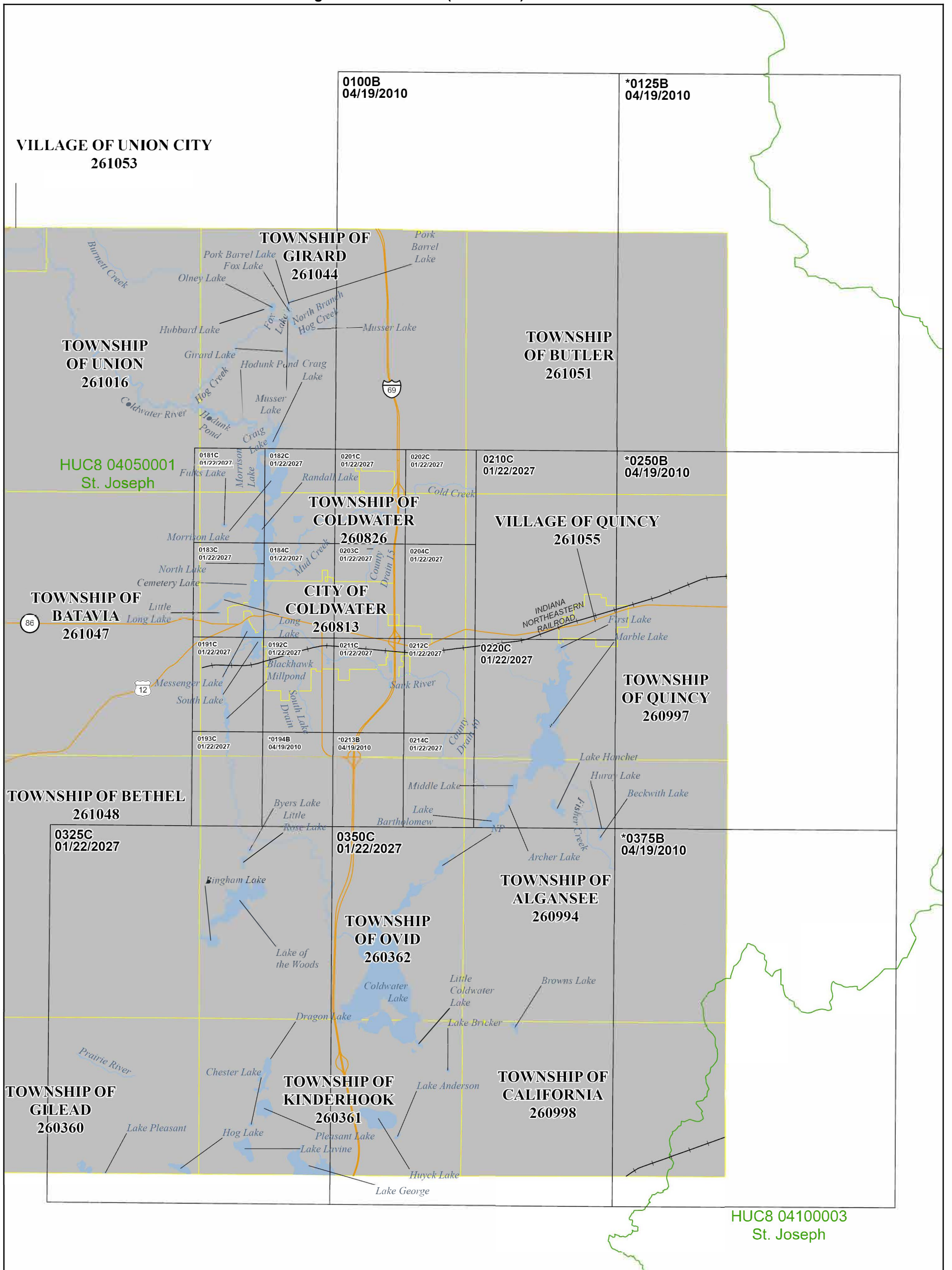


FEMA

MAP NUMBER
26023CIND1B

EFFECTIVE DATE
January 22, 2027

Figure 1: FIRM Index (continued)



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

BRANCH COUNTY, MICHIGAN, ALL JURISDICTIONS

PAGE 2 OF 2

PANELS PRINTED:

0100, 0181, 0182, 0183, 0184, 0191, 0192, 0193, 0201, 0202, 0203, 0204, 0210, 0211, 0212, 0214, 0220, 0325, 0350

ATTENTION: The corporate limits shown on this FIRM Index are based on the best information available at the time of publication. As Such, they may be more current than those shown on FIRM panels issued before January 22, 2027.



FEMA

MAP NUMBER
26023CIND2B

EFFECTIVE DATE
January 22, 2027

Each FIRM panel may contain specific notes to the user that provide additional information regarding the flood hazard data shown on that map. However, the FIRM panel does not contain enough space to show all the notes that may be relevant in helping to better understand the information on the panel. Figure 2 contains the full list of these notes.

Figure 2: FIRM Notes to Users

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), 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 Mapping and Insurance eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at 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 Flood Map Service Center website or by calling the FEMA Mapping and Insurance 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 Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to Table 27 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.

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.

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 Non-Coastal 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.

Figure 2. FIRM Notes to Users (Continued)

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 have reduced flood hazards due to flood control structures. Refer to Section 4.3 "Dams and Other Flood Hazard Reduction 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 NAD 1983 State Plane Michigan South FIPS 2113 Feet. The horizontal datum was the North American Datum 1983. 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 www.ngs.noaa.gov.

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community listed in Table 30 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on the FIRM was provided by Branch County GIS Department at a scale of 1:5,000. The following panels used base map information provided by the U.S. Geological Survey at a scale of 1:12,000: 125, 130, and 140. For information about base maps, refer to Section 6.2 "Base Map" in this FIS Report.

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 Branch County, Michigan, 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 27 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.

Figure 2. FIRM Notes to Users (Continued)

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for Branch County, Michigan, effective January 22, 2027.

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.

Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Branch County.

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.
	Regulatory Floodway determined in Zone AE.

Figure 3: Map Legend for FIRM (Continued)

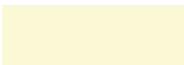
OTHER AREAS OF FLOOD HAZARD	
	Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.
	Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate 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.
	Area with Reduced Flood Hazard due to Accredited or Provisionally Accredited Levee System: Area is shown as reduced flood hazard from the 1-percent-annual-chance or greater flood by a levee system. Overtopping or failure of any levee system is possible.
	Area with Undetermined Flood Hazard due to Non-Accredited Levee System: Analysis and mapping procedures for non-accredited levee systems were applied resulting in a flood insurance rate zone where flood hazards are undetermined, but possible.
OTHER AREAS	
	Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.
	Unshaded Zone X: Areas of minimal flood hazard.
FLOOD HAZARD AND OTHER BOUNDARY LINES	
 (ortho) (vector)	Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)
	Limit of Study
	Jurisdiction Boundary
	Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet
GENERAL STRUCTURES	
 Aqueduct Channel Culvert Storm Sewer	Channel, Culvert, Aqueduct, or Storm Sewer

Figure 3: Map Legend for FIRM (Continued)

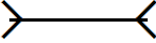
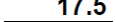
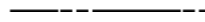
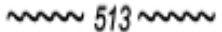
 <i>Dam Jetty Weir</i>	Dam, Jetty, Weir
	Levee, Dike, or Floodwall
 <i>Bridge</i>	Bridge
REFERENCE MARKERS	
 22.0	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
 20.2	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
 21.1	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
 17.5	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.
 513	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 (Continued)

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
4276⁰⁰⁰mE	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80° 16' 52.5"	Corner Coordinates (Latitude, Longitude)

SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

2.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance (500-year) flood is employed to indicate additional areas of flood hazard in the community.

Each flooding source included in the project scope has been studied and mapped using professional engineering and mapping methodologies that were agreed upon by FEMA and Branch County as appropriate to the risk level. Flood risk is evaluated based on factors such as known flood hazards and projected impact on the built environment. Engineering analyses were performed for each studied flooding source to calculate its 1-percent-annual-chance flood elevations; elevations corresponding to other floods (e.g. 10-, 4-, 2-, 0.2-percent annual chance, etc.) may have also been computed for certain flooding sources. Engineering models and methods are described in detail in Section 5.0 of this FIS Report. The modeled elevations at cross sections were used to delineate the floodplain boundaries on the FIRM; between cross sections, the boundaries were interpolated using elevation data from various sources. More information on specific mapping methods is provided in Section 6.0 of this FIS Report.

Depending on the accuracy of available topographic data (Table 22), study methodologies employed (Section 5.0), and flood risk, certain flooding sources may be mapped to show both the 1-percent and 0.2-percent-annual-chance floodplain boundaries, regulatory water surface elevations (BFEs), and/or a regulatory floodway. Similarly, other flooding sources may be mapped to show only the 1-percent-annual-chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1-percent and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary is shown on the FIRM. Figure 3: Map Legend for FIRM, “Map Legend for FIRM”, describes the flood zones that are used on the FIRMs to account for the varying levels of flood risk that exist along flooding sources within the project area. Table 2: Flooding Sources Included in this FIS Report and Table 3: Flood Zone Designations by Community indicate the flood zone designations for each flooding source and each community within Branch County, respectively.

Table 3 indicate the flood zone designations for each flooding source and each community within Branch County, respectively.

Table 2, “Flooding Sources Included in this FIS Report,” lists each flooding source, including its study limits, affected communities, mapped zone on the FIRM, and the completion date of its engineering analysis from which the flood elevations on the FIRM and in the FIS Report were derived. Descriptions and dates for the latest hydrologic and hydraulic analyses of the flooding sources are shown in Table 12. Floodplain boundaries for these flooding sources are shown on the FIRM (published separately) using the symbology described in Figure 3: Map Legend for FIRM. On the map, the 1-percent-annual-chance floodplain corresponds to the SFHAs. The 0.2-percent-annual-chance floodplain shows areas that, although out of the regulatory floodplain, are still subject to flood hazards.

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. The procedures to remove these areas from the SFHA are described in Section 6.5 of this FIS Report.

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
All flooding sources mapped as Zone A on the FIRM	California, Township of; Matteson, Township of; Sherwood, Township of	Various	Various	04050001	1.5	N	A	2016
Cold Creek	Coldwater, Township of; Girard, Township of	Approximately 4,500 feet downstream of Union City Road	Approximately 185 feet upstream of Corbell Road	04050001	5.4	N	AE	2016
Coldwater River	Ovid, Township of; Coldwater, Township of	Approximately 4,200 feet downstream of Indiana Northeastern Railroad	Approximately 350 feet upstream of East Fenn Road	04050001	3.3	N	AE	2016
County Drain 15	Coldwater, City of; Coldwater, Township of	At confluence with Cold Creek	Approximately 925 feet upstream of Grahl Drive	04050001	3.0	N	AE	2016
County Drain 40	Ovid, Township of; Coldwater, Township of	At confluence with Sauk River	At North Wood Road	04050001	2.9	N	AE	2016
Little Swan Creek	Matteson, Township of	Approximately 970 feet downstream of West Colon Road	Approximately 300 feet upstream of Langwell Road	04050001	1.8	N	AE	2016

Table 2: Flooding Sources Included in this FIS Report (Continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Little Swan Creek	Matteson, Township of	Approximately 160 feet downstream of Lindley Road	At Matteson Lake	04050001	3.4	N	AE	2016
Nottawa Creek	Sherwood, Township of	At Branch / St. Joseph county boundary	Approximately 60 feet upstream of Branch / St. Joseph county boundary	04050001	0.22	Y	A	2020
Sauk River	Coldwater, City of; Coldwater, Township of; Quincy, Township of	Approximately 3,100 feet downstream of Butters Avenue	Approximately 90 feet upstream of Fox Road	04050001	6.3	Y	AE	2020
South Lake Drain	Coldwater, City of; Coldwater, Township of	Approximately 355 feet downstream of Township of Coldwater / City of Coldwater boundary	Approximately 2,550 feet upstream of Township of Coldwater / City of Coldwater boundary	04050001	2.1	N	AE	2016

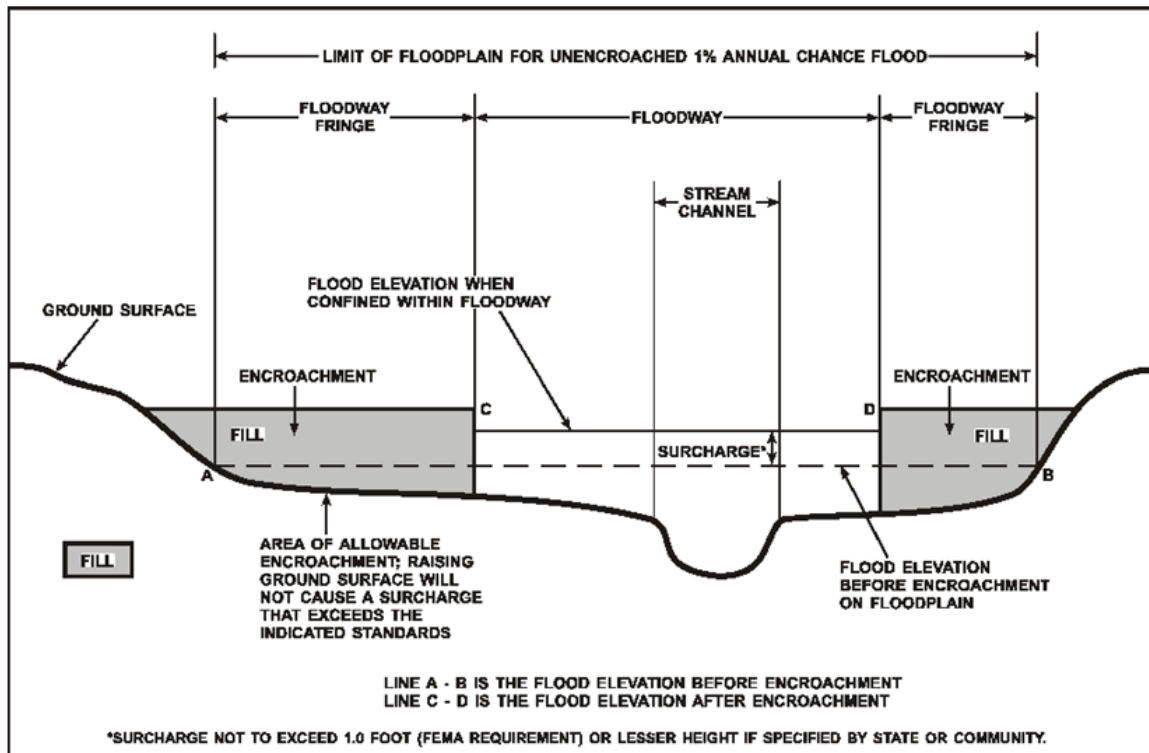
2.2 Floodways

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 balancing floodplain development against increasing flood hazard. With this approach, the area of the 1-percent-annual-chance floodplain on a river is divided into a floodway and a floodway fringe based on hydraulic modeling. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order to carry the 1-percent-annual-chance flood. The floodway fringe is the area between the floodway and the 1-percent-annual-chance floodplain boundaries where encroachment is permitted. The floodway must be wide enough so that the floodway fringe could be completely obstructed without increasing the water surface elevation of the 1-percent-annual-chance flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 4.

To participate in the NFIP, Federal regulations require communities to limit increases caused by encroachment to 1.0 foot, provided that hazardous velocities are not produced. Regulations for Michigan under Act 245, Public Acts of 1929, as amended by Act 167, Public Acts of 1968, encroachment in the floodplain is limited to that which will cause only insignificant increases in flood heights. Thus, at the recommendation of the Michigan Department of Natural Resources, Land and Water Management Division, floodways having no more than a 0.1-foot surcharge have been delineated for this study. The floodways in this project are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway projects.

Figure 4: Floodway Schematic



Floodway widths presented in this FIS Report and on the FIRM were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. For certain stream segments, floodways were adjusted so that the amount of floodwaters conveyed on each side of the floodplain would be reduced equally. The results of the floodway computations have been tabulated for selected cross sections and are shown in Table 23: Floodway Data, "Floodway Data."

All floodways that were developed for this Flood Risk Project are shown on the FIRM using the symbology described in Figure 3: Map Legend for FIRM. 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 on the FIRM. For information about the delineation of floodways on the FIRM, refer to Section 6.3.

2.3 Base Flood Elevations

The hydraulic characteristics of flooding sources were analyzed to provide estimates of the elevations of floods of the selected recurrence intervals. The BFE is the elevation of the 1-percent-annual-chance flood. These BFEs are most commonly rounded to the whole foot, as shown on the FIRM, but in certain circumstances or locations they may be rounded to 0.1 foot. Cross section lines shown on the FIRM may also be labeled with the BFE rounded to 0.1 foot. Whole-foot BFEs derived from engineering analyses that apply to coastal areas, areas of ponding, or other static areas with little elevation change may also be shown at selected intervals on the FIRM.

Cross sections with BFEs shown on the FIRM correspond to the cross sections shown in the Floodway Data table and Flood Profiles in this FIS Report. 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. For example, the user may use the FIRM to determine the stream station of a location of interest and then use the profile to determine the 1-percent annual chance elevation at that location. Because only selected cross sections may be shown on the FIRM for riverine areas, the profile should be used to obtain the flood elevation between mapped cross sections. Additionally, for riverine areas, whole-foot elevations shown on the FIRM may not exactly reflect the elevations derived from the hydraulic analyses; therefore, elevations obtained from the profile may more accurately reflect the results of the hydraulic analysis.

2.4 Non-Encroachment Zones

This section is not applicable to this Flood Risk Project.

2.5 Coastal Flood Hazard Areas

This section is not applicable to this Flood Risk Project.

2.5.1 Water Elevations and the Effects of Waves

This section is not applicable to this Flood Risk Project.

Figure 5: Wave Runup Transect Schematic

[Not applicable to this Flood Risk Project.]

2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

This section is not applicable to this Flood Risk Project.

2.5.3 Coastal High Hazard Areas

This section is not applicable to this Flood Risk Project.

Figure 6: Coastal Transect Schematic

[Not applicable to this Flood Risk Project.]

2.5.4 Limit of Moderate Wave Action

This section is not applicable to this Flood Risk Project.

SECTION 3.0 – INSURANCE APPLICATIONS

3.1 National Flood Insurance Program Insurance Zones

For flood insurance applications, the FIRM designates flood insurance rate zones as described in Figure 3: Map Legend for FIRM, “Map Legend for FIRM.” Flood insurance zone designations are assigned to flooding sources based on the results of the hydraulic or coastal analyses. Insurance agents use the zones shown on the FIRM and depths and base flood elevations in this FIS Report in conjunction with information on structures and

their contents to assign premium rates for flood insurance policies.

The 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (e.g. Zones A, AE, V, VE, etc.), and the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table 3 lists the flood zones in Branch County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Algansee, Township of	A, X
Batavia, Township of	X
Bethel, Township of	X
Bronson, City of	X
Bronson, Township of	A, X
Butler, Township of	A, X
California, Township of	A, X
Coldwater, City of	AE, X
Coldwater, Township of	AE, X
Gilead, Township of	X
Girard, Township of	A, AE, X
Kinderhook, Township of	A, X
Noble, Township of	X
Matteson, Township of	A, AE, X
Ovid, Township of	A, AE, X
Quincy, Township of	A, AE, X
Quincy, Village of	A, X
Sherwood, Township of	A, X
Sherwood, Village of	A, X
Union, Township of	A, X
Union City, Village of	A, X

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

Table 4 contains a description of the characteristics of the HUC-8 sub-basins within which each community falls. The table includes the main flooding sources within each basin, a brief description of the basin, and its drainage area.

Table 4: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
St. Joseph	04050001	St. Joseph River	Watershed encompassing all of Branch County	4714
St. Joseph	04100003	St. Joseph River	Watershed covers a small amount of southeast Branch County	1093

4.2 Principal Flood Problems

Table 5 contains a description of the principal flood problems that have been noted for Branch County by flooding source.

Table 5: Principal Flood Problems

Flooding Source	Description of Flood Problems
Cold Creek	During the 1-percent-annual-chance flood, approximately 529 acres – mostly stream and wetland areas – would be inundated. Damages would primarily be limited to Old 27 (Marshall Street), Gorbell Road, and cropland along the channel of Cold Creek. The percent-annual-chance water-surface elevation is approximately 0.8 foot higher than the low point in the road at the Old 27 crossing and is approximately 3.1 feet higher than the low point in the road at the Gorbell Road crossing. Such a flood would make both roads impassable and require traffic to be rerouted.
Coldwater River	Flood damages along the Coldwater River in the Township of Coldwater would primarily be limited to Fenn and Blackhawk Roads. The 1-percent-annual-chance water-surface elevation is approximately 0.5 foot higher than the low point in the road at Fenn Road crossing. Assuming the road is structurally adequate, it is conceivable that the road could still be used by emergency vehicles. The 1-percent-annual-chance flood would top the New Blackhawk Millpond Dam and inundate approximately 150 acres. A few residents would experience basement flooding during a 1-percent-annual-chance flood.
County Drain 15	County Drain 15 has capacity for a 1-percent-annual-chance flood and only 77 acres –mostly wetland areas – would be inundated.
County Drain 40	The 1-percent-annual-chance flood would inundate approximately 445 acres of land on County Drain 40. Dorrance Road could probably be used in an emergency; however, Wood Road would be impassable. Most of the flooded areas along County Drain 40 are either woods or idle land. No residents or businesses are threatened in the event of a 1-percent-annual-chance flood.

Table 5: Principal Flood Problems (continued)

Flooding Source	Description of Flood Problems
Little Swan Creek	Flooding along Matteson Lake/Little Swan Creek in Matteson Township would be primarily limited to roads and residences around Matteson Lake. Approximately 980 acres would be inundated by the 1-percent-annual-chance flood. During this flood, 45 residents would experience first-floor flooding, 29 residents would experience basement flooding, and 29 residents would sustain yard damage. Babcock, Butz, Langwell, Lyter, and Outwater Roads would be impassable during this event. Comm and Linley Roads and M-86 would be overtopped by less than 0.5 feet of water and could be used by emergency vehicles, assuming the roads are structurally adequate.
Sauk River	Frequent flooding occurs along the Sauk River. The 1-percent-annual-chance flood would top several road crossings and inundate residential areas east of I-69. In addition to Michigan Avenue and Willowbrook Road, Race and Jefferson Streets would be impassable in the event of a 1-percent-annual-chance flood. Approximately 695 acres would be inundated and approximately 40 residents and a few businesses would experience flooding.
South Lake Drain	The 1-percent-annual-chance flood would inundate most of the road crossings on South Lake Drain. Emergency use of these existing road crossings is questionable. A few businesses would experience flooding. Approximately 80 acres would be inundated by the 1-percent-annual-chance flood. Also, settling basins upstream of the CONRAIL crossing would be threatened.

Table 6: Historic Flooding Elevations

[Not Applicable to this Flood Risk Project]

4.3 Dams and Other Flood Hazard Reduction Measures

Table 7 contains information about non-levee flood hazard reduction measures within Branch County such as dams or jetties. Levee systems are addressed in Section 4.4 of this FIS Report.

Table 7: Dams and Other Flood Hazard Reduction Measures

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Coldwater River	Old Blackhawk Dam	Dam	Approximately 400 feet upstream of Blackhawk Rd.	N/A
Coldwater River	New Blackhawk Dam	Dam	Approximately 500 feet upstream of Blackhawk Rd.	N/A
Sauk River	N/A	Weir	Downstream of Railroad Bridge	N/A
Sauk River	N/A	Dam	Downstream of S. Sprague St.	N/A

4.4 Levee Systems

This section is not applicable to this Flood Risk Project.

Table 8: Levee Systems
[Not Applicable to this Flood Risk Project]

SECTION 5.0 – ENGINEERING METHODS

For the flooding sources in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded at least once on the average during any 10-, 25-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management. These events, commonly termed the 10-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2-percent-annual-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 100-year flood (1-percent chance of annual exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 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.

In addition to these flood events, the “1-percent-plus”, or “1%+”, annual chance flood elevation has been modeled and included on the flood profile for certain flooding sources in this FIS Report. While not used for regulatory or insurance purposes, this flood event has been calculated to help illustrate the variability range that exists between the regulatory 1-percent-annual-chance flood elevation and a 1-percent-annual-chance elevation that has taken into account an additional amount of uncertainty in the flood discharges (thus, the 1% “plus”). For flooding sources whose discharges were estimated using regression equations, the 1%+ flood elevations are derived by taking the 1-percent-annual-chance flood discharges and increasing the modeled discharges by a percentage equal to the average predictive error for the regression equation. For flooding sources with gage- or rainfall-runoff-based discharge estimates, the upper 84-percent confidence limit of the discharges is used to compute the 1%+ flood elevations.

5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for each stream is provided in Table 12. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

A summary of the discharges is provided in Table 9: Summary of Discharges.

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Ainsley Drain	Blossom Lake Outlet	2.8	80	120	150	190	310
Cold Creek	At Randall Lake	18.37	985	*	1,610	1,840	2,770
Cold Creek	At Marshall Street	13.58	945	*	1,520	1,750	2,640
Cold Creek	At Michigan Road	10.99	880	*	1,410	1,610	2,375
Cold Creek	At confluence with County Drain 15	8.35	805	*	1,250	1,430	2,105
Cold Creek	Upstream of I-69	5.90	560	*	870	995	1,470
Coldwater River	At Garfield Road	71.40	1,060	*	1,530	1,685	2,320
Coldwater River	Upstream of Blackhawk Millpond	71.40	1,235	*	1,800	2,015	2,870
Coldwater River	At Fenn Road	69.56	980	*	1,430	1,600	2,290
County Drain 15	At confluence with Cold Creek	2.64	305	*	450	505	705
County Drain 15	At Michigan Road in Township of Coldwater	1.71	190	*	315	360	520
County Drain 15	At Seeley Road	1.16	150	*	240	275	380
County Drain 15	At Michigan Avenue in City of Coldwater	0.83	125	*	195	225	335
County Drain 40	At Dorrance Road	2.90	215	*	260	275	390
County Drain 40	At Wood Road	1.38	130	*	200	230	335

Table 9: Summary of Discharges (continued)

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Fawn River	1500 ft upstream of N Section Line	125.5	370	430	470	500	600
Little Swan Creek	At Lindley Rd	21.4	470	600	700	850	1,300
Little Swan Creek	At Lyter Road	19.07	410	*	725	875	1,280
Little Swan Creek	At Butz Road	17.85	370	*	690	840	1,250
Little Swan Creek	At Matteson Lake inlet	13.51	690	*	1,070	1,260	1,700
Little Swan Creek	At M-86	9.24	480	*	760	890	1,210
Sauk River	At the Confluence with Coldwater River/ South Lake	55.7	550	800	900	1,100	1,500
Sauk River	Approximately 180ft upstream of S Clay Street	52.7	470	700	750	950	1,300
Sauk River	Approximately 650ft East of N Fiske Road	47.8	400	550	600	750	1,000
Sauk River	Approximately 2,850ft West of N Fiske Road	42.9	300	400	450	550	700
Sauk River	Approximately 800ft downstream of Fox Road	41.3	290	380	430	500	650
Sauk River	Marble Lake Dam	37.7	180	180	240	290	410
South Lake Drain	Upstream of South Lake	2.28	285	*	410	455	605

Table 9: Summary of Discharges (continued)

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
South Lake Drain	At Garfield Road	1.59	225	*	355	405	600

*Not calculated for this Flood Risk Project

**Figure 7: Frequency Discharge-Drainage Area Curves
[Not Applicable to this Flood Risk Project]**

Table 10: Summary of Non-Coastal Stillwater Elevations

Flooding Source	Location	Elevations (feet NAVD88)				
		10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Cemetery Lake	At outlet with Randall Lake / North Lake	925.9	*	926.8	927.1	928.2
Coldwater Lake	At outlet with Long Lake	*	*	*	986.3	*
Craig Lake	At outlet with Coldwater River	*925.9	*	926.8	927.1	928.2
Lake George	No outlet on Michigan side; outlet falls in Indiana	*	*	*	986.1	*
Marble Lake	At outlet with Sauk River	*	*	*	986.3	*
Matteson Lake	At outlet with Little Swan Creek	891.1	*	891.4	891.6	892.1
Messenger Lake	At outlet with South Lake	925.9	*	926.8	927.1	928.2
Middle Lake	At outlet with Marble Lake	*	*	*	986.3	*
Morrison Lake	At outlet with Craig Lake	925.9	*	926.8	927.1	928.2
Randall Lake / North Lake	At outlet with Morrison Lake	925.9	*	926.8	927.1	928.2
South Lake	At outlet with Cemetery Lake	925.9	*	926.8	927.1	928.2

*Not calculated for this Flood Risk Project

Table 11: Stream Gage Information used to Determine Discharges

[Not Applicable to this Flood Risk Project]

5.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. The hydraulic analyses for this FIS were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed in Table 23: Floodway Data, "Floodway Data."

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 12. Roughness coefficients are provided in Table 13. Roughness coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. They are used in the calculations to determine water surface elevations. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
All flooding sources mapped as Zone A on the FIRM	Various	Various	TR-20 Win 1.00 (Jan 2005)	HEC-RAS 3.1.1 and up	2010	A	Effects of hydraulic structures not considered in the model; Countywide vertical datum conversion of -0.427 applied to NGVD29 to convert to NGVD88 Effects of hydraulic structures not considered in the model
Cold Creek	Approximately 4,500 feet downstream of Union City Road	Approximately 185 feet upstream of Corbell Road	TR-20 Win 1.00 (Jan 2005)	OTHER	2010	AE	
Coldwater River	Approximately 4,200 feet downstream of Indiana Northeastern Railroad	Approximately 350 feet upstream of East Fenn Road	TR-20 Win 1.00 (Jan 2005)	OTHER	2010	AE	
County Drain 15	At confluence with Cold Creek	Approximately 925 feet upstream of Grahl Drive	TR-20 Win 1.00 (Jan 2005)	OTHER	2010	AE	
County Drain 40	At confluence with Sauk River	At North Wood Road	TR-20 Win 1.00 (Jan 2005)	OTHER	2010	AE	
Little Swan Creek	Approximately 970 feet downstream of West Colon Road	Approximately 300 feet upstream of Langwell Road	TR-20 Win 1.00 (Jan 2005)	OTHER	2010	AE	

Table 12: Summary of Hydrologic and Hydraulic Analyses (Continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Little Swan Creek	Approximately 160 feet downstream of Lindley Road	At Matteson Lake	TR-20 Win 1.00 (Jan 2005)	OTHER	2010	AE	
Nottawa Creek	At Branch / St. Joseph county boundary	Approximately 60 feet upstream of Branch / St. Joseph county boundary	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 3.1.1 and up	10/26/20 20	A	
Sauk River	Approximately 3,100 feet downstream of Butters Avenue	Approximately 90 feet upstream of Fox Road	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 3.1.1 and up	10/26/20 20	AE w/ Floodway	Countywide vertical datum conversion of -0.427 applied to NGVD29 to convert to NGVD88
South Lake Drain	Approximately 355 feet downstream of Township of Coldwater / City of Coldwater boundary	Approximately 2,550 feet upstream of Township of Coldwater / City of Coldwater boundary	TR-20 Win 1.00 (Jan 2005)	OTHER	2010	AE	

Table 13: Roughness Coefficients

Flooding Source	Channel "n"	Overbank "n"
Sauk River	0.035-0.040	0.035-0.110

5.3 Coastal Analyses

This section is not applicable to this Flood Risk Project.

Table 14: Summary of Coastal Analyses

[Not Applicable to this Flood Risk Project]

5.3.1 Total Stillwater Elevations

This section is not applicable to this Flood Risk Project.

Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas

[Not Applicable to this Flood Risk Project]

Table 15: Tide Gage Analysis Specifics

[Not Applicable to this Flood Risk Project]

5.3.2 Waves

This section is not applicable to this Flood Risk Project.

5.3.3 Coastal Erosion

This section is not applicable to this Flood Risk Project.

5.3.4 Wave Hazard Analyses

This section is not applicable to this Flood Risk Project.

Table 16: Coastal Transect Parameters
[Not Applicable to this Flood Risk Project]

Figure 9: Transect Location Map
[Not applicable to this Flood Risk Project]

5.4 Alluvial Fan Analyses

This section is not applicable to this Flood Risk Project.

Table 17: Summary of Alluvial Fan Analyses
[Not Applicable to this Flood Risk Project]

Table 18: Results of Alluvial Fan Analyses
[Not Applicable to this Flood Risk Project]

SECTION 6.0 – MAPPING METHODS

6.1 Vertical and Horizontal Control

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

Flood elevations shown in this FIS Report and on the FIRMs are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between NGVD29 and NAVD88 or other datum conversion, visit the National Geodetic Survey website at 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 archived project documentation associated with the FIS Report and the FIRMs for this community. Interested individuals may contact FEMA to access these data.

To obtain current elevation, description, and/or location information for benchmarks in the area, please visit the NGS website at www.ngs.noaa.gov.

The datum conversion locations and values that were calculated for Branch County are provided in Table 19.

Table 19: Countywide Vertical Datum Conversion

Quadrangle Name	Quadrangle Corner	Latitude	Longitude	Conversion from NGVD29 to NAVD88 (feet)
Allen	SW	41.875	-84.875	-0.397
Bronson South	SE	41.750	-85.125	-0.433
Burlington	SE	42.000	-85.000	-0.427
Burr Oak	SE	41.750	-85.250	-0.430
Camden	SW	41.750	-84.875	-0.397
Coldwater West	SE	41.875	-85.000	-0.423
Coldwater West	SW	41.875	-85.125	-0.443

Table 19: Countywide Vertical Datum Conversion (continued)

Quadrangle Name	Quadrangle Corner	Latitude	Longitude	Conversion from NGVD29 to NAVD88 (feet)
Colon	SE	41.875	-85.250	-0.446
Kinderhook	SE	41.750	-85.000	-0.427
Leonidas	SE	42.000	-85.250	-0.449
Tekonsha	SE	42.000	-84.875	-0.407
Union City	SE	42.000	-85.125	-0.440
Average Conversion from NGVD to NAVD88 = -0.427				

Table 20: Stream-Based Vertical Datum Conversion**[Not Applicable to this Flood Risk Project]****6.2 Base Map**

The FIRMs and FIS Report for this project have been produced in a digital format. The flood hazard information was converted to a Geographic Information System (GIS) format that meets FEMA's FIRM Database specifications and geographic information standards. This information is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community. The FIRM Database includes most of the tabular information contained in the FIS Report in such a way that the data can be associated with pertinent spatial features. For example, the information contained in the Floodway Data table and Flood Profiles can be linked to the cross sections that are shown on the FIRMs. Additional information about the FIRM Database and its contents can be found in FEMA's *Guidelines and Standards for Flood Risk Analysis and Mapping*, www.fema.gov/flood-maps/guidance-partners/guidelines-standards.

Base map information shown on the FIRM was derived from the sources described in Table 21.

Table 21: Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
Base Map Data	MCGI	2006	1:24000	Spatial and attribute information for effective data layers that fall within Branch County, MI
COUNTY AERIAL IMAGERY	MICHIGAN STATEWIDE AUTHORITATIVE IMAGERY & LiDAR PROGRAM	2017	1:24000	Spatial and attribute information for ortho-imagery and submittal file extents
MI GEOGRAPHIC FRAMEWORK CITIES (v14a)	MICHIGAN CENTER FOR GEOGRAPHIC INFORMATION	2014	1:24000	Spatial and attribute information for political boundaries and transportation features
National Hydrography Dataset (NHD) - High Resolution	UNITED STATES GEOLOGICAL SURVEY	1999	1:24000	Spatial and attribute information for USGS stream gages and HUC-8 watershed boundaries
SDE_DATE_DBO_Corporate_Limits, SDE_DATE_DBO_Road_Centerlines, Lakes, Rivers, Streams	STEUBEN COUNTY GIS DEPARTMENT	2017	1:24000	S_POL_AR, S_TRANSPORT_LN, S_WTR_AR, S_WTR_LN

6.3 Floodplain and Floodway Delineation

The FIRM shows tints, screens, and symbols to indicate floodplains and floodways as well as the locations of selected cross sections used in the hydraulic analyses and floodway computations.

For riverine flooding sources, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 22.

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

The floodway widths presented in this FIS Report and on the FIRM were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. Table 2 indicates the flooding sources for which floodways have been determined. The results of the floodway computations for those flooding sources have been tabulated for selected cross sections

and are shown in Table 23: Floodway Data, "Floodway Data."

Table 22: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Vertical Accuracy	Horizontal Accuracy	Citation
Township of California, Township of Ovid, City of Coldwater, Township of Matteson, Township of Coldwater, Township of Quincy, Township of Sherwood, Township of Girard	Blossom/Goodrich /Havens Lakes, Cold Creek, Coldwater River, County Drain 15, County Drain 40, Little Fawn River, Little Swan Creek, Nottawa Creek, Sauk River, South Lake Drain	State of Michigan 2015 DEM	Unknown	Unknown	USGS 2017

BFEs shown at cross sections on the FIRM represent the 1-percent-annual-chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations.

Table 23: Floodway Data

FLOODING SOURCE		FLOODWAY				1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY (FEET)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
COLD CREEK									
A	1,520	*	*	*		927.1 ²	*	*	*
B	4,470	*	*	*		927.1 ²	*	*	*
C	4,568	*	*	*		927.5	*	*	*
D	4,670	*	*	*		927.9	*	*	*
E	7,322	*	*	*		928.4	*	*	*
F	9,966	*	*	*		929.9	*	*	*
G	11,205	*	*	*		933.4	*	*	*
H	11,285	*	*	*		933.6	*	*	*
I	11,335	*	*	*		933.6	*	*	*
J	14,180	*	*	*		934.3	*	*	*
K	14,278	*	*	*		934.5	*	*	*
L	14,380	*	*	*		934.7	*	*	*
M	18,200	*	*	*		940.6	*	*	*
N	21,200	*	*	*		944.5	*	*	*
O	21,300	*	*	*		944.9	*	*	*
P	21,375	*	*	*		945.2	*	*	*
Q	21,767	*	*	*		945.9	*	*	*
R	22,760	*	*	*		948.8	*	*	*
S	23,625	*	*	*		953.9	*	*	*
T	24,010	*	*	*		955.5	*	*	*
U	24,200	*	*	*		957.0	*	*	*
V	25,714	*	*	*		959.8	*	*	*
W	26,668	*	*	*		961.4	*	*	*
X	26,718	*	*	*		961.6	*	*	*
Y	26,768	*	*	*		961.7	*	*	*

¹ Feet above confluence with Randall Lake
² 1-percent-annual-chance backwater from Randall Lake
* Data not computed

TABLE 9	FEDERAL EMERGENCY MANAGEMENT AGENCY	FLOODWAY DATA
	BRANCH COUNTY, MI (ALL JURISDICTIONS)	COLD CREEK

Table 23: Floodway Data (continued)

FLOODING SOURCE		FLOODWAY				1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY (FEET)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
COLD CREEK									
Z	27,782	*	*	*		962.4	*	*	*
AA	27,882	*	*	*		962.8	*	*	*
AB	27,982	*	*	*		963.1	*	*	*
AC	28,472	*	*	*		963.2	*	*	*
AD	29,482	*	*	*		963.4	*	*	*
AE	29,742	*	*	*		963.5	*	*	*
AF	29,922	*	*	*		963.6	*	*	*
¹ Feet above confluence with Randall Lake * Data not computed									
TABLE 9	FEDERAL EMERGENCY MANAGEMENT AGENCY					FLOODWAY DATA			
	BRANCH COUNTY, MI (ALL JURISDICTIONS)					COLD CREEK			

Table 23: Floodway Data (continued)

FLOODING SOURCE		FLOODWAY				1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY (FEET)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
COLDWATER RIVER									
A	500	*	*	*		927.1 ²	*	*	*
B	2,600	*	*	*		930.0	*	*	*
C	5,300	*	*	*		938.2	*	*	*
D	5,600	*	*	*		939.1	*	*	*
E	6,100	*	*	*		940.3	*	*	*
F	7,100	*	*	*		941.2	*	*	*
G	10,600	*	*	*		948.4	*	*	*
H	11,300	*	*	*		949.1	*	*	*
I	11,470	*	*	*		949.5	*	*	*
J	11,700	*	*	*		956.2	*	*	*
K	11,800	*	*	*		958.2	*	*	*
L	19,300	*	*	*		959.0	*	*	*
M	19,600	*	*	*		960.0	*	*	*

¹ Feet above confluence with South Lake
² 1-percent-annual-chance backwater from South Lake
* Data not computed

TABLE 9	FEDERAL EMERGENCY MANAGEMENT AGENCY	FLOODWAY DATA
	BRANCH COUNTY, MI (ALL JURISDICTIONS)	COLDWATER RIVER

Table 23: Floodway Data (continued)

FLOODING SOURCE		FLOODWAY				1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY (FEET)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
COUNTY DRAIN 15									
A	2,120	*	*	*		949.7	*	*	*
B	3,494	*	*	*		955.5	*	*	*
C	3,619	*	*	*		958.2	*	*	*
D	3,869	*	*	*		960.6	*	*	*
E	4,325	*	*	*		961.8	*	*	*
F	4,475	*	*	*		962.9	*	*	*
G	5,230	*	*	*		962.9	*	*	*
H	7,450	*	*	*		964.1	*	*	*
I	9,665	*	*	*		965.8	*	*	*
J	9,765	*	*	*		967.0	*	*	*
K	9,865	*	*	*		968.2	*	*	*
L	10,665	*	*	*		968.2	*	*	*
M	11,115	*	*	*		968.4	*	*	*
N	11,215	*	*	*		968.4	*	*	*
O	11,315	*	*	*		968.4	*	*	*
P	12,135	*	*	*		968.5	*	*	*
Q	12,900	*	*	*		969.1	*	*	*
R	13,092	*	*	*		969.8	*	*	*
S	13,192	*	*	*		970.3	*	*	*
T	13,897	*	*	*		971.2	*	*	*
U	14,247	*	*	*		972.5	*	*	*
V	14,347	*	*	*		973.4	*	*	*
W	15,200	*	*	*		973.6	*	*	*
X	16,100	*	*	*		973.6	*	*	*

¹ Feet above confluence with Cold Creek
 * Data not computed

TABLE 9	FEDERAL EMERGENCY MANAGEMENT AGENCY	FLOODWAY DATA
	BRANCH COUNTY, MI (ALL JURISDICTIONS)	COUNTY DRAIN 15

Table 23: Floodway Data (continued)

FLOODING SOURCE		FLOODWAY				1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY (FEET)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
COUNTY DRAIN 40									
A	1,300	*	*	*		978.1	*	*	*
B	2,500	*	*	*		979.1	*	*	*
C	6,200	*	*	*		983.9	*	*	*
D	6,800	*	*	*		986.8	*	*	*
E	7,400	*	*	*		988.6	*	*	*
F	8,400	*	*	*		989.2	*	*	*
G	9,400	*	*	*		989.3	*	*	*
H	9,500	*	*	*		989.3	*	*	*
I	15,600	*	*	*		989.6	*	*	*
J	15,800	*	*	*		989.7	*	*	*
¹ Feet above confluence with Sauk River * Data not computed									
TABLE 9	FEDERAL EMERGENCY MANAGEMENT AGENCY					FLOODWAY DATA			
	BRANCH COUNTY, MI (ALL JURISDICTIONS)					COUNTY DRAIN 40			

Table 23: Floodway Data (continued)

FLOODING SOURCE		FLOODWAY				1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY (FEET)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
LITTLE SWAN CREEK									
A	0	*	*	*		872.1	*	*	*
B	150	*	*	*		872.6	*	*	*
C	300	*	*	*		873.2	*	*	*
D	1,000	*	*	*		873.5	*	*	*
E	1,165	*	*	*		873.6	*	*	*
F	1,300	*	*	*		873.6	*	*	*
G	2,150	*	*	*		875.1	*	*	*
H	2,500	*	*	*		875.7	*	*	*
I	2,650	*	*	*		875.8	*	*	*
J	4,350	*	*	*		877.6	*	*	*
K	5,450	*	*	*		879.6	*	*	*
L	5,637	*	*	*		880.0	*	*	*
M	5,750	*	*	*		880.2	*	*	*
N	9,400	*	*	*		882.4	*	*	*
O	9,550	*	*	*		883.8	*	*	*
P	9,700	*	*	*		885.1	*	*	*
Q	10,300	*	*	*		885.3	*	*	*
R	11,700	*	*	*		887.5	*	*	*
S	11,950	*	*	*		887.9	*	*	*
T	12,300	*	*	*		888.0	*	*	*
U	14,100	*	*	*		890.9	*	*	*
V	15,900	*	*	*		891.1	*	*	*
W	16,050	*	*	*		891.3	*	*	*
X	16,200	*	*	*		891.4	*	*	*

¹ Feet above a point 150 feet downstream of Lindley Road

* Data not computed

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BRANCH COUNTY, MI
(ALL JURISDICTIONS)**

FLOODWAY DATA

LITTLE SWAN CREEK

Table 23: Floodway Data (continued)

FLOODING SOURCE		FLOODWAY				1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY (FEET)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
LITTLE SWAN CREEK									
Y	18,050	*	*	*		891.6	*	*	*
Z	28,250	*	*	*		891.9	*	*	*
AA	28,400	*	*	*		892.2	*	*	*
AB	30,850	*	*	*		892.2	*	*	*
AC	33,685	*	*	*		898.4	*	*	*
AD	33,970	*	*	*		899.2	*	*	*
AE	34,086	*	*	*		899.6	*	*	*
AF	35,300	*	*	*		901.3	*	*	*
AG	36,185	*	*	*		903.2	*	*	*
AH	36,810	*	*	*		904.5	*	*	*
AI	36,935	*	*	*		905.7	*	*	*
AJ	37,235	*	*	*		906.6	*	*	*
¹ Feet above a point 150 feet downstream of Lindley Road * Data not computed									
TABLE 9	FEDERAL EMERGENCY MANAGEMENT AGENCY					FLOODWAY DATA			
	BRANCH COUNTY, MI (ALL JURISDICTIONS)					LITTLE SWAN CREEK			

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	243	86	367	3.0	927.1	927.1	927.2	0.1
B	2,690	34	210	5.2	933.7	933.7	933.7	0.0
C	3,154	53	230	4.8	934.6	934.6	934.7	0.1
D	4,112	36	213	5.2	937.7	937.7	937.7	0.0
E	4,457	54	293	3.8	938.3	938.3	938.4	0.1
F	4,750	40	202	5.5	938.9	938.9	939.0	0.1
G	6,829	45	200	5.5	947.5	947.5	947.5	0.0
H	7,398	48	186	5.9	951.8	951.8	951.9	0.1
I	8,563	40	203	5.4	957.0	957.0	957.0	0.0
J	8,808	38	177	5.4	958.2	958.2	958.2	0.0
K	10,668	41	224	4.2	960.6	960.6	960.7	0.1
L	11,722	183	286	3.3	962.6	962.6	962.6	0.0
M	12,631	178	384	2.5	963.7	963.7	963.7	0.0
N	13,126	45	246	3.9	965.0	965.0	965.0	0.0
O	13,330	43	243	3.9	965.9	965.9	966.0	0.1
P	13,852	500	1,658	0.6	966.3	966.3	966.4	0.1
Q	17,156	786	1,281	0.7	966.7	966.7	966.8	0.1
R	19,816	578	530	5.8	969.3	969.3	969.4	0.1
S	20,733	74	330	2.9	971.6	971.6	971.6	0.0
T	20,871	67	349	2.7	971.9	971.9	971.9	0.0
U	21,022	77	384	2.5	972.2	972.2	972.2	0.0
V	21,500	1,272	3,560	0.3	972.5	972.5	972.5	0.0
W	23,210	103	525	1.8	972.8	972.8	972.9	0.1

¹ Stream distance in feet above confluence with South Lake

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

BRANCH COUNTY, MI

AND INCORPORATED AREAS

FLOODWAY DATA

SAUK RIVER

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
X	24,398	42	235	3.2	973.0	973	973.1	0.1
Y	25,650	58	362	2.1	974.6	974.6	974.7	0.1
Z	27,301	236	561	1.0	975.0	975.0	975.1	0.1
AA	29,120	30	101	5.4	976.5	976.5	976.6	0.1
AB	30,579	49	155	3.5	980.0	980.0	980.0	0.1
AC	30,652	36	254	2.2	981.3	981.3	981.4	0.1
AD	33,031	85	302	1.7	981.8	981.8	981.9	0.1
AE	33,143	30	188	2.7	982.5	982.5	982.6	0.1

¹ Stream distance in feet above confluence with South Lake

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

BRANCH COUNTY, MI

AND INCORPORATED AREAS

FLOODWAY DATA

SAUK RIVER

Table 23: Floodway Data (continued)

FLOODING SOURCE		FLOODWAY				1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY (FEET)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
SOUTH LAKE DRAIN									
A	1,300	*	*	*		946.9	*	*	*
B	2,600	*	*	*		954.9	*	*	*
C	3,700	*	*	*		959.0	*	*	*
D	3,900	*	*	*		961.2	*	*	*
E	5,700	*	*	*		962.6	*	*	*
F	6,000	*	*	*		964.7	*	*	*
G	8,200	*	*	*		972.1	*	*	*
H	8,700	*	*	*		977.3	*	*	*
I	8,800	*	*	*		977.9	*	*	*
J	12,400	*	*	*		999.8	*	*	*
¹ Feet above confluence with South Lake * Data not computed									
TABLE 9	FEDERAL EMERGENCY MANAGEMENT AGENCY					FLOODWAY DATA			
	BRANCH COUNTY, MI (ALL JURISDICTIONS)					SOUTH LAKE DRAIN			

6.4 Coastal Flood Hazard Mapping

Table 24: Flood Hazard and Non-Encroachment Data for Selected Streams

[Not Applicable to this Flood Risk Project]

Table 25: Summary of Coastal Transect Mapping Considerations

[Not Applicable to this Flood Risk Project]

6.5 FIRM Revisions

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table 30, “Map Repositories”).

6.5.1 Letters of Map Amendment

A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative process that involves the review of scientific or technical data submitted by the owner or lessee of property who believes the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in a SFHA.

To obtain an application for a LOMA, visit www.fema.gov/flood-maps/change-your-flood-zone and download the form “MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill”. Visit the “Flood Map-Related Fees” section to determine the cost, if any, of applying for a LOMA.

FEMA offers a tutorial on how to apply for a LOMA. The LOMA Tutorial Series can be accessed at www.fema.gov/flood-maps/tutorials.

For more information about how to apply for a LOMA, call the FEMA Mapping and Insurance eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627).

6.5.2 Letters of Map Revision Based on Fill

A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA’s determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is, therefore, excluded from the SFHA.

Information about obtaining an application for a LOMR-F can be obtained in the same manner as that for a LOMA, by visiting www.fema.gov/flood-maps/change-your-flood-zone.

[zone](#) for the “MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill” or by calling the FEMA Mapping and Insurance eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627). Fees for applying for a LOMR-F, if any, are listed in the “Flood Map-Related Fees” section.

A tutorial for LOMR-F is available at www.fema.gov/flood-maps/tutorials.

6.5.3 Letters of Map Revision

A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All requests for LOMRs should be made to FEMA through the chief executive officer of the community, since it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the community, evidence must be submitted that the community has been notified of the request.

To obtain an application for a LOMR, visit www.fema.gov/flood-maps/change-your-flood-zone and download the form “MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision”. Visit the “Flood Map-Related Fees” section to determine the cost of applying for a LOMR. For more information about how to apply for a LOMR, call the FEMA Mapping and Insurance eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627) to speak to a Map Specialist.

Previously issued mappable LOMCs (including LOMRs) that have been incorporated into the Branch County FIRM are listed in Table 26. Please note that this table only includes LOMCs that have been issued on the FIRM panels updated by this map revision. For all other areas within this county, users should be aware that revisions to the FIS Report made by prior LOMRs may not be reflected herein and users will need to continue to use the previously issued LOMRs to obtain the most current data.

Table 26: Incorporated Letters of Map Change
[Not Applicable to this Flood Risk Project]

6.5.4 Physical Map Revisions

A Physical Map Revisions (PMR) is an official republication of a community’s NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements, annexations resulting in additional flood hazard areas or correction to base flood elevations or SFHAs.

The community’s chief executive officer must submit scientific and technical data to FEMA to support the request for a PMR. The data will be analyzed and the map will be revised if warranted. The community is provided with copies of the revised information and is afforded a review period. When the base flood elevations are changed, a 90-day appeal period is provided. A 6-month adoption period for formal approval of the revised map(s) is also provided.

For more information about the PMR process, please visit www.fema.gov and visit the Floods & Maps “Change Your Flood Zone Designation” section.

6.5.5 Contracted Restudies

The NFIP provides for a periodic review and restudy of flood hazards within a given community. FEMA accomplishes this through a national watershed-based mapping needs assessment strategy, known as the Coordinated Needs Management Strategy (CNMS). The CNMS is used by FEMA to assign priorities and allocate funding for new flood hazard analyses used to update the FIS Report and FIRM. The goal of CNMS is to define the validity of the engineering study data within a mapped inventory. The CNMS is used to track the assessment process, document engineering gaps and their resolution, and aid in prioritization for using flood risk as a key factor for areas identified for flood map updates. Visit www.fema.gov to learn more about the CNMS or contact the FEMA Regional Office listed in Section 8 of this FIS Report.

6.5.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Branch County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBMs) and/or Flood Boundary and Floodway Maps (FBFMs) may have been prepared for the incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table 27, "Community Map History." A description of each of the column headings and the source of the date is also listed below.

- *Community Name* includes communities falling within the geographic area shown on the FIRM, including those that fall on the boundary line, nonparticipating communities, and communities with maps that have been rescinded. Communities with No Special Flood Hazards are indicated by a footnote. If all maps (FHBM, FBFM, and FIRM) were rescinded for a community, it is not listed in this table unless SFHAs have been identified in this community.
- *Initial Identification Date (First NFIP Map Published)* is the date of the first NFIP map that identified flood hazards in the community. If the FHBM has been converted to a FIRM, the initial FHBM date is shown. If the community has never been mapped, the upcoming effective date or "pending" (for Preliminary FIS Reports) is shown. If the community is listed in Table 27 but not identified on the map, the community is treated as if it were unmapped.
- *Initial FHBM Effective Date* is the effective date of the first FHBM. This date may be the same date as the Initial NFIP Map Date.
- *FHBM Revision Date(s)* is the date(s) that the FHBM was revised, if applicable.
- *Initial FIRM Effective Date* is the date of the first effective FIRM for the community.
- *FIRM Revision Date(s)* is the date(s) the FIRM was revised, if applicable. This is the revised date that is shown on the FIRM panel, if applicable. As countywide studies are completed or revised, each community listed should have its FIRM dates updated accordingly to reflect the date of the countywide study. Once the FIRMs exist in countywide format, as PMRs of FIRM panels within the county are completed, the FIRM Revision Dates in the table for each community affected by the PMR are updated with the date of the PMR, even if the PMR did not revise all the panels within that community.

The initial effective date for the Branch County FIRMs in countywide format was 04/19/2010.

Table 27: Community Map History

Community Name	Initial Identification Date	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Algansee, Township of ³	04/19/2010	N/A	N/A	04/19/2010	01/22/2027
Batavia, Township of ^{2, 3}	04/19/2010	N/A	N/A	04/19/2010	01/22/2027
Bethel, Township of ^{2, 3}	04/19/2010	N/A	N/A	04/19/2010	01/22/2027
Bronson, City of ^{2, 3}	04/19/2010	N/A	N/A	04/19/2010	01/22/2027
Bronson, Township of ³	04/19/2010	N/A	N/A	04/19/2010	01/22/2027
Butler, Township of ³	04/19/2010	N/A	N/A	04/19/2010	01/22/2027
California, Township of ³	04/19/2010	N/A	N/A	04/19/2010	01/22/2027
Coldwater, City of	08/16/1996	N/A	N/A	08/16/1996	01/22/2027 4/19/2010
Coldwater, Township of	08/16/1996	N/A	N/A	08/16/1996	01/22/2027 4/19/2010
Gilead, Township of ^{2, 3}	04/19/2010	N/A	N/A	04/19/2010	01/22/2027
Girard, Township of ³	04/19/2010	N/A	N/A	04/19/2010	01/22/2027
Kinderhook, Township of ³	04/19/2010	N/A	N/A	04/19/2010	01/22/2027
Matteson, Township of ³	04/19/2010	N/A	N/A	04/19/2010	01/22/2027
Ovid, Township of ³	04/19/2010	N/A	N/A	04/19/2010	01/22/2027
Quincy, Township of ³	04/19/2010	N/A	N/A	04/19/2010	01/22/2027
Quincy, Village of ³	04/19/2010	N/A	N/A	04/19/2010	01/22/2027

¹ Dates for this community were taken from Branch County, Unincorporated Areas

² No Special Flood Hazard Areas Identified

³ This community did not have a FIRM prior to the first countywide FIRM for Branch County

Table 27: Community Map History (continued)

Community Name	Initial Identification Date	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Sherwood, Township of ³	04/19/2010	N/A	N/A	04/19/2010	01/22/2027
Sherwood, Village of ³	04/19/2010	N/A	N/A	04/19/2010	01/22/2027
Union City, Village of ³	04/19/2010	N/A	N/A	04/19/2010	N/A
Union, Township of ³	04/19/2010	N/A	N/A	04/19/2010	01/22/2027

¹ Dates for this community were taken from Branch County, Unincorporated Areas

² No Special Flood Hazard Areas Identified

³ This community did not have a FIRM prior to the first countywide FIRM for Branch County

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

Table 28 provides a summary of the contracted studies, by flooding source, that are included in this FIS Report.

Table 28: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
All flooding sources mapped as Zone A on the FIRM	01/22/2027	STARR II	HSFE60-15-D-0005	August 2020	California, Township of; Matteson, Township of; Sherwood, Township of
Sauk River	01/22/2027	STARR II	HSFE60-15-D-0005	August 2020	Coldwater, City of; Coldwater, Township of; Quincy, Township of

7.2 Community Meetings

The dates of the community meetings held for this Flood Risk Project and previous Flood Risk Projects are shown in

Table 29. These meetings may have previously been referred to by a variety of names (Community Coordination Officer (CCO), Scoping, Discovery, etc.), but all meetings represent opportunities for FEMA, community officials, study contractors, and other invited guests to discuss the planning for and results of the project.

Table 29: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Algansee, Township of	01/22/2027	08/10/2020	Flood Risk Review	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	01/15/2015	Project Discovery	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	04/18/2024	Final CCO	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City

Table 29: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Batavia, Township of	01/22/2027	08/10/2020	Flood Risk Review	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	01/15/2015	Project Discovery	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	04/18/2024	Final CCO	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City

Table 29: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Bethel, Township of	01/22/2027	08/10/2020	Flood Risk Review	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	01/15/2015	Project Discovery	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	04/18/2024	Final CCO	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City

Table 29: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Bronson, City of	01/22/2027	08/10/2020	Flood Risk Review	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	01/15/2015	Project Discovery	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	04/18/2024	Final CCO	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City

Table 29: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Bronson, Township of	01/22/2027	08/10/2020	Flood Risk Review	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	01/15/2015	Project Discovery	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	04/18/2024	Final CCO	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City

Table 29: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Butler, Township of	01/22/2027	08/10/2020	Flood Risk Review	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	01/15/2015	Project Discovery	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	04/18/2024	Final CCO	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City

Table 29: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
California, Township of	01/22/2027	08/10/2020	Flood Risk Review	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	01/15/2015	Project Discovery	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	04/18/2024	Final CCO	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City

Table 29: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Coldwater, City of	04/19/2010	08/10/2020	Flood Risk Review	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	04/19/2010	01/15/2015	Project Discovery	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	04/18/2024	Final CCO	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City

Table 29: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Coldwater, Township of	01/22/2027	08/10/2020	Flood Risk Review	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	01/15/2015	Project Discovery	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	04/18/2024	Final CCO	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City

Table 29: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Gilead, Township of	01/22/2027	08/10/2020	Flood Risk Review	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	01/15/2015	Project Discovery	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	04/18/2024	Final CCO	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City

Table 29: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Girard, Township of	01/22/2027	08/10/2020	Flood Risk Review	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	01/15/2015	Project Discovery	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	04/18/2024	Final CCO	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City

Table 29: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Kinderhook, Township of	01/22/2027	08/10/2020	Flood Risk Review	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	01/15/2015	Project Discovery	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	04/18/2024	Final CCO	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City

Table 29: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Matteson, Township of	01/22/2027	08/10/2020	Flood Risk Review	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	01/15/2015	Project Discovery	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	04/18/2024	Final CCO	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City

Table 29: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Ovid, Township of	01/22/2027	08/10/2020	Flood Risk Review	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	01/15/2015	Project Discovery	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	04/18/2024	Final CCO	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City

Table 29: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Quincy, Township of	01/22/2027	08/10/2020	Flood Risk Review	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	01/15/2015	Project Discovery	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	04/18/2024	Final CCO	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City

Table 29: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Sherwood, Township of	01/22/2027	08/10/2020	Flood Risk Review	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	01/15/2015	Project Discovery	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	04/18/2024	Final CCO	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City

Table 29: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Sherwood, Village of	01/22/2027	08/10/2020	Flood Risk Review	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	01/15/2015	Project Discovery	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	04/18/2024	Final CCO	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City

Table 29: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Union City, Village of	01/22/2027	08/10/2020	Flood Risk Review	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	01/15/2015	Project Discovery	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	04/18/2024	Final CCO	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City

Table 29: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Union, Township of	01/22/2027	08/10/2020	Flood Risk Review	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	01/15/2015	Project Discovery	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City
	01/22/2027	04/18/2024	Final CCO	Branch County, Michigan; City of Bronson; City of Coldwater; Township of Algansee; Township of Batavia; Township of Bethel; Township of Bronson; Township of Butler; Township of California; Township of Coldwater; Township of Gilead; Township of Girard; Township of Kinderhook; Township of Matteson; Township of Noble; Township of Ovid; Township of Quincy; Township of Sherwood; Township of Union; Village of Sherwood; Village of Union City

SECTION 8.0 – ADDITIONAL INFORMATION

Information concerning the pertinent data used in the preparation of this FIS Report can be obtained by submitting an order with any required payment to the FEMA Engineering Library. For more information on this process, see www.fema.gov.

Table 30 is a list of the locations where FIRMs for Branch County can be viewed. Please note that the maps at these locations are for reference only and are not for distribution. Also, please note that only the maps for the community listed in the table are available at that particular repository. A user may need to visit another repository to view maps from an adjacent community.

Table 30: Map Repositories

Community	Address	City	State	Zip Code
Algansee, Township of	Algansee Townhall 378 South Ray Quincy Road	Quincy	Michigan	49082
Batavia, Township of ¹	Batavia Township Building 614 North Snow Prairie Road	Coldwater	Michigan	49036
Bethel, Township of ¹	Bethel Township Building 453 West Hatmaker Road	Bronson	Michigan	49028
Bronson, City of ¹	Bronson City Hall 141 South Matteson Street	Bronson	Michigan	49028
Bronson, Township of	Bronson City Hall 141 South Matteson Street	Bronson	Michigan	49028
Butler, Township of	Butler Township Hall 993 South Butler Road	Quincy	Michigan	49082
California, Township of	California Townhall 1019 Copeland Road	Montgomery	Michigan	49255
Coldwater, City of	City Hall One Grand Street	Coldwater	Michigan	49036
Coldwater, Township of	Coldwater Township Hall 319 Sprague Road	Coldwater	Michigan	49036
Gilead, Township of ¹	Gilead Township Building 822 South Snow Prairie Road	Bronson	Michigan	49028
Girard, Township of	Girard Township Clerk Office 1009 Marshall Road	Coldwater	Michigan	49036
Kinderhook, Township of	Kinderhook Township Office 797 South Angola Road	Coldwater	Michigan	49036
Matteson, Township of	Matteson Township Clerk Office 850 South Werners Landing	Bronson	Michigan	49028
Noble, Township of ¹	Pleasant Hill Church 886 Pleasant Hill Road	Bronson	Michigan	49028

Table 30: Map Repositories (continued)

Community	Address	City	State	Zip Code
Ovid, Township of	Ovid Township Hall 381 South Angola Road	Coldwater	Michigan	49036
Quincy, Township of	Village Offices 11 North Main Street	Quincy	Michigan	49082
Quincy, Village of	Village Offices 47 Cole Street	Quincy	Michigan	49082
Sherwood, Township of	Sherwood Township Hall 548 North Main Street	Sherwood	Michigan	49089
Sherwood, Village of	Village Office 118 Sherman Street	Sherwood	Michigan	49089
Union City, Village of	Village Office 101 South Broadway Street	Union City	Michigan	49094
Union, Township of	Township Hall 191 North Broadway Street	Union City	Michigan	49094

¹ No Special Flood Hazard Areas Identified

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM Databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table 31.

Table 31 contains useful contact information regarding the FIS Report, the FIRM, and other relevant flood hazard and GIS data. In addition, information about the State NFIP Coordinator and GIS Coordinator is shown in this table. At the request of FEMA, each Governor has designated an agency of State or territorial government to coordinate that State's or territory's NFIP activities. These agencies often assist communities in developing and adopting necessary floodplain management measures. State GIS Coordinators are knowledgeable about the availability and location of State and local GIS data in their state.

Table 31: Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	www.fema.gov/flood-maps/products-tools/know-your-risk/engineers-surveyors-architects
NFIP website	www.fema.gov/flood-insurance
NFHL Dataset	msc.fema.gov
FEMA Region V	Federal Regional Center 536 South Clark St., 6th Floor Chicago, IL 60605 (312) 408-5500
Other Federal Agencies	
USGS website	www.usgs.gov
Hydraulic Engineering Center website	www.hec.usace.army.mil
State Agencies and Organizations	

Table 31: Additional Information (*continued*)

State NFIP Coordinator	Matt Occhipinti, Michigan NFIP Coordinator Michigan Department of Environmental Quality 350 Ottawa Avenue Grand Rapids, Michigan 49503 (616) 204-1708 occhipintim@michigan.gov
State GIS Coordinator	Eric Swanson, Information Center Director Center for Shared Solutions and Technology Partnerships Michigan Department of Information Technology Romney Building, 10th Floor 111 South Capitol Avenue Lansing, Michigan 48933 (517) 373-7910

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table 32 includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

Table 32: Bibliography and References

Citation in this FIS	Publisher/ Issuer	<i>Publication Title</i> , "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
ARC	Advancing Resilience in Communities (ARC)	Branch DFIRM	ARC	Branch County, MI	September 2023	
MCGI 2006	MCGI	Base Map Data	MCGI	LANSING, MI	January 2006	
MI CGI 2014	MICHIGAN CENTER FOR GEOGRAPHIC INFORMATION	MI GEOGRAPHIC FRAMEWORK CITIES (v14a)	MICHIGAN CENTER FOR SHARED SOLUTIONS AND TECHNOLOG Y PARTERSHIP S	LANSING, MI	June 2014	https://www.mcgi.state.mi.us/mgdl/
MiSAIL	MICHIGAN STATEWIDE AUTHORITATIVE IMAGERY & LiDAR PROGRAM	MiSAIL	MICHIGAN STATEWIDE AUTHORITATIVE IMAGERY & LiDAR PROGRAM	LANSING, MI	June 2016	https://www.michigan.gov/som/0,4669,7-192-78943_78944_78949_78952_63834---,00.html
MiSAIL 2016	MICHIGAN STATEWIDE AUTHORITATIVE IMAGERY & LiDAR PROGRAM	COUNTY AERIAL IMAGERY	MICHIGAN STATEWIDE AUTHORITATIVE IMAGERY & LiDAR PROGRAM	LANSING, MI	January 2017	

Table 32: Bibliography and References (continued)

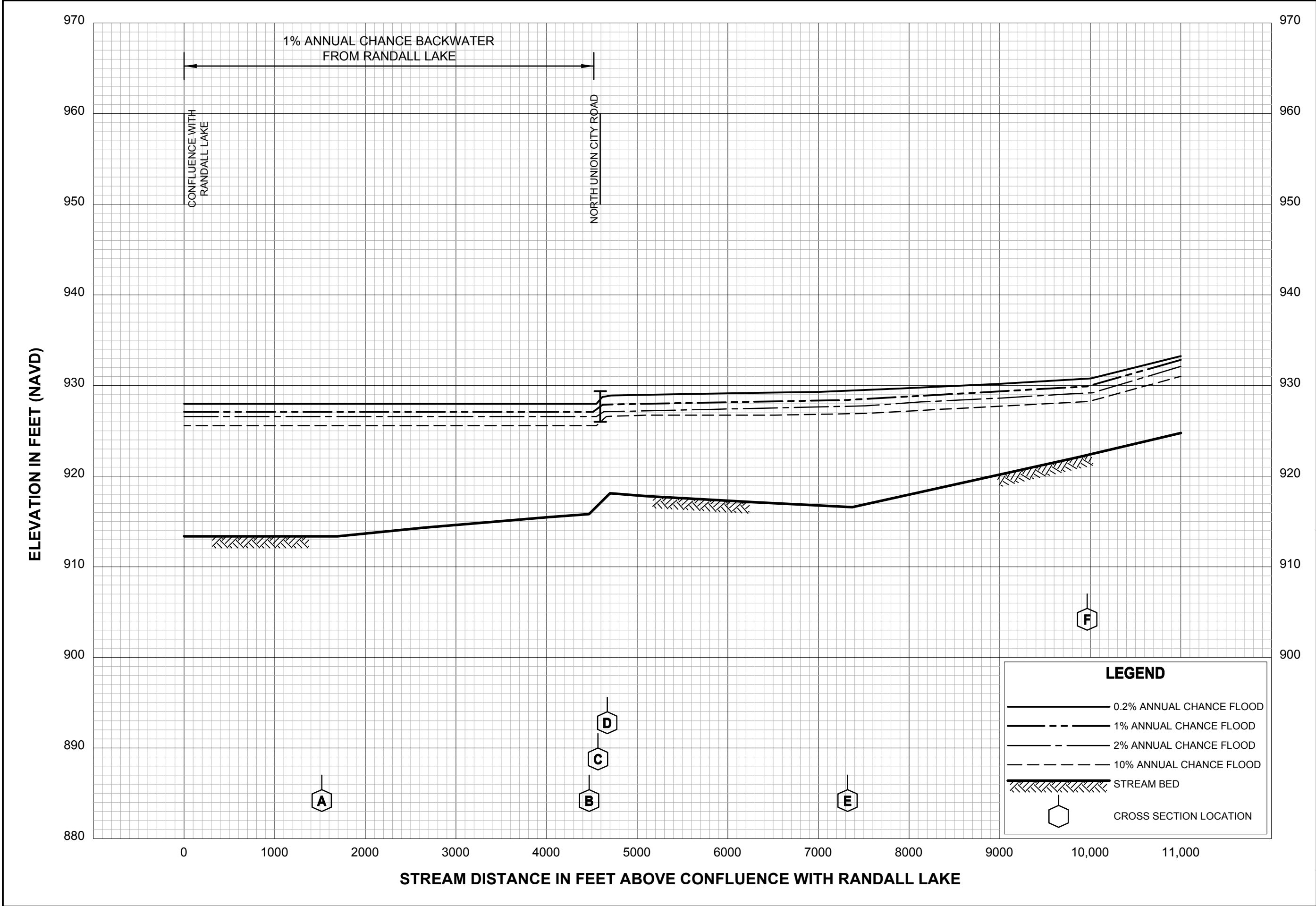
Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
NFHL 2010	FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)	NATIONAL FLOOD HAZARD LAYER Dataset	FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)	WASHINGTON, DC	May 2016	
STARR II Survey 2019	STARR II	ST. JOSEPH RIVER WATERSHED SURVEY	CONTINENTAL MAPPING CONSULTANTS	SUN PRAIRIE, WI	December 2019	
STARR II 2018	STRATEGIC ALLIANCE FOR RISK REDUCTION	HYDROLOGY REACHES, NODES, AND SUBBASINS	STRATEGIC ALLIANCE FOR RISK REDUCTION	CINCINNATI, OH	January 2018	
STARR II 2019	STRATEGIC ALLIANCE FOR RISK REDUCTION	REDELINEATION OF EFFECTIVE DETAILED REACHES	STRATEGIC ALLIANCE FOR RISK REDUCTION	CINCINNATI, OH	January 2018	
STARR II 2019	STRATEGIC ALLIANCE FOR RISK REDUCTION	REDELINEATION OF EFFECTIVE APPROXIMATE LAKES (MICHIGAN)	MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY (EGLE)	CINCINNATI, OH	January 2019	
STARR II 2020	STRATEGIC ALLIANCE FOR RISK REDUCTION	DETAILED STUDIES - RAINFALL RUNOFF	STRATEGIC ALLIANCE FOR RISK REDUCTION	WASHINGTON, DC	October 2020	

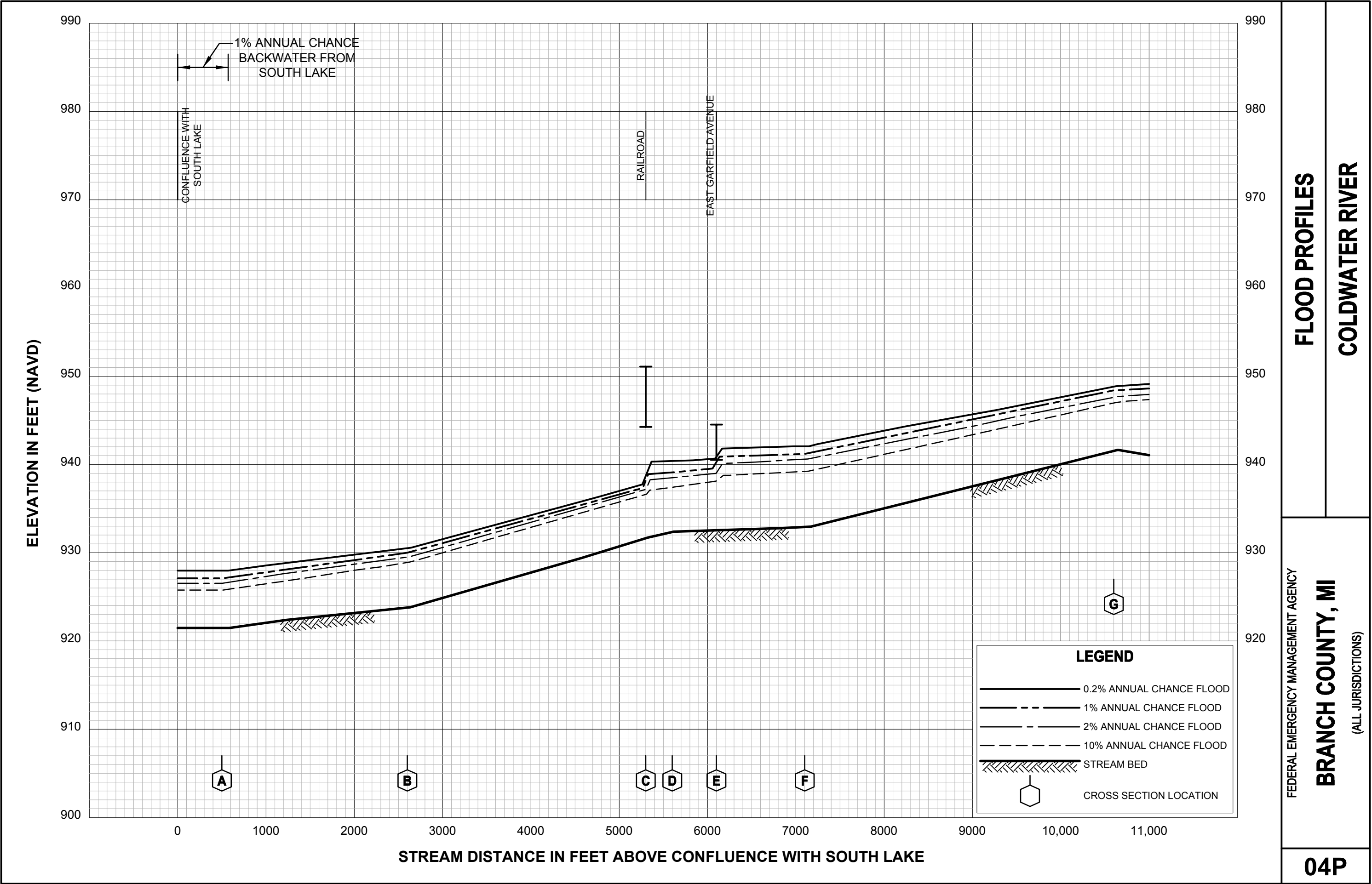
Table 32: Bibliography and References (continued)

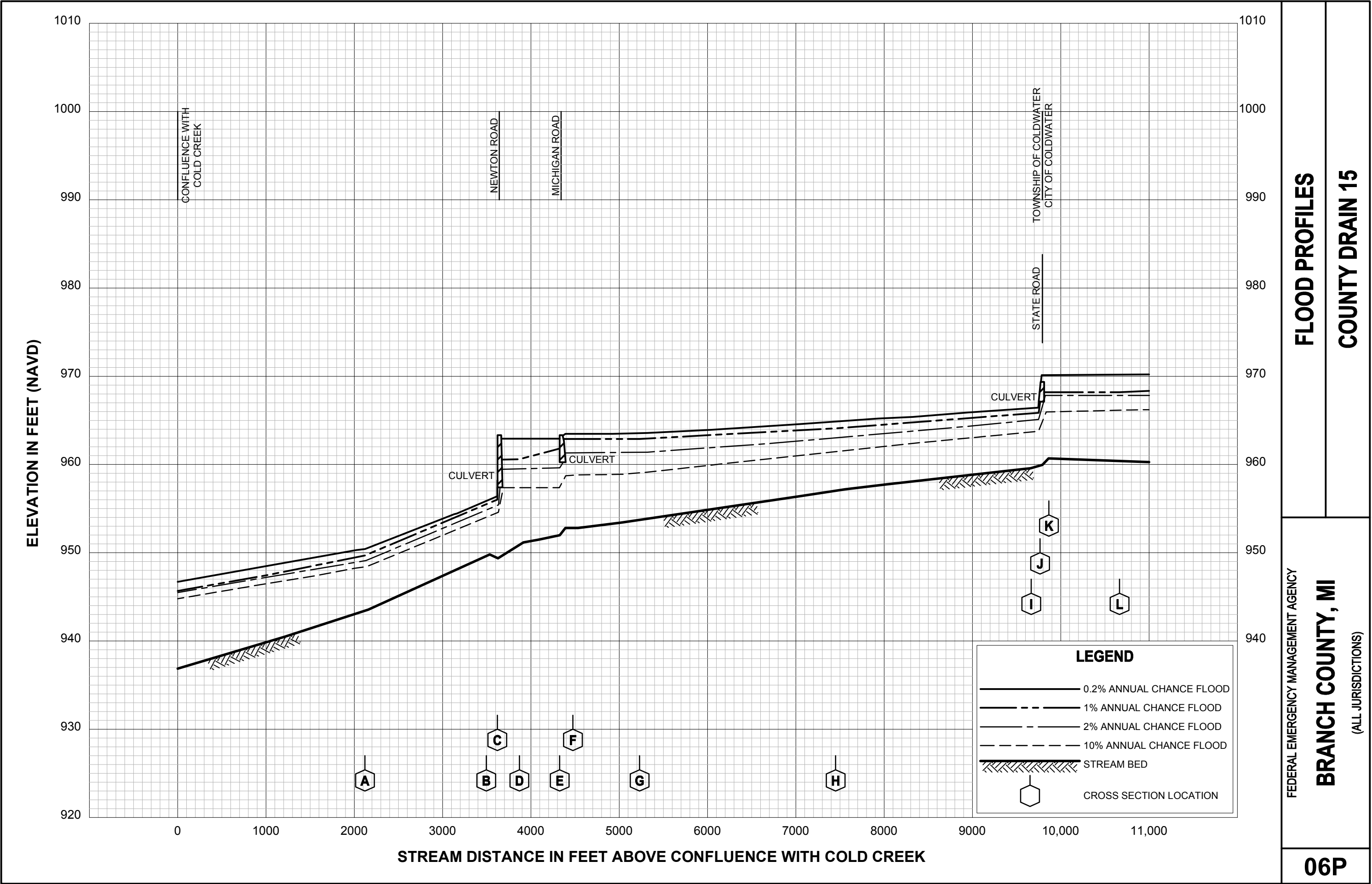
Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
STARR II 2020	STRATEGIC ALLIANCE FOR RISK REDUCTION	APPROXIMATES STUDIES (MICHIGAN) - SCS MODIFIED REGRESSION	STRATEGIC ALLIANCE FOR RISK REDUCTION	WASHINGTON, DC	October 2020	
STARR II 2020	STRATEGIC ALLIANCE FOR RISK REDUCTION	DETAILED STUDIES - GAGE ANALYSIS	STRATEGIC ALLIANCE FOR RISK REDUCTION	WASHINGTON, DC	October 2020	
STARR II 2020	STRATEGIC ALLIANCE FOR RISK REDUCTION	APPROXIMATES STUDIES (INDIANA)	STRATEGIC ALLIANCE FOR RISK REDUCTION	WASHINGTON, DC	October 2020	
STEUBEN CO GIS 2016	STEUBEN COUNTY GIS DEPARTMENT	SDE_DATE_DBO_Corporate_Limits, SDE_DATE_DBO_Road_Centerlines, Lakes, Rivers, Streams	STEUBEN COUNTY GIS DEPARTMENT	ANGOLA, IN	January 2017	
USGS NHD	UNITED STATES GEOLOGICAL SURVEY	National Hydrography Dataset (NHD) - High Resolution	UNITED STATES GEOLOGICAL SURVEY	RESTON, VA	January 1999	

Table 32: Bibliography and References (continued)

Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
STARR II 2020	STRATEGIC ALLIANCE FOR RISK REDUCTION	APPROXIMATES STUDIES (MICHIGAN) - SCS MODIFIED REGRESSION	STRATEGIC ALLIANCE FOR RISK REDUCTION	WASHINGTON, DC	October 2020	
STARR II 2020	STRATEGIC ALLIANCE FOR RISK REDUCTION	DETAILED STUDIES - GAGE ANALYSIS	STRATEGIC ALLIANCE FOR RISK REDUCTION	WASHINGTON, DC	October 2020	
STARR II 2020	STRATEGIC ALLIANCE FOR RISK REDUCTION	APPROXIMATES STUDIES (INDIANA)	STRATEGIC ALLIANCE FOR RISK REDUCTION	WASHINGTON, DC	October 2020	
STEUBEN CO GIS 2016	STEUBEN COUNTY GIS DEPARTMENT	SDE_DATE_DBO_Corporate_Limits, SDE_DATE_DBO_Road_Centerlines, Lakes, Rivers, Streams	STEUBEN COUNTY GIS DEPARTMENT	ANGOLA, IN	January 2017	
USGS NHD	UNITED STATES GEOLOGICAL SURVEY	National Hydrography Dataset (NHD) - High Resolution	UNITED STATES GEOLOGICAL SURVEY	RESTON, VA	January 1999	







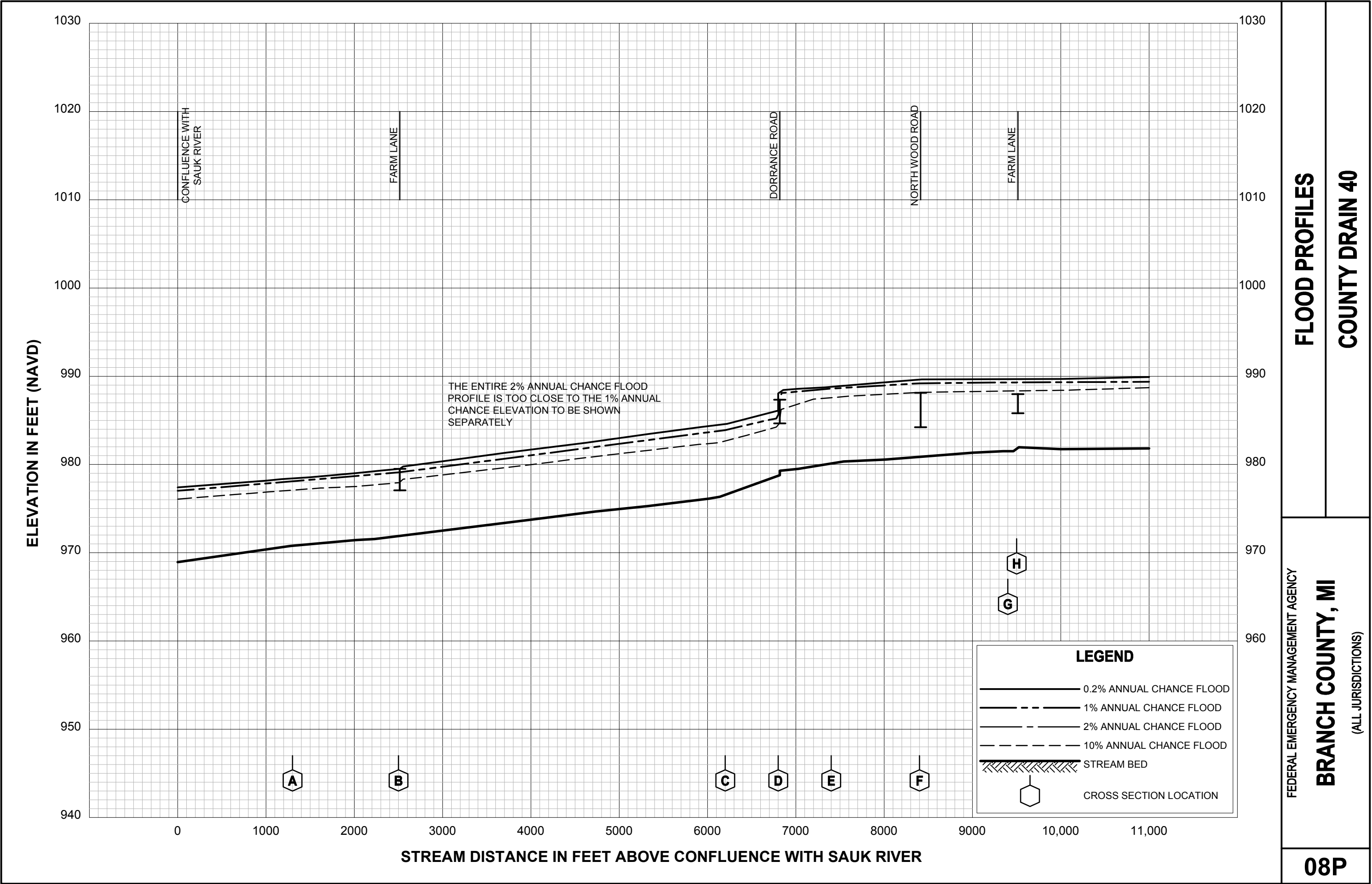
FLOOD PROFILES

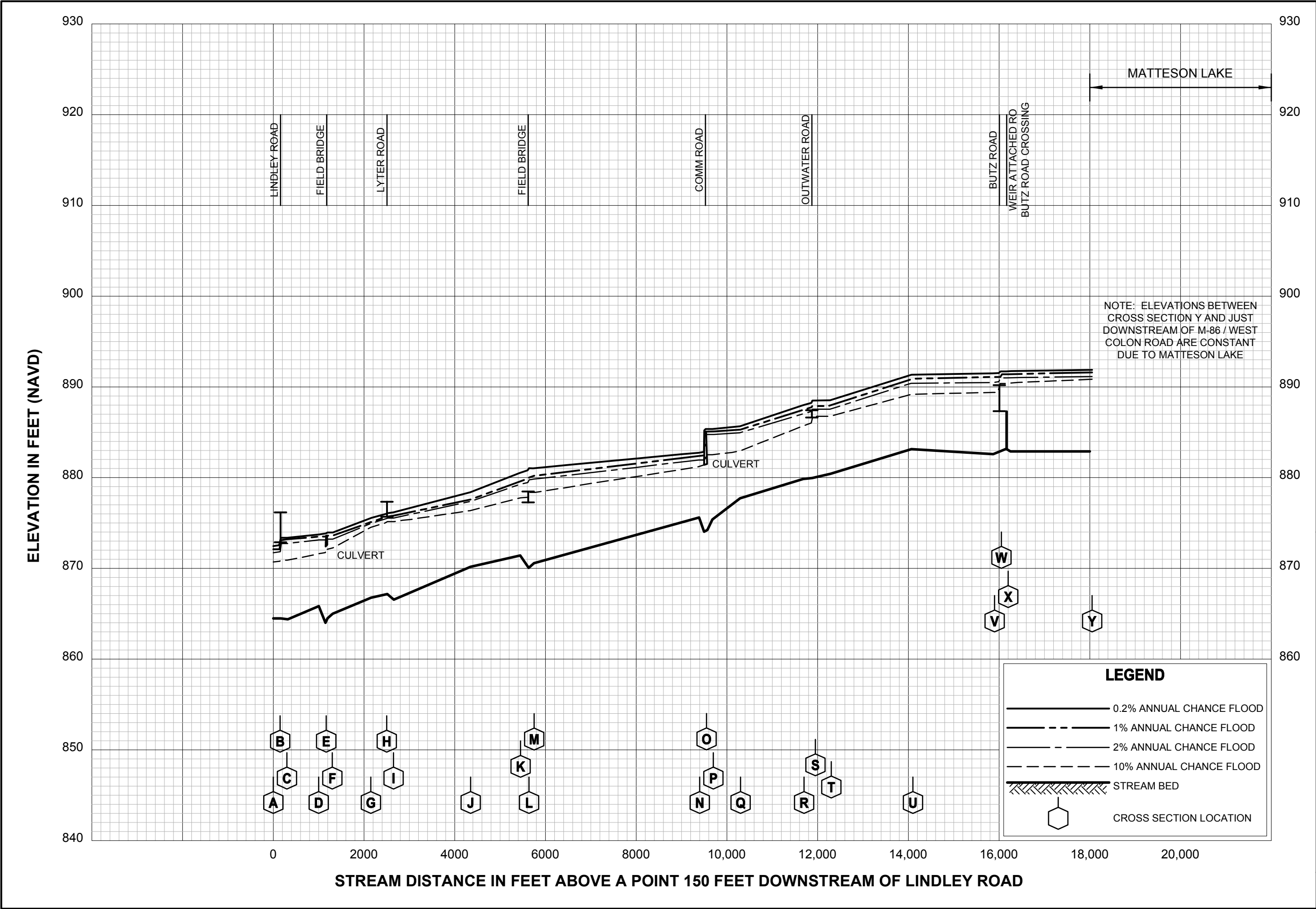
COUNTY DRAIN 15

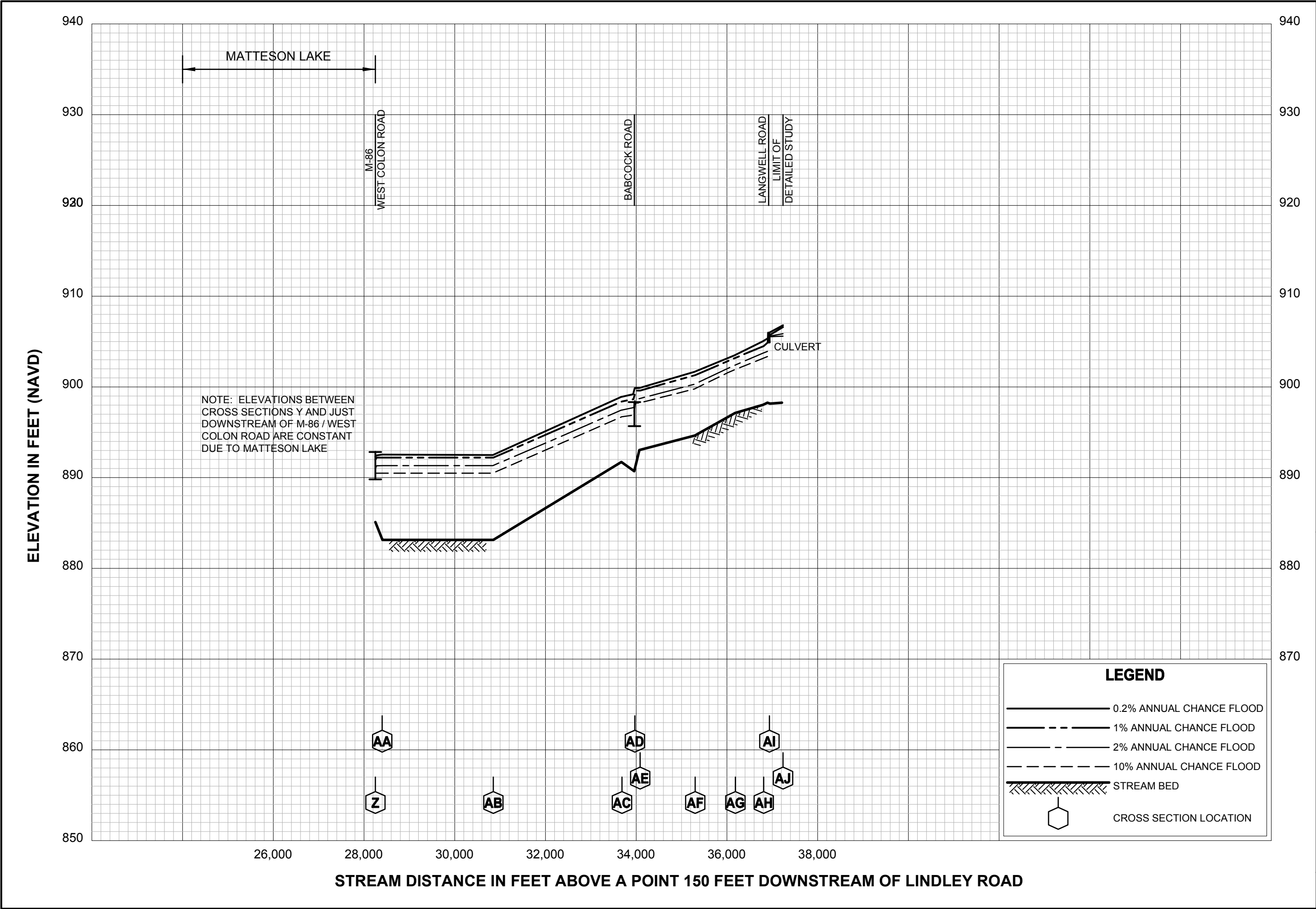
FEDERAL EMERGENCY MANAGEMENT AGENCY

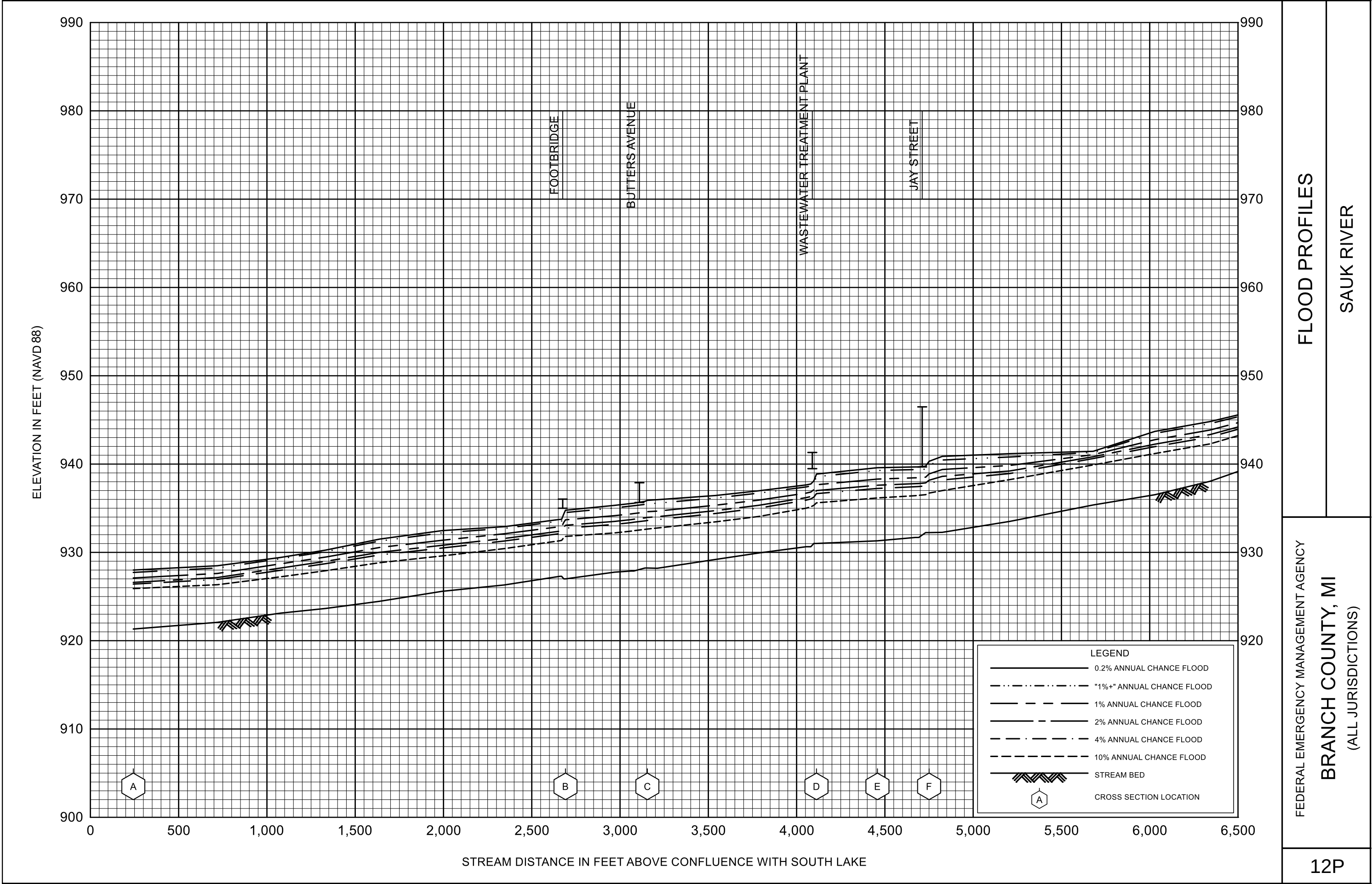
BRANCH COUNTY, MI

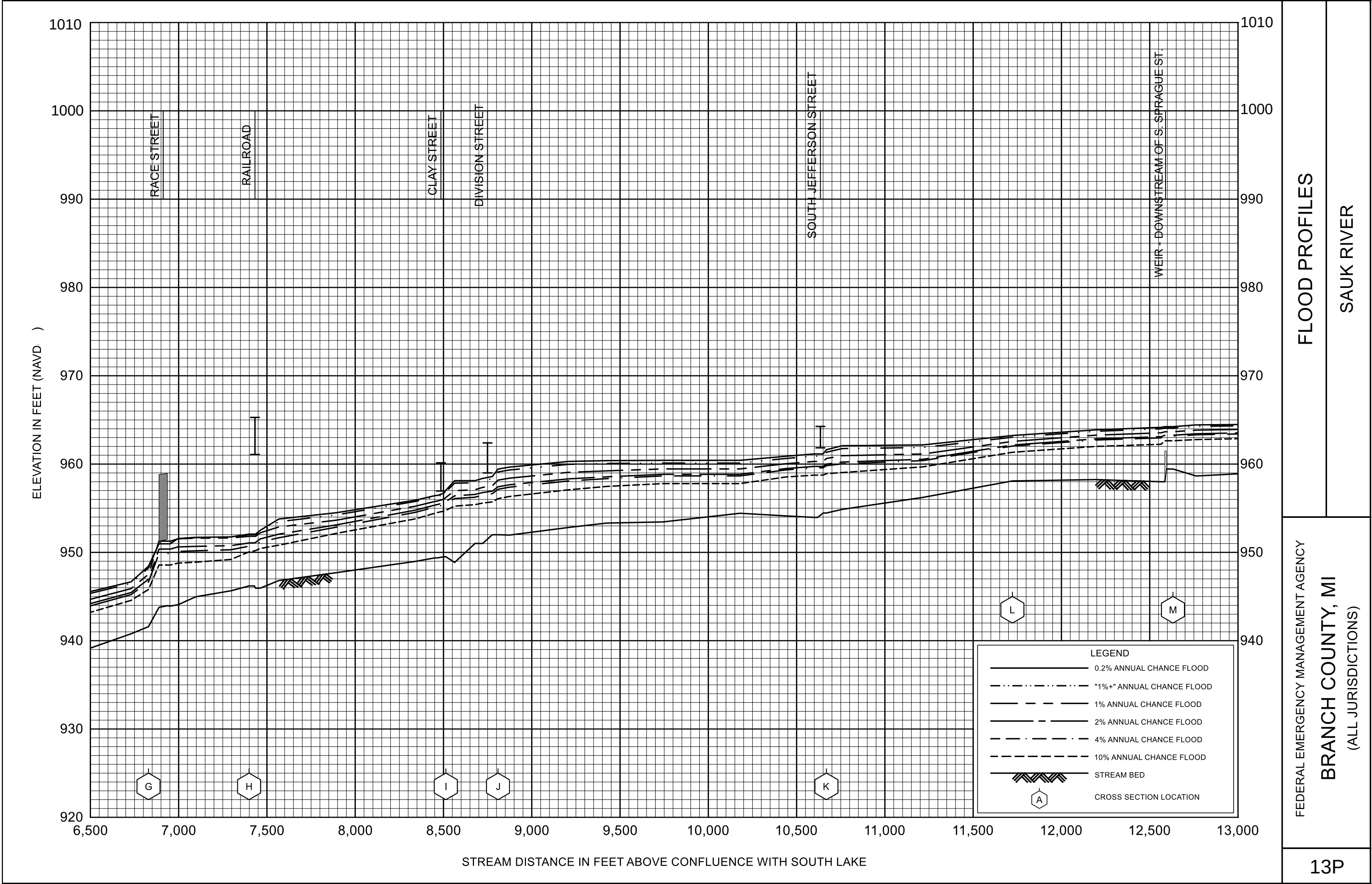
(ALL JURISDICTIONS)

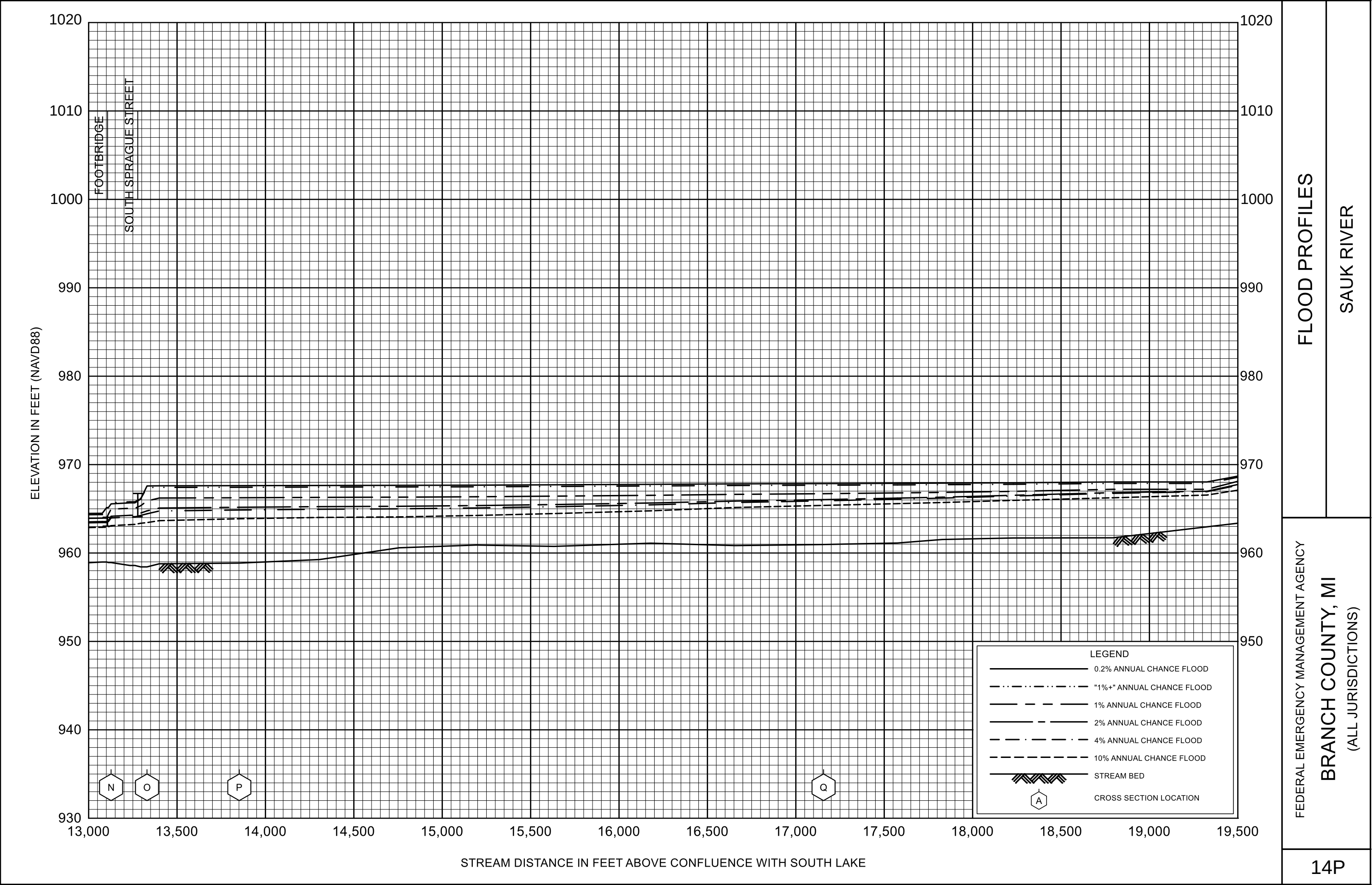


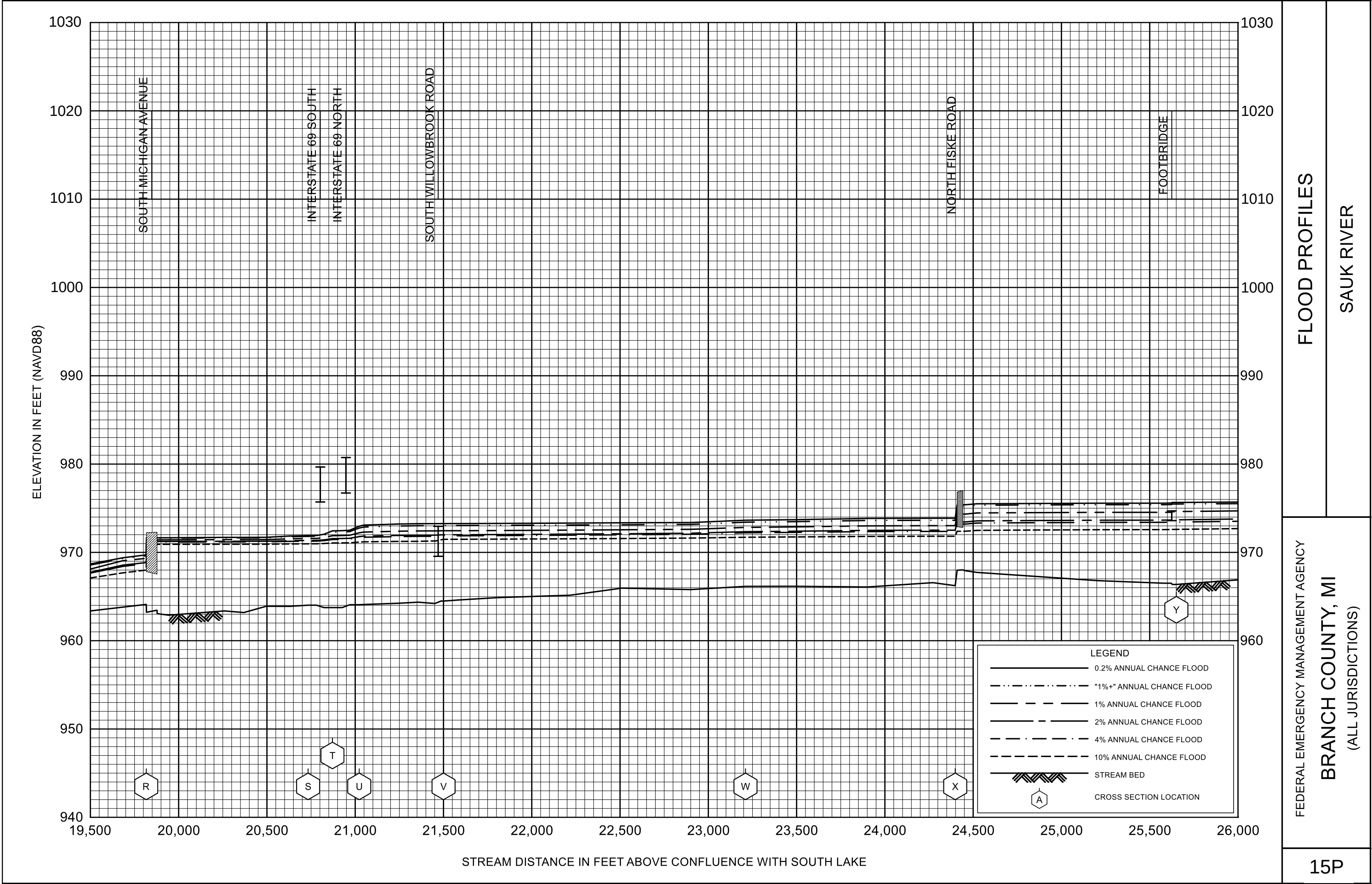


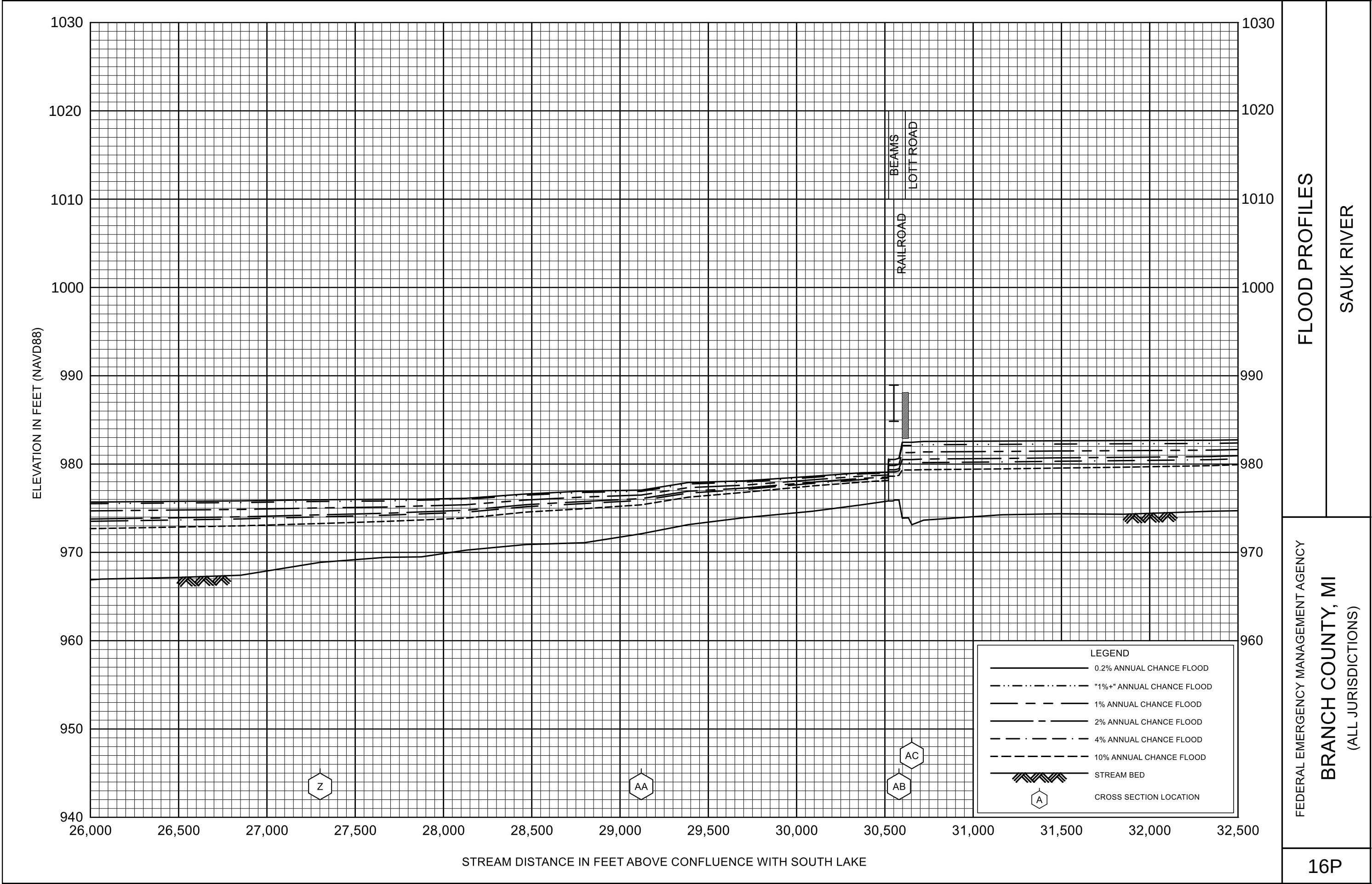












FLOOD PROFILES

SAUK RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

BRANCH COUNTY, MI
(ALL JURISDICTIONS)

