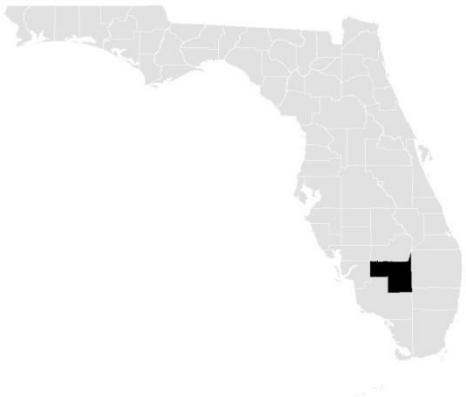
FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 1



HENDRY COUNTY, FLORIDA

AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
CLEWISTON, CITY OF	120108
HENDRY COUNTY, UNINCORPORATED AREAS	120107
LABELLE, CITY OF	120109

FEMA

REVISED

MAY 15, 2020

FLOOD INSURANCE STUDY NUMBER
12051CV000B

Version Number 2.4.3.6

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Volume 1

Exhibits

Flood Profiles	Panel
Bee Branch	01 P
Caloosahatchee River	02 P
Canal 139	03 P
Jacks Branch	04-05 P
Messer Canal	06 P
N Hendry Tributary 1	07 P
N Hendry Tributary 3	08-09 P
Pollywog Creek	10 P
Roy Brown Creek	11 P
Stream A	12 P
Stream A – LaBelle	13 P
Stream B	14 P
Stream B – LaBelle	15 P
Stream C	16 P
Stream C – LaBelle	17 P
Stream D	18 P
Stream D – LaBelle	19 P
Stream E	20 P
Stream F – LaBelle	21 P

Published Separately

Flood Insurance Rate Map (FIRM)

FLOOD INSURANCE STUDY REPORT
HENDRY COUNTY, FLORIDA

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 that will be used to establish actuarial flood insurance rates and 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 Hendry County, Florida.

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.

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
Clewiston, City of	120108	03090201 03090205	12051C0139E 12051C0143E 12051C0277E 12051C0281E	
Hendry County, Unincorporated Areas	120107	03090201 03090202 03090204 03090205	12051C0015D 12051C0020D 12051C0039D 12051C0040D 12051C0043D 12051C0045D 12051C0065D 12051C0070D	

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
Hendry County, Unincorporated Areas	120107	03090201 03090202 03090204 03090205	12051C0100E 12051C0125E 12051C0139E 12051C0140E 12051C0143E 12051C0145E 12051C0150E* 12051C0155D 12051C0160D 12051C0165D 12051C0170D 12051C0177D 12051C0180D 12051C0181D 12051C0182D 12051C0185D 12051C0190D 12051C0195D 12051C0205D 12051C0210D 12051C0225D 12051C0230D 12051C0250D 12051C0275E 12051C0277E 12051C0280E 12051C0281E 12051C0285E 12051C0290E 12051C0295E 12051C0325D 12051C0350D 12051C0375D 12051C0400D 12051C0405D 12051C0425D 12051C0450E 12051C0460D 12051C0470D 12051C0500D 12051C0525D 12051C0550E 12051C0560D 12051C0570D 12051C0600D 12051C0625D 12051C0650D	

*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
LaBelle, City of	120109	03090205	12051C0039D 12051C0043D 12051C0177D 12051C0180D 12051C0181D 12051C0185D 12051C0190D 12051C0195D	
Seminole Tribe of Florida (Big Cypress Indian Reservation)	120685	03090202	12051C0625D 12051C0650D	**Area Not Studied Within Hendry County**

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% annual chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1% annual chance and 0.2% annual chance floodplains; and 1% 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.

- 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 Hendry County became effective on July 6, 2015. Refer to Table 27 for information about subsequent revisions to the FIRMs.

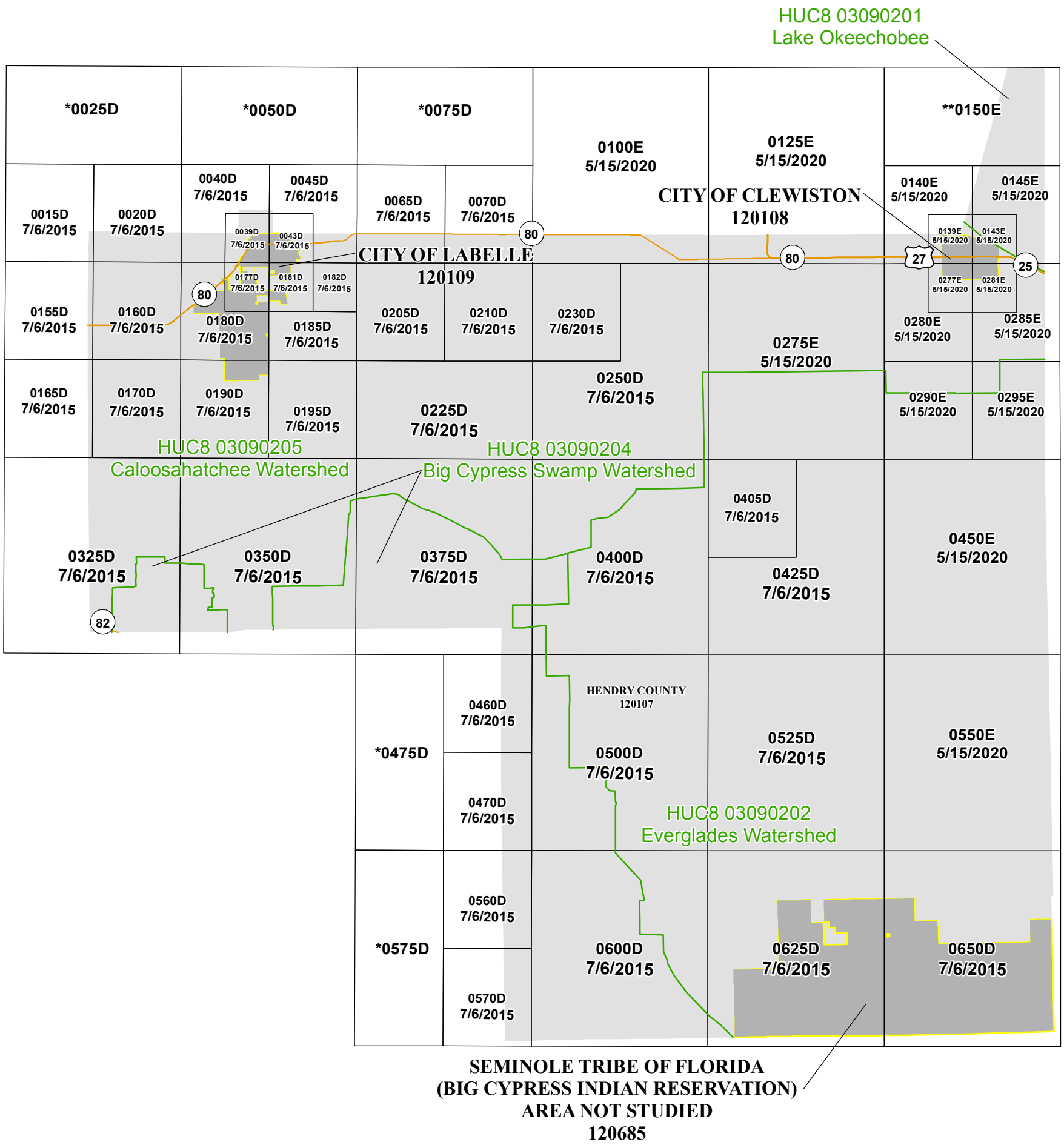
- Previous FIS Reports and FIRMs may have included levees that were accredited as reducing the risk associated with the 1% annual chance flood based on the information available and the mapping standards of the NFIP at that time. For FEMA to continue to accredit the identified levees, the levees must meet the criteria of the Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10), titled "Mapping of Areas Protected by Levee Systems."

  Since the status of levees is subject to change at any time, the user should contact the appropriate agency for the latest information regarding levees presented in Table 8 of this FIS Report. For levees owned or operated by the U.S. Army Corps of Engineers (USACE), information may be obtained from the USACE National Levee Database (nld.usace.army.mil). For all other levees, the user is encouraged to contact the appropriate local community.

- 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/online-tutorials.

The FIRM Index in Figure 1 shows the overall FIRM panel layout within Hendry 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, transportation features, watershed boundaries, and USGS HUC-8 codes.

Figure 1: FIRM Panel Index



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 MAY 15, 2020.

N

1 inch = 27,000 feet 1:324,000

0 14,500 29,000 58,000 Feet

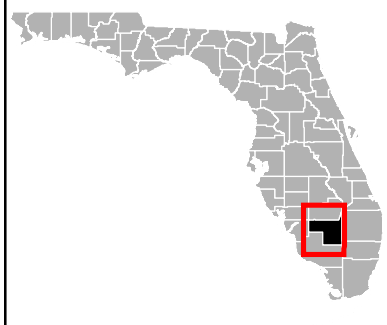
Map Projection:
NAD 1983 State Plane Florida East FIPS 0901 Feet;
North American Datum 1983

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

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

*PANEL NOT PRINTED - AREA OUTSIDE COUNTY BOUNDARY
**PANEL NOT PRINTED - AREA ALL IN ZONE AE (EL 17.5)

COUNTY LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP PANEL INDEX

HENDRY COUNTY, FLORIDA and Incorporated Areas

PANELS PRINTED:

0015, 0020, 0039, 0040, 0043, 0045, 0065, 0070, 0100, 0125, 0139, 0140, 0143, 0145, 0155, 0160, 0165, 0170, 0177, 0180, 0181, 0182, 0185, 0190, 0195, 0205, 0210, 0225, 0230, 0250, 0275, 0277, 0280, 0281, 0285, 0290, 0295, 0325, 0350, 0375, 0400, 0405, 0425, 0450, 0460, 0470, 0500, 0525, 0550, 0560, 0570, 0600, 0625, 0650

FEMA

MAP NUMBER
12051CIND0B

MAP REVISED
MAY 15, 2020

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 map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA 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 Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the 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.

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

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

Figure 2. FIRM Notes to Users

PROJECTION INFORMATION: The projection used in the preparation of the map was State Plane Florida East FIPS 0901. The horizontal datum was NAD83, GRS 1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

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

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 this FIRM was provided in digital format by the South Florida Water Management District, United States Census Bureau, United States Department of Transportation Bureau of Transportation Statistics, Florida Resources and Environmental Analysis Center, and the Seminole Tribe of Florida. Ortho imagery was originally produced by National Agriculture Imagery Program (NAIP) in 2016 and has a 1 - meter ground sample distance.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 Hendry County, Florida, 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.

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 May 15, 2020.

Figure 2. FIRM Notes to Users

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for Hendry County, Florida, effective May 15, 2020.

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

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

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 Hendry 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

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 Risk due to Levee: Areas where an accredited levee, dike, or other flood control structure has reduced the flood risk from the 1% annual chance flood. See Notes to Users for important information.



Area with Flood Risk due to Levee: Areas where a non-accredited levee, dike, or other flood control structure is shown as providing protection to less than the 1% annual chance flood.

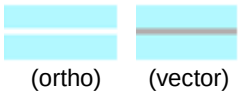
OTHER AREAS

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



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

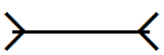
Channel, Culvert, Aqueduct, or Storm Sewer

Dam
Jetty
Weir

Dam, Jetty, Weir



Levee, Dike, or Floodwall



Bridge

Bridge

Figure 3: Map Legend for FIRM

REFERENCE MARKERS	
22.0	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
B 20.2	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
5280 21.1	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
17.5	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
8	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
BASE MAP FEATURES	
Missouri Creek	River, Stream or Other Hydrographic Feature
234	Interstate Highway
234	U.S. Highway
234	State Highway
234	County Highway
MAPLE LANE	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
RAILROAD	Railroad

Figure 3: Map Legend for FIRM

_____	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
^{42}**76**^{000m}**E**	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% annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2% 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 Hendry 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% 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% and 0.2% 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% annual chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary is shown on the FIRM. Figure 3, “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 and Table 3 indicate the flood zone designations for each flooding source and each community within Hendry 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. On the map, the 1% annual chance floodplain corresponds to the SFHAs. The 0.2% 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)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Bee Branch	Hendry County, Unincorporated Areas	Confluence with Caloosahatchee River	At Howard Road	03090205	1.7		Y	AE	1980
Caloosahatchee River	Hendry County, Unincorporated Areas; LaBelle, City of	Collier County Boundary	Glades County Boundary	03090205	12		N	AE	1980
Canal 139	Hendry County, Unincorporated Areas	Confluence with Deer Fence Canal	At Flagpole Road	03090202 03090205	16.1		N	AE	1980
Jacks Branch	Hendry County, Unincorporated Areas	Confluence with Caloosahatchee River	At Glades County Boundary	03090205	3.4		Y	AE	2012
Lake Okeechobee	Hendry County, Unincorporated Areas	N/A	N/A	03090201		183.1	N	AE	2017
Long Hammock Creek	Hendry County, Unincorporated Areas	At State Highway 80	At County Road 832	03090205	11.55		N	A	1980
Messer Canal	Hendry County, Unincorporated Areas; LaBelle, City of	Confluence with Caloosahatchee River	Approximately 7,205 ft upstream of State Road 80	03090205	1.8		Y	AE	2012
N Hendry Tributary 1	Hendry County, Unincorporated Areas	Glades County Boundary	Approximately 8,125 feet upstream of Glades County Boundary	03090205	1.3		Y	AE	2012
N Hendry Tributary 3	Hendry County, Unincorporated Areas	Confluence with Caloosahatchee River	At Helms Road	03090205	3.1		Y	AE	2012
Pollywog Creek	Hendry County, Unincorporated Areas	Confluence with Caloosahatchee River	Glades County Boundary	03090205	0.8		Y	AE	2012

Table 2: Flooding Sources Includes in this FIS Report continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Roy Brown Creek	Hendry County, Unincorporated Areas; LaBelle, City of	Confluence with Caloosahatchee River	Glades County Boundary	03090205	1.3		Y	AE	2012
Stream A	Hendry County, Unincorporated Areas	Confluence with Jacks Branch	Approximately 3,985 feet upstream of Cemetery Road	03090205	1.1		Y	AE	2012
Stream A – LaBelle	Hendry County, Unincorporated Areas; LaBelle, City of	Confluence with Caloosahathcee River	Approximately 100 feet upstream of South Main Street	03090205	1.9		Y	AE	2012
Stream B	Hendry County, Unincorporated Areas	Confluence with Stream A	Glades County Boundary	03090205	1.4		Y	AE	2012
Stream B – LaBelle	LaBelle, City of	Confluence with Stream A – LaBelle	Approximately 1,050 feet upstream of South Missouri Street	03090205	1.1		Y	AE	2012
Stream C	Hendry County, Unincorporated Areas	Confluence with Caloosahatchee River	At Trader Road	03090205	2.1		Y	AE	2012
Stream C – LaBelle	LaBelle, City of	At South Main Street	Approximately 1,250 feet upstream of Seminole Avenue	03090205	1.1		Y	AE	1980
Stream D	Hendry County, Unincorporated Areas	Confluence with Caloosahatchee River	Glades County Boundary	03090205	1.7		Y	AE	1980
Stream D – LaBelle	LaBelle, City of	At South Main Street	Approximately 150 feet upstream of South Elm Street	03090205	1.0		Y	AE	1980
Stream E	Hendry County, Unincorporated Areas	Confluence with Caloosahatchee River	Approximately 950 feet upstream of North River Road	03090205	0.8		Y	AE	1980

Table 2: Flooding Sources Includes in this FIS Report continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Stream F	Hendry County, Unincorporated Areas	Glades County Boundary	Approximately 24,600 feet upstream of Glades County Boundary	03090205			N	AH	1980
Stream F – LaBelle	LaBelle, City of	Confluence with Caloosahatchee River	Approximately 100 feet upstream of Cowboy Way	03090205	1.4		Y	AE	1980
Stream G	Hendry County, Unincorporated Areas	Glades County Boundary	Approximately 24,000 feet upstream of Glades County Boundary	03090205			N	AH	1980
Stream I	Hendry County, Unincorporated Areas	Glades County Boundary	At Lake View Aveune	03090205			N	AH	1980
Stream J	Hendry County, Unincorporated Areas	Glades County Boundary	At Acadia Avenue	03090205			N	AH	1980
Stream K	Hendry County, Unincorporated Areas	Glades County Boundary	At Acadia Avenue	03090205			N	AH	1980
Zone A Streams within Hendry County	Hendry County, Unincorporated Areas; LaBelle, City of	Various	Various	03090201 03090202 03090204 03090205			N	A	1980

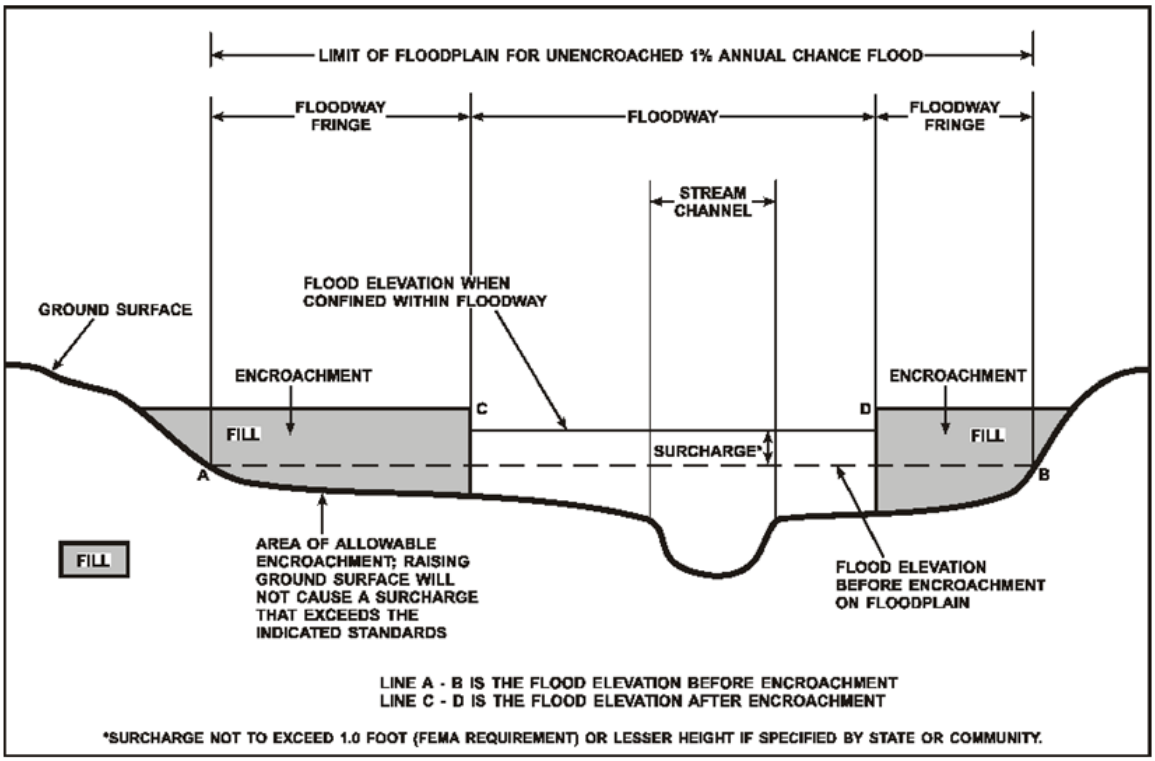
2.2 Floodways

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% 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% annual chance flood. The floodway fringe is the area between the floodway and the 1% 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% 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 Florida require communities in Hendry County to limit increases caused by encroachment to 1.0 foot and several communities have adopted additional restrictions. 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.”

All floodways that were developed for this Flood Risk Project are shown on the FIRM using the symbology described in Figure 3. In cases where the floodway and 1% 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 Base Flood Elevation (BFE) is the elevation of the 1% 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. BFEs are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM.

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." 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% 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% annual chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table 3 lists the flood insurance zones in Hendry County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Clewiston, City of	AE, X
Hendry County, Unincorporated Areas	A, AE, AH, X
LaBelle, City of	A, AE, AH, 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)
Big Cypress Swamp	03090204	Big Cypress Swamp	This watershed has the second smallest presence in Hendry County, located in the southwest portion of the county.	2,848
Caloosahatchee	03090205	Caloosahatchee River	This watershed has the second largest presence in Hendry County. It is located in the central part of the county, containing both the City of LaBelle and the City of Clewiston.	1,403
Everglades	03090202	Everglades	This watershed is the largest within Hendry County. It is located in the southeast portion of the county, containing Big Cypress Indian Reservation.	4,421
Lake Okeechobee	03090201	Lake Okeechobee	This watershed is located in the northeastern corner of the county. It has the smallest presence in Hendry County.	865

4.2 Principal Flood Problems

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

Table 5: Principal Flood Problems

Flooding Source	Description of Flood Problems
Caloosahatchee River	Early flood records of flooding along the Caloosahatchee River are limited, but serious flooding occurred in 1924, 1926, 1928, 1930, 1936, 1945, 1947, 1948, 1951, and 1953. The flood of June 1930 was the most severe of recent years; however, stage records of that flood are not applicable to existing conditions because of channel improvements in the early 1960's. The record stage of the Caloosahatchee River since construction of the navigation and flood control project was 11.5 feet NAVD at the upstream side of Ortana Locks on June 26, 1974. (FEMA, 2015)

Table 6 contains information about historic flood elevations in the communities within Hendry County.

Table 6: Historic Flooding Elevations

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Caloosahatchee River	Along the river	N/A	1924 1926 1928 1930 1936 1945 1947 1948 1951 1953	N/A	FEMA, 2015
Caloosahatchee River	Upstream side of the Ortona Locks	11.5	06/26/1974	N/A	FEMA, 2015

4.3 Non-Levee Flood Protection Measures

Table 7 contains information about non-levee flood protection measures within Hendry County such as dams, jetties, and or dikes. Levees are addressed in Section 4.4 of this FIS Report.

Table 7: Non-Levee Flood Protection Measures

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Caloosahatchee River	N/A	Flood Control Structures	Along the river	The plan of improvement included constructing Canal 43, and constructing or improving three structures in the main canal for water control and regulation. The project normally provides 30 percent Standard Project protection. (FEMA, 2015)

4.4 Levees

For purposes of the NFIP, FEMA only recognizes levee systems that meet, and continue to meet, minimum design, operation, and maintenance standards that are consistent with comprehensive floodplain management criteria. The Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10) describes the information needed for FEMA to determine if a levee system reduces the risk from the 1% annual chance flood. This information must be supplied to FEMA by the community or other party when a flood risk study or restudy is conducted, when FIRMs are revised, or upon FEMA request. FEMA reviews the information for the purpose of establishing the appropriate FIRM flood zone.

Levee systems that are determined to reduce the risk from the 1% annual chance flood are accredited by FEMA. FEMA can also grant provisional accreditation to a levee system that was previously accredited on an effective FIRM and for which FEMA is awaiting data and/or documentation to demonstrate compliance with Section 65.10. These levee systems are referred to as Provisionally Accredited Levees, or PALs. Provisional accreditation provides communities and levee owners with a specified timeframe to obtain the necessary data to confirm the levee's certification status. Accredited levee systems and PALs are shown on the FIRM using the symbology shown in Figure 3 and in Table 8. If the required information for a PAL is not submitted within the required timeframe, or if information indicates that a levee system not longer meets Section 65.10, FEMA will de-accredit the levee system and issue an effective FIRM showing the levee-impacted area as a SFHA.

FEMA coordinates its programs with USACE, who may inspect, maintain, and repair levee systems. The USACE has authority under Public Law 84-99 to supplement local efforts to repair flood control projects that are damaged by floods. Like FEMA, the USACE provides a program to allow public sponsors or operators to address levee system maintenance deficiencies. Failure to do so within the required timeframe results in the levee system being placed in an inactive status in the USACE Rehabilitation and Inspection Program. Levee systems in an inactive status are ineligible for rehabilitation assistance under Public Law 84-99.

FEMA coordinated with the USACE, the local communities, and other organizations to compile a list of levees that exist within Hendry County. Table 8, "Levees," lists all accredited levees, PALs, and de-accredited levees shown on the FIRM for this FIS Report. Other categories of levees may also be included in the table. The Levee ID shown in this table may not match numbers based on other identification systems that were listed in previous FIS Reports. Levees identified as PALs in the table are labeled on the FIRM to indicate their provisional status.

Please note that the information presented in Table 8 is subject to change at any time. For that reason, the latest information regarding any USACE structure presented in the table should be obtained by contacting USACE and accessing the USACE National Levee Database. For levees owned and/or operated by someone other than the USACE, contact the local community shown in Table 30.

Table 8: Levees

Community	Flooding Source	Levee Location	Levee Owner	USACE Levee	Levee ID	Covered Under PL84-99 Program?	FIRM Panel(s)
Clewiston, City of	Lake Okeechobee	Left Bank	US Army Corps of Engineers	Yes	N/A	Yes	12051C0143E
Hendry County, Unincorporated Areas	Lake Okeechobee	Left Bank	US Army Corps of Engineers	Yes	N/A	Yes	12051C0139E 12051C0143E 12051C0145E 12051C0285E

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 and for flood insurance rates. These events, commonly termed the 10-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2% 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.

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. A summary of stillwater elevations developed for non-coastal flooding sources is provided in Table 10.

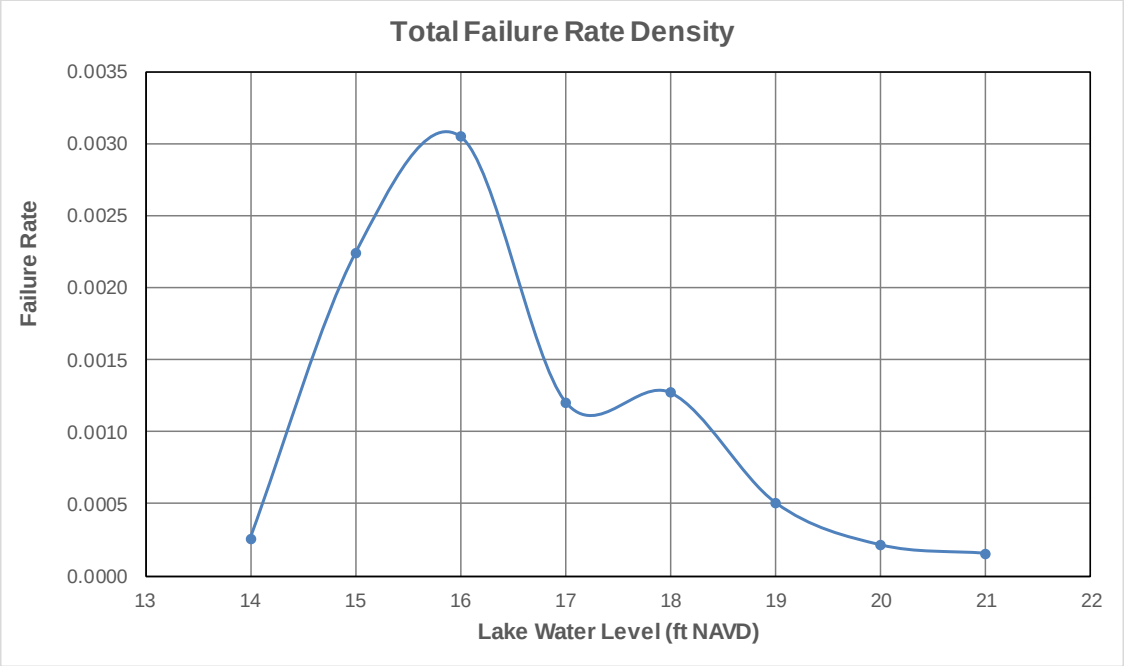
Herbert Hoover Dike/Lake Okeechobee

As part of the Federal Emergency Management Agency's (FEMA) efforts to update the flood insurance rate maps around Lake Okeechobee, Compass JV — a Joint Venture (JV) including AECOM and Taylor Engineering — initiated efforts to complete flood insurance studies (FIS) for the five counties surrounding Lake Okeechobee. The counties include Glades, Hendry, Martin, Okeechobee, and Palm Beach. The USACE has certified a portion of the Dike as able to withstand a 1% annual chance event. However, approximately half of the Herbert Hoover Dike (HHD or Dike) remains un-certified and is not able to provide protection from high lake water levels. This situation required a unique study approach consistent with FEMA's Guidelines and Specifications, revised Analysis and Mapping Procedures for Non-Accredited Levees, and coastal flood mapping methodologies. The study incorporated a technical review by Donald Resio, PhD, who provided invaluable technical expertise.

The study of HHD failure and associated flood risks comprised three major tasks: (1) an analysis of stage-frequencies for lake water levels, (2) establishment of dike fragility curves for each dike reach, and (3) joint probability analyses of downstream flood inundations created by various dike breach scenarios (12 breach locations at 11 reaches and 8 lake water levels). This study included one additional breach location added since the September 2012 FEMA study. For a given water level behind the dike, task 1 established the frequency of occurrence of the water level, and task 2 established the associated dike failure probability. Considering these probabilities, along with the results of the model simulations for various lake level breaches, task 3 established the joint probability of HHD failure (failure rate at each breach location) and corresponding probability of downstream flood elevations associated with dike breaching. The July 2015 USACE *Herbert Hoover Dike Major Hydrologic Hazard Assessment*, called the HHA (USACE, 2015), provided the critical lake stage-frequency curves. The November 2015 Report *Risk Assessment Technical Summary, Part 2*, presented dike fragility curves representing each reach (breach location) around HHD. Based on FEMA-funded LiDAR topography, a 2011 USACE study (USACE, 2011) performed by Taylor Engineering provided the advanced, 2-dimensional hydrodynamic dam breach model (MIKE modeling system) to simulate breaches and the associated downstream flooding caused by seepage/piping and slope stability. (This study did not address alternative mechanisms of failure such as overtopping.) Because the USACE's main study goal was part of emergency planning, rather than mitigation and flood insurance rate map production, this study included additional activities aimed at estimating 1% annual chance flood elevations, including additional hydrodynamic simulations and statistical analyses.

A component of the statistical analyses (task 3), the figure shown below illustrates the calculated HHD failure rate (events per year) for lake levels from 14 ft. to 21 ft. NAVD.

HHD Failure Rate (Events per Year) for Various Lake Okeechobee Lake Levels



Note the calculated failure rates in the figure apply to the total dike system (i.e., the total dike failure rate at a given lake level represents the combined failure rate of all reaches). Each dike reach around the circumference of the lake must receive a portion of the total failure rate. Because the dike comprises 11 reaches with an established fragility curve for each reach based on characteristic geotechnical conditions for that reach, the failure probability of each reach provides the basis to allocate (through Equation 1) the total failure rate.

$$Rate_{i,j} = \frac{P_{i,j}}{\sum_{i=1A..}^{8} P_{i,j}} \times TotalRate_j \quad (1)$$

Here, *i* denotes the reach number from 1A to 8; j denotes the lake level from 14 ft. to 21 ft.; $Rate_{i,j}$ is occurrence rate of each breach; $TotalRate_j$ is the total dike failure rate.

The table below shows the rate for each breach simulation. Note the fragility curves indicate a 0% chance of failure at a lake level of 17.5 ft. NAVD and lower at some reach locations. This is the area that the USACE believes the HHD will withstand the 1% annual chance event (17.5 ft.).

Allocated Failure Rate (Events per Year) for each Breach Simulation

Lake Level (NAVD)								
Reach	**14 ft**	**15 ft**	**16 ft**	**17 ft**	**18 ft**	**19 ft**	**20 ft**	**21 ft**
1A	4.49E-09	1.06E-08	1.67E-08	1.92E-08	1.83E-08	2.36E-08	2.54E-08	2.65E-08
1B	4.49E-09	1.06E-08	1.67E-08	1.92E-08	1.83E-08	2.36E-08	2.54E-08	2.65E-08
1C	8.17E-06	1.57E-05	2.18E-05	2.42E-05	2.25E-05	2.82E-05	3.02E-05	3.14E-05
2	0	0	0	0	0.000386	0.000594	0.000663	0.000701
2A	0.000155	0.001261	0.002765	0.003365	0.003398	0.003383	0.003399	0.003425
3	9.69E-05	0.001224	0.002765	0.003365	0.003398	0.003383	0.003398	0.003424
4	0	0	0	0	0.000277	0.000407	0.000451	0.000476
5	0	0	0	0	0.000109	0.000125	0.000131	0.000135
6A	0	0	0	0	0.000164	0.000259	0.000291	0.000309
6B	0	0	0	0	8.50E-05	8.96E-05	9.16E-05	9.31E-05
7	0	0	0	0	0.000106	0.000176	0.000199	0.000212
8	0	0	0	0	7.95E-05	8.02E-05	8.09E-05	8.16E-05

Applied to the breach flooding simulation results, the statistical analysis yielded a statistical flood surface, which represents flood levels at every computational node for a given flood frequency, in this case the 1% annual chance. The statistical surface then became the basis for work maps that show the extent of 1% annual chance flooding, proposed Base Flood Elevations, and proposed Special Flood Hazard Area zones. Engineering and mapping products are consistent with FEMA's Guidelines and Specifications and the study's scope of work.

The study also included coordination with stakeholders, specifically the USACE, South Florida Water Management District, and local communities. Leveraging existing studies and reports, including the USACE's HHD breach model and HHA, also proved critical to the cost-effective and timely completion of this scope of work. The USACE authorized the use of its HHD hydrodynamic breach model in May 2011 and again for an additional breach location in 2017 as the foundation for this study and provided other supporting insight, information, and clarification about the data, Lake Okeechobee water levels and regulation, and ongoing HHD improvements.

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
Bee Branch	At mouth	27.20	980	*	1,720	2,140	2,800
Jacks Branch	At mouth	61.95	2,243	*	3,897	4,720	6,953
Jacks Branch	At confluence with Stream A	61.84	2,230	*	3,876	4,695	6,920
Jacks Branch	At Norris Road	53.6	2,089	*	3,634	4,401	6,486
Jacks Branch	At Kirby Thompson Road	52.69	2,057	*	3,580	4,336	6,392
Jacks Branch	Approximately 1,980 feet upstream of Kirby Thompson Road	52.28	1,975	*	3,443	4,176	6,183
Jacks Branch	Approximately 5,000 feet upstream of Kirby Thompson Road	51.57	1,928	*	3,365	4,082	6,055
Jacks Branch	At Glades County Boundary	51.12	1,922	*	3,354	4,069	6,033
Long Hammond Creek	At State Road 80	29.50	1,190	*	2,460	2,800	4,670
Messer Canal	At mouth	12.14	550	*	863	1,003	1,332
Messer Canal	At State Road 80	11.9	547	*	855	992	1,314
Messer Canal	Approximately 5,980 feet upstream of State Road 80	10.94	521	*	799	922	1,225
N Hendry Tributary 1	At State Road 80	2.91	213	*	309	350	449
N Hendry Tributary 1	Adjacent to Malibu Drive	1.94	162	*	233	264	337

* Data Not Available

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
N Hendry Tributary 1	Approximately 1,900 feet upstream of Malibu Drive	0.67	70	*	100	113	143
N Hendry Tributary 3	At mouth	17.19	1,147	*	1,673	1,904	2,453
N Hendry Tributary 3	At State Road 80	15.33	1,011	*	1,471	1,673	2,152
N Hendry Tributary 3	At Eucalyptus Circle	13.09	895	*	1,288	1,460	1,867
N Hendry Tributary 3	Approximately 1,050 feet upstream of Eucalyptus Circle	12.77	872	*	1,254	1,422	1,815
N Hendry Tributary 3	At Birchwood Parkway	7.75	456	*	658	746	954
N Hendry Tributary 3	At SW Raintree Boulvard	3.67	256	*	367	417	532
N Hendry Tributary 3	At Helms Road	2.42	122	*	178	203	262
Pollywog Creek	At mouth	13.71	1,168	*	2,045	2,476	3,671
Pollywog Creek	Approximately 590 feet downstream of Pollywog Point	13.68	1,166	*	2,040	2,471	3,665
Pollywog Creek	At Glades County Boundary	13.5	1,130	*	1,981	2,401	3,572
Roy Brown Creek	At mouth	0.78	286	*	407	465	608
Roy Brown Creek	At Mohawk Aveune	0.71	267	*	380	434	569
Roy Brown Creek	At Choctaw Aveune	0.61	234	*	330	381	499
Roy Brown Creek	At Nobles Road	0.53	210	*	292	341	447
Roy Brown Creek	At Glades County Boundary	0.22	121	*	174	197	250
Stream A	At mouth	7.88	684	*	1,213	1,470	2,143
Stream A	At Confluence with Steam B	7.87	700	*	1,240	1,503	2,183

* Data Not Available

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
Stream A	At Cemetery Road	0.35	70	*	133	164	257
Stream A – LaBelle	At mouth	1.93	360	*	680	800	1,220
Stream A – LaBelle	Downstream of confluence of Stream B – LaBelle	1.66	300	*	585	710	1,060
Stream B	At mouth	7.51	526	*	945	1,154	1,730
Stream B	At Cemetery Road	7.5	530	*	953	1,163	1,742
Stream B	Approximately 2,470 feet upstream of Cemetery Road	7.37	490	*	885	1,082	1,634
Stream B	At Glades County Boundary	7.15	467	*	844	1,033	1,565
Stream B – LaBelle	At mouth	0.37	60	*	110	140	200
Stream C	At County Road 78	1.97	231	*	339	387	500
Stream C	At N River Road	1.57	171	*	253	289	376
Stream C	Approximately 175 feet upstream of Bonneville Street	0.14	32	*	48	55	71
Stream C – LaBelle	At mouth	0.29	70	*	130	170	240
Stream D	At mouth	0.30	340	*	530	600	700
Stream D – LaBelle	At mouth	0.36	70	*	130	160	240
Stream E	At mouth	0.40	70	*	150	170	330
Stream F	At State Road 80	10.50	650	*	1,340	1,530	2,550
Stream F – LaBelle	At mouth	0.98	80	*	150	180	250
Stream G	At State Road 80	36.00	1,140	*	2,470	2,850	4,920

* Data Not Available

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
Stream I	At State Road 80	15.20	1,030	*	2,220	2,470	4,250
Stream J	At State Road 80	2.10	140	*	290	340	560
Stream K	At State Road 80	4.40	180	*	410	480	880

* Data Not Available

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
Lake Ockeechobe	Hendry County, Unincorporated Areas	15.8	*	17.0	17.5	19.1

*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. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. The hydraulic analyses for this 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.”

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
Bee Branch	Confluence with Caloosahatchee River	At Howard Road	U.S. Weather Bureau Technical Paper No. 40	HEC-2	September 1980	AE/ Floodway	
Caloosahatchee River	Collier County Boundary	Glades County Boundary	Other	Other	September 1980	AE	Water surface elevation of floods of the selected recurrence intervals were determined by the Jacksonville District USACE (FEMA, 2015).
Canal 139	Confluence with Deer Fence Canal	At Flagpole Road	Other	Other	September 1980	AE	Hydrologic data is not available. Water surface elevation and flood boundaries were obtained from Part I, supplement 48 Genreral Design Memorandum Feubuary 1977 (USACE, 1977).
Jacks Branch	Confluence with Caloosahatchee River	At Glades County Boundary	Regression Equations	HEC-RAS 4.1.0	September 2012	AE/ Floodway	
Lake Okeechobee	N/A	N/A	Other	Other	July 2017	AE	Herbert Hoover Dike within Hendry County is certified by USACE, 2011.
Long Hammock Creek	At State Highway 80	At County Road 832	U.S. Weather Bureau Technical Paper No. 40	HEC-2	September 1980		
Messer Canal	Confluence with Caloosahatchee River	Approximately 7,205 ft upstream of State Road 80	HEC-HMS 3.3	HEC-RAS 4.1.0	September 2012	AE/ Floodway	

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
N Hendry Tributary 1	Glades County Boundary	Approximately 8,125 feet upstream of Glades County Boundary	HEC-HMS 3.3	HEC-RAS 4.1.0	September 2012	AE/ Floodway	
N Hendry Tributary 3	Confluence with Caloosahatchee River	At Helms Road	HEC-HMS 3.3	HEC-RAS 4.1.0	September 2012	AE/ Floodway	
Pollywog Creek	Confluence with Caloosahatchee River	Glades County Boundary	Regression Equations	HEC-RAS 4.1.0	September 2012	AE/ Floodway	
Roy Brown Creek	Confluence with Caloosahatchee River	Glades County Boundary	HEC-HMS 3.3	HEC-RAS 4.1.0	September 2012	AE/ Floodway	
Stream A	Confluence with Jacks Branch	Approximately 3,985 feet upstream of Cemetery Road	Regression Equations	HEC-RAS 4.1.0	September 2012	AE/ Floodway	
Stream A – LaBelle	Confluence with Caloosahathcee River	Approximately 100 feet upstream of South Main Street	U.S. Weather Bureau Technical Paper No. 40	HEC-RAS 4.1.0	September 2012	AE/ Floodway	The hydraulic data was updated in this countywide study but hydrologic was not.
Stream B	Confluence with Stream A	Glades County Boundary	Regression Equations	HEC-RAS 4.1.0	September 2012	AE/ Floodway	
Stream B – LaBelle	Confluence with Stream A – LaBelle	Approximately 1,050 feet upstream of South Missouri Street	U.S. Weather Bureau Technical Paper No. 40	HEC-RAS 4.1.0	September 2012	AE/ Floodway	The hydraulic data was updated in this countywide study but hydrologic was not.
Stream C	Confluence with Caloosahatchee River	At Trader Road	HEC-HMS 3.3	HEC-RAS 4.1.0	September 2012	AE/ Floodway	

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
Stream C – LaBelle	At South Main Street	Approximately 1,250 feet upstream of Seminole Avenue	U.S. Weather Bureau Technical Paper No. 40	HEC-2	September 1980	AE/ Floodway	
Stream D	Confluence with Caloosahatchee River	Glades County Boundary	U.S. Weather Bureau Technical Paper No. 40	HEC-2	September 1980	AE/ Floodway	
Stream D – LaBelle	At South Main Street	Approximately 150 feet upstream of South Elm Street	U.S. Weather Bureau Technical Paper No. 40	HEC-2	September 1980	AE/ Floodway	
Stream E	Confluence with Caloosahatchee River	Approximately 950 feet upstream of North River Road	U.S. Weather Bureau Technical Paper No. 40	HEC-2	September 1980	AE/ Floodway	
Stream F	Glades County Boundary	Approximately 24,600 feet upstream of Glades County Boundary	U.S. Weather Bureau Technical Paper No. 40	HEC-2	September 1980	AH	
Stream F – LaBelle	Confluence with Caloosahatchee River	Approximately 100 feet upstream of Cowboy Way	U.S. Weather Bureau Technical Paper No. 40	HEC-2	September 1980	AE/ Floodway	
Stream G	Glades County Boundary	Approximately 24,000 feet upstream of Glades County Boundary	U.S. Weather Bureau Technical Paper No. 40	HEC-2	September 1980	AH	
Stream I	Glades County Boundary	At Lake View Aveune	U.S. Weather Bureau Technical Paper No. 40	HEC-2	September 1980	AH	
Stream J	Glades County Boundary	At Acadia Avenue	U.S. Weather Bureau Technical Paper No. 40	HEC-2	September 1980	AH	

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
Stream K	Glades County Boundary	At Acadia Avenue	U.S. Weather Bureau Technical Paper No. 40	HEC-2	September 1980	AH	
Zone A Streams within Hendry County	Various	Various	Other	Other	September 1980	AE	

Table 13: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Bee Branch	0.035 - 0.060	0.060 – 0.100
Caloosahatchee River	0.035 – 0.060	0.060 – 0.100
Canal 139	0.035 – 0.060	0.060 – 0.100
Jacks Branch	0.040 – 0.045	0.037 – 0.100
Messer Canal	0.037	0.037 – 0.100
N Hendry Tributary 1	0.035 – 0.040	0.040 – 0.100
N Hendry Tributary 3	0.035 – 0.045	0.030 – 0.100
Pollywog Creek	0.040 – 0.045	0.035 – 0.100
Roy Brown Creek	0.040 – 0.045	0.035 – 0.100
Stream A	0.040 – 0.045	0.037 – 0.100
Stream A – LaBelle	0.045	0.040 – 0.100
Stream B	0.050	0.030 – 0.100
Stream B – LaBelle	0.045	0.040 – 0.100
Stream C	0.045	0.030 – 0.1 00
Stream C – LaBelle	0.015	0.100
Stream D	0.035 – 0.060	0.060 – 0.100
Stream D – LaBelle	0.015	0.100
Stream E	0.035 – 0.060	0.060 – 0.100
Stream F – LaBelle	0.015	0.100

5.3 Coastal Analyses

This section is not applicable for 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 for 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 for this Flood Risk Project.

5.3.3 Coastal Erosion

This section is not applicable for this Flood Risk Project.

5.3.4 Wave Hazard Analyses

This section is not applicable for 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 for 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 contact the Information Services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

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

Table 19: Countywide Vertical Datum Conversion

Quadrangle Name	Quadrangle Corner	Latitude	Longitude	Conversion from NGVD29 to NAVD88 (feet)
Average Conversion from NGVD29 to NAVD88 = -1.33 ft				

Table 20: Stream-Based Vertical Datum Conversion

[Not Applicable to this Flood Risk Report]

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/guidelines-and-standards-flood-risk-analysis-and-mapping.

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
Ortho Imagery	National Agriculture Imagery Program (NAIP)	2016	1 meter	1 – meter ground sample distance
Political boundaries	South Florida Water Management District	2008	1:24,000	Municipal and county boundaries

Table 21: Base Map Sources continued

Data Type	Data Provider	Data Date	Data Scale	Data Description
Public Land Survey System (PLSS)	Florida Resources & Environmental Analysis Center	2003	1:24,000	PLSS Data
Reservation Boundaries	Seminole Tribe of Florida	2007	1:24,000	Indian Reservation Boundaries
Surface Water Features	Federal Emergency Management Agency	2015	1:3,000	Water Features
Surface Water Features	United States Geological Survey	2006	1:3,000	Water areas within the study area
Transportation Features	United States Census Bureau	2016	N/A	Road Features
Transportation Features	USDOT Bureau of Transportation Services	2017	N/A	Railroad Features

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% and 0.2% annual chance floodplain boundaries are close together, only the 1% 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.”

Table 22: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Vertical Accuracy	Horizontal Accuracy	Citation
Clewiston, City of; Hendry County, Unincorporated Areas	All within Panel suffix ending in E	LiDAR	9.14 RMSEz	1.158m at 95% confidence interval	FDEM, 2007
Hendry County, Unincorporated Areas; LaBelle, City of	All within Panel suffix ending in D	7.5 Minute Series Maps	N/A	N/A	USGS

BFEs shown at cross sections on the FIRM represent the 1% 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 areas with static base flood elevations.

Table 23: Floodway Data

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
Bee Branch								
A	445	208	792	2.7	7.8	7.8	8.8	1.0
B	1,970	132	571	3.7	10.4	10.4	10.4	0.0
C	3,810	200	727	2.9	13.0	13.0	13.0	0.0
D	4,710	390	969	2.2	14.5	14.5	14.6	0.1
E	6,000	188	499	4.3	15.9	15.9	16.6	0.7
F	6,760	360	1,299	1.6	16.9	16.9	17.6	0.7
G	7,414	292	954	2.2	19.2	19.2	20.0	0.8
H	8,670	366	973	2.2	21.4	21.4	22.0	0.6
Jacks Branch								
A	396	245	1,756	2.7	10.7	10.7	10.8	0.1
B	1,369	280	2,179	2.2	11.6	11.6	11.7	0.1
C	2,828	213	1,577	2.8	12.0	12.0	12.7	0.6
D	4,504	366	3,614	1.2	12.5	12.5	13.4	0.9
E	6,699	286	1,498	2.9	14.4	14.4	15.3	0.9
F	8,790	548	1,763	2.5	15.9	15.9	16.9	1.0
G	9,983	1,096	2,803	1.6	17.2	17.2	17.7	0.6
H	11,365	1,270	4,038	1.6	17.3	17.3	18.1	0.8
I	13,525	818	2,740	1.5	18.8	18.8	19.6	0.8
J	15,782	1,597	3,867	1.1	20.3	20.3	21.3	1.0
K	17,429	557	1,555	2.6	21.7	21.7	22.6	1.0
L	18,341	513	1,603	2.5	23.1	23.1	24.1	1.0

[1] Feet above mouth

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FLORIDA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: BEE BRANCH & JACKS BRANCH

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
Messer Canal								
A	570	33	152	6.6	7.7[2]	6.3	6.5	0.1
B	780	43	224	4.5	7.7[2]	7.6	7.8	0.1
C	1,099	34	191	5.2	8.7	8.7	9.4	0.8
D	1,653	71	445	2.2	10.6	10.6	11.4	0.8
E	2,592	79	457	2.2	12.1	12.1	12.6	0.5
F	3,805	356	624	1.6	12.3	12.3	12.8	0.6
G	4,376	331	599	1.6	12.4	12.4	13.3	1.0
H	5,319	69	369	2.6	16.0	16.0	16.8	0.7
I	6,644	71	491	1.9	16.4	16.4	17.2	0.7
J	8,339	29	169	5.5	17.8	17.8	18.3	0.5
K	9,263	60	278	3.3	19.1	19.1	19.9	0.7
N Hendry Tributary 1								
A	9,654	102	269	1.3	15.4	15.4	15.4	0.0
B	11,538	81	293	0.9	15.6	15.6	15.7	0.0
C	12,474	88	334	0.8	15.7	15.7	15.8	0.0
D	14,133	88	157	0.7	15.9	15.9	15.9	0.0
E	15,198	79	268	0.4	18.3	18.3	18.4	0.1
F	16,548	77	221	0.3	21.0	21.0	21.0	0.1
G	16,626	103	244	0.3	21.0	21.0	21.1	0.1

[1] Feet above mouth
[2] Backwater from Caloosahatchee River

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FLORIDA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: MESSER CANAL & N HENDRY TRIBUTARY 1

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
N Hendry Tributary 3								
A	192	72	463	4.1	8.2[2]	2.3	2.4	0.1
B	326	75	724	2.6	8.2[2]	4.9	5.1	0.1
C	1,823	74	435	3.8	8.2[2]	6.0	6.3	0.3
D	2,563	73	381	4.4	8.2[2]	7.8	7.8	0.1
E	2,756	2,578	5,701	0.3	8.2[2]	8.0	8.3	0.3
F	4,075	330	966	1.6	8.3	8.3	8.6	0.3
G	5,206	142	743	2.0	12.2	12.2	12.9	0.8
H	6,384	102	561	2.5	12.7	12.7	13.3	0.6
I	7,607	111	580	1.9	16.4	16.4	17.0	0.6
J	9,511	99	513	1.5	17.7	17.7	17.8	0.1
K	10,266	210	1,396	0.5	19.1	19.1	20.0	0.9
L	11,689	213	1,160	0.4	19.1	19.1	20.1	0.9
M	12,361	166	897	0.5	19.1	19.1	20.1	0.9
N	13,988	174	887	0.4	19.2	19.2	20.1	0.9
O	14,182	246	1,030	0.3	19.2	19.2	20.1	0.9
P	15,208	363	1,433	0.1	19.2	19.2	20.1	0.9
Q	16,312	180	980	0.2	19.2	19.2	20.1	0.9

[1] Feet above mouth
[2] Backwater from the Caloosahatchee River

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FLORIDA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: N HENDRY TRIBUTARY 3

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
Pollywog Creek								
A	505	70	765	3.2	10.5	10.5	11.3	0.8
B	1,872	72	598	4.1	11.7	11.7	12.5	0.8
C	2,437	130	1,091	2.3	12.2	12.2	13.1	0.8
D	3,266	269	1,964	1.4	16.5	16.5	17.6	0.8
E	4,127	121	914	2.6	16.8	16.8	17.5	0.7
Roy Brown Creek								
A	349	43	139	3.3	7.9[2]	7.8	7.8	0.0
B	935	28	108	4.0	9.5	9.5	9.5	0.0
C	2,201	35	159	2.4	14.3	14.3	15.2	0.9
D	2,753	30	180	1.9	14.9	14.9	15.6	0.7
E	3,582	41	257	1.3	17.2	17.2	17.8	0.6
F	5,550	59	197	1.0	22.0	22.0	22.4	0.4
G	6,702	41	142	1.4	22.2	22.2	22.7	0.5
Stream A								
A	800	204	786	1.9	11.9[3]	11.1	12.0	1.0
B	1,587	160	424	0.4	11.9[3]	11.3	12.2	1.0
C	1,806	52	163	1.0	11.9[3]	11.5	12.4	0.9
D	3,651	49	47	1.0	14.2	14.2	14.5	0.3
E	5,110	35	34	1.3	18.2	18.2	18.6	0.4
F	5,754	84	72	0.6	18.8	18.8	19.1	0.2

[1] Feet above mouth
[2] Backwater from the Caloosahatchee River
[3] Backwater from Jacks Branch

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FLORIDA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: POLLYWOG CREEK & ROY BROWN CREEK & STREAM A

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
Stream A – LaBelle								
A	432	250	587	1.4	9.3	9.3	9.9	0.6
B	1,450	250	736	1.0	9.8	9.8	10.3	0.6
C	2,169	199	734	1.2	10.2	10.2	10.8	0.6
D	2,709	218	536	1.4	11.7	11.7	12.7	1.0
E	3,388	257	1,028	0.7	13.1	13.1	14.0	0.9
F	3,773	230	1,144	0.6	13.1	13.1	14.0	0.9
G	4,894	223	675	0.4	13.1	13.1	14.1	1.0
H	6,193	103	287	1.6	13.4	13.4	14.2	0.8
I	6,945	70	125	2.2	14.7	14.7	15.1	0.4
J	7,949	635	720	0.4	16.0	16.0	17.0	1.0
K	8,156	541	362	0.8	17.0	17.0	17.1	0.1
L	8,333	65	127	2.2	17.1	17.1	17.8	0.8
M	8,859	262	437	0.2	17.1	17.1	18.0	0.9
N	9,602	250	228	0.4	17.2	17.2	18.2	1.0
O	9,957	53	134	0.6	18.5	18.5	19.4	0.9
P	10,304	56	237	0.4	18.5	18.5	19.5	1.0

[1] Feet above mouth

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FLORIDA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: STREAM A – LABELLE

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
Stream B								
A	535	162	739	1.6	12.5	12.5	13.4	0.9
B	768	180	850	1.4	14.5	14.5	15.4	1.0
C	3,221	253	474	2.3	18.3	18.3	19.2	0.9
D	5,231	370	760	1.4	20.8	20.8	21.8	0.9
E	7,017	530	1,371	0.8	23.5	23.5	24.5	1.0
F	7,747	191	517	2.0	24.2	24.2	25.0	0.8
Stream B – LaBelle								
A	431	45	149	0.7	13.1[2]	11.1	11.7	0.6
B	1,699	21	163	0.7	13.1[2]	12.6	13.2	0.6
C	2,967	62	269	0.2	13.1[2]	12.6	13.3	0.7
D	3,857	43	144	0.4	13.1[2]	12.8	13.5	0.7
E	4,220	15	35	1.6	13.4	13.4	14.4	1.0
F	5,250	25	42	0.5	14.0	14.0	14.7	0.7
G	6,037	17	31	0.7	14.0	14.0	14.8	0.8

[1] Feet above mouth
[2] Backwater from Stream A - LaBelle

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FLORIDA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: STREAM B & STREAM B – LABELLE

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
Stream C								
A	467	26	50	7.8	7.8	7.8	7.8	0.0
B	791	43	229	1.5	13.5	13.5	13.5	0.0
C	2,236	31	172	1.9	13.8	13.8	13.8	0.0
D	3,603	31	128	2.3	15.2	15.2	15.2	0.0
E	4,560	32	154	1.1	15.4	15.4	15.5	0.0
F	5,538	40	142	1.2	15.7	15.7	15.8	0.0
G	6,498	40	139	0.4	15.8	15.8	15.8	0.0
H	7,438	27	97	0.6	15.8	15.8	15.9	0.0
I	8,835	24	79	0.4	15.9	15.9	15.9	0.1
J	10,712	25	63	0.2	15.9	15.9	15.9	0.1

[1] Feet above mouth

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FLORIDA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: STREAM C

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
Stream C – LaBelle								
A	2,730	73	245	0.7	14.7	14.7	15.7	1.0
Stream D								
A	130	80	216	2.8	7.5	7.5	8.5	1.0
B	985	29	111	5.4	10.8	10.8	10.8	0.0
C	2,200	36	224	2.7	14.5	14.5	14.5	0.0
D	3,450	31	128	4.7	16.8	16.8	17.4	0.6
E	3,900	77	275	2.2	18.7	18.7	19.0	0.3
F	5,100	79	292	2.1	19.6	19.6	19.8	0.2
G	6,250	81	301	2.0	20.3	20.3	20.4	0.1
H	7,400	81	307	2.0	20.9	20.9	21.0	0.1
I	7,700	315	721	0.8	21.1	21.1	21.2	0.1
J	8,800	288	669	0.9	21.3	21.3	21.6	0.3
Stream D – LaBelle								
A	2,315	22	105	1.5	15.9	15.9	16.9	1.0

[1] Feet above mouth

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FLORIDA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: STREAM C – LABELLE & STREAM D & STREAM D – LABELLE

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
Stream E								
A	200	41	130	1.3	7.7	7.7	8.7	1.0
B	900	43	137	1.3	8.1	8.1	8.9	0.8
C	2,215	121	245	0.7	9.0	9.0	9.8	0.8
D	2,640	18	26	6.7	11.9	11.9	11.9	0.0
E	3,385	236	516	0.3	17.8	17.8	17.8	0.0
F	4,300	26	125	1.4	17.8	17.8	17.8	0.0
Stream F – LaBelle								
A	60	807	912	0.2	8.2	8.2	9.2	1.0
B	810	23	82	2.1	8.8	8.8	9.3	0.5
C	1,275	29	87	1.8	9.6	9.6	10.4	0.8
D	1,990	23	34	4.7	11.8	11.8	11.8	0.0
E	2,900	64	89	1.8	15.2	15.2	15.6	0.4
F	4,630	81	215	0.7	16.4	16.4	16.7	0.3
G	5,860	57	10	1.5	16.7	16.7	17.2	0.5
H	6,490	32	121	0.9	17.5	17.5	18.0	0.5

[1] Feet above mouth

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FLORIDA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: STREAM E & STREAM F – LABELLE

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

[Not Applicable to this Flood Risk Project]

6.4 Coastal Flood Hazard Mapping

This section is 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/floodplain-management/letter-map-amendment-loma 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/online-tutorials.

For more information about how to apply for a LOMA, call the FEMA Map Information 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/floodplain-management/letter-map-amendment-loma 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 Map Information 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/online-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/national-flood-insurance-program-flood-hazard-mapping/mt-2-application-forms-and-instructions 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 Map Information 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 Hendry County FIRM are listed in Table 26.

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 "Flood Map Revision Processes" 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 Hendry 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.Funincor

The initial effective date for the Hendry County FIRMs in countywide format was 07/06/2015.

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)
Clewiston, City of	07/19/1974	07/19/1974	02/13/1976	03/15/1977	05/15/2020 07/06/2015
Hendry County, Unincorporated Areas	07/21/1978	07/21/1978	N/A	05/17/1982	05/15/2020 07/06/2015
LaBelle, City of	01/16/1974	01/16/1974	02/13/1976	01/20/1982	07/06/2015 03/18/1987

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
Bee Branch	11/17/1981	U.S. Army Corps of Engineers, Jacksonville District	IAA-H-18-78	September 1980	Hendry County, Unincorporated Areas
Caloosahatchee River	11/17/1981	U.S. Army Corps of Engineers, Jacksonville District	IAA-H-18-78	September 1980	Hendry County, Unincorporated Areas; LaBelle, City of
Canal 139	11/17/1981	U.S. Army Corps of Engineers, Jacksonville District	IAA-H-18-78	September 1980	Hendry County, Unincorporated Areas
Jacks Branch	07/16/2015	Taylor Engineering, Inc.	EMA-2002-CO-0011A	September 2012	Hendry County, Unincorporated Areas
Lake Okeechobee	05/15/2020	Compass PTS JV	HSFE60-15-D-0003	July 2017	Hendry County, Unincorporated Areas

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

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Long Hammock Creek	11/17/1981	U.S. Army Corps of Engineers, Jacksonville District	IAA-H-18-78	September 1980	Hendry County, Unincorporated Areas
Messer Canal	07/16/2015	Taylor Engineering, Inc.	EMA-2002-CO-0011A	September 2012	Hendry County, Unincorporated Areas
N Hendry Tributary 1	07/16/2015	Taylor Engineering, Inc.	EMA-2002-CO-0011A	September 2012	Hendry County, Unincorporated Areas
N Hendry Tributary 3	07/16/2015	Taylor Engineering, Inc.	EMA-2002-CO-0011A	September 2012	Hendry County, Unincorporated Areas
Pollywog Creek	07/16/2015	Taylor Engineering, Inc.	EMA-2002-CO-0011A	September 2012	Hendry County, Unincorporated Areas
Roy Brown Creek	07/16/2015	Taylor Engineering, Inc.	EMA-2002-CO-0011A	September 2012	Hendry County, Unincorporated Areas; LaBelle, City of
Stream A	07/16/2015	Taylor Engineering, Inc.	EMA-2002-CO-0011A	September 2012	Hendry County, Unincorporated Areas
Stream A – LaBelle	07/16/2015	Taylor Engineering, Inc.	EMA-2002-CO-0011A	September 2012	Hendry County, Unincorporated Areas; LaBelle, City of
Stream B	07/16/2015	Taylor Engineering, Inc.	EMA-2002-CO-0011A	September 2012	Hendry County, Unincorporated Areas
Stream B – LaBelle	07/16/2015	Taylor Engineering, Inc.	EMA-2002-CO-0011A	September 2012	LaBelle, City of
Stream C	07/16/2015	Taylor Engineering, Inc.	EMA-2002-CO-0011A	September 2012	Hendry County, Unincorporated Areas
Stream C – LaBelle	11/17/1981	U.S. Army Corps of Engineers, Jacksonville District	IAA-H-18-78	September 1980	LaBelle, City of
Stream D	11/17/1981	U.S. Army Corps of Engineers, Jacksonville District	IAA-H-18-78	September 1980	Hendry County, Unincorporated Areas
Stream D – LaBelle	11/17/1981	U.S. Army Corps of Engineers, Jacksonville District	IAA-H-18-78	September 1980	LaBelle, City of

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

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Stream E	11/17/1981	U.S. Army Corps of Engineers, Jacksonville District	IAA-H-18-78	September 1980	Hendry County, Unincorporated Areas
Stream F	11/17/1981	U.S. Army Corps of Engineers, Jacksonville District	IAA-H-18-78	September 1980	Hendry County, Unincorporated Areas
Stream F – LaBelle	11/17/1981	U.S. Army Corps of Engineers, Jacksonville District	IAA-H-18-78	September 1980	LaBelle, City of
Stream G	11/17/1981	U.S. Army Corps of Engineers, Jacksonville District	IAA-H-18-78	September 1980	Hendry County, Unincorporated Areas
Stream I	11/17/1981	U.S. Army Corps of Engineers, Jacksonville District	IAA-H-18-78	September 1980	Hendry County, Unincorporated Areas
Stream J	11/17/1981	U.S. Army Corps of Engineers, Jacksonville District	IAA-H-18-78	September 1980	Hendry County, Unincorporated Areas
Stream K	11/17/1981	U.S. Army Corps of Engineers, Jacksonville District	IAA-H-18-78	September 1980	Hendry County, Unincorporated Areas
Zone A Streams within Hendry County	11/17/1981	U.S. Army Corps of Engineers, Jacksonville District	IAA-H-18-78	September 1980	Hendry County, Unincorporated Areas; LeBelle, City 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
Clewiston, City of	05/15/2020	11/21/2017	Final CCO Meeting	FEMA, Hendry County, City of Clewiston and the study contractor
Hendry County, Unincorporated Areas	05/15/2020	11/21/2017	Final CCO Meeting	FEMA, Hendry County, City of Clewiston and the study contractor
	07/06/2015	08/12/2008	Initial CCO Meeting	FEMA, Hendry County, City of Clewiston, City of LaBelle and the study contractor
		09/17/2013	Final CCO Meeting	FEMA, Hendry County, City of Clewiston, City of LaBelle and the study contractor
LaBelle, City of	07/06/2015	08/12/2008	Initial CCO Meeting	FEMA, Hendry County, City of Clewiston, City of LaBelle and the study contractor
		09/17/2013	Final CCO Meeting	FEMA, Hendry County, City of Clewiston, City of LaBelle and the study contractor

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 Hendry 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
Clewiston, City of	City Building Department 121 Central Avenue	Clewiston	FL	33440
Hendry County, Unincorporated Areas	Hendry County Engineering Department 99 East Cowboy Way	LaBelle	FL	33935
LaBelle, City of	LaBelle City Hall 481 Hickpochee Avenue	LaBelle	FL	33935

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/national-flood-insurance-program-flood-hazard-mapping/engineering-library
NFIP website	www.fema.gov/national-flood-insurance-program
NFHL Dataset	msc.fema.gov
FEMA Region IV	Federal Emergency Management Agency 3003 Chamblee Tucker Road Atlanta, GA 30341
Other Federal Agencies	
USGS website	www.usgs.gov
Hydraulic Engineering Center website	www.hec.usace.army.mil
State Agencies and Organizations	
State NFIP Coordinator	Steve Martin, CFM Florida Division of Emergency Management 2555 Shummard Oak Boulevard Tallahassee, FL 32399-2100 (850)-922-5269 Steve.Martin@em.myflorida.com
State GIS Coordinator	Richard Butgereit, GIS Administrator Florida Division of Emergency Management 2555 Shummard Oak Boulevard Tallahassee, FL 32399-2100 (850)-922-5269 Richard.Butgereit@dca.state.fl.us

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	*Publication Title, "Article," Volume, Number, etc.*	Author/ Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Department of Commerce, 1961	U.S. Department of Commerce, Weather Bureau	*Technical Paper No. 40, Rainfall Frequency Atlas of the United States*		Washington, D.C.	1961	
FEMA, 2015	Federal Emergency Management Agency	*Flood Insurance Study, Hendry County, Flordia and Incorporated Areas*		Washington, D.C.	July 6, 2015	
USACE, 2011	Taylor Engineering, Inc.	*Herbert Hoover Dike Dam Breach Analysis: Dam Break and Flood Routing Model Simulations for Reaches 1-8 and Modeling Uncertainties and Sensitivites, Okeechobee ,Martin ,Palm Beach, Hendry, and Glades Counties, Florida*		Jacksonville, Florida	February 2011	
USACE, 2015	U.S Army Corps of Engineers	*The Herbert Hoover Dike Major Hydrologic Hazard Assessment and Risk Assessment Technical Summary, Part 2*			July & November 2015	
USACE, 1977	U.S Army Corps of Engineers, Jacksonville District	*Part 1, Supplement 48 – General Design Memorandum, Hendry County Areas, Central and Southern Florida Project*			Februrary 1977	
USACE, 1991	U.S Army Corps of Engineers, Hydrologic Engineering Center	*HEC-2 Water Surface Profiles. Generalized Computer Program*		Davis, California	May 1991	
USACE, 2008	U.S Army Corps of Engineers	*HEC-HMS 3.3, Hydrologic Modeling System*		Davis, California	September 2008	
USACE, 2010	U.S Army Corps of Engineers, Hydrologic Engineering Center	*HEC-RAS River Analysis System, Version 4.1.0*		Davis, California	January 2010	
USGS, 1993	U.S. Geological Survey	*Water-Resources Investigations Report 94-2002: Nationwide Summary of U.S. Geological Survery regional regression equations for estimating magnitude and frequency of floods for ungagged sites*			1993	
USGS	U.S. Geological Survey	*Quadrangle Maps, 7.5 Minute Series*				

BACKWATER FROM CALOOSAHATCHEE RIVER

CONFLUENCE WITH CALOOSAHATCHEE RIVER

COUNTY ROAD 78

BEE BRANCH LAKE DRIVE

HOWARD ROAD
LIMIT OF DETAILED STUDY

ELEVATION IN FEET (NAVD 88)

40
35
30
25
20
15
10
5
0
-5

0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 11000 12000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH CALOOSAHATCHEE RIVER

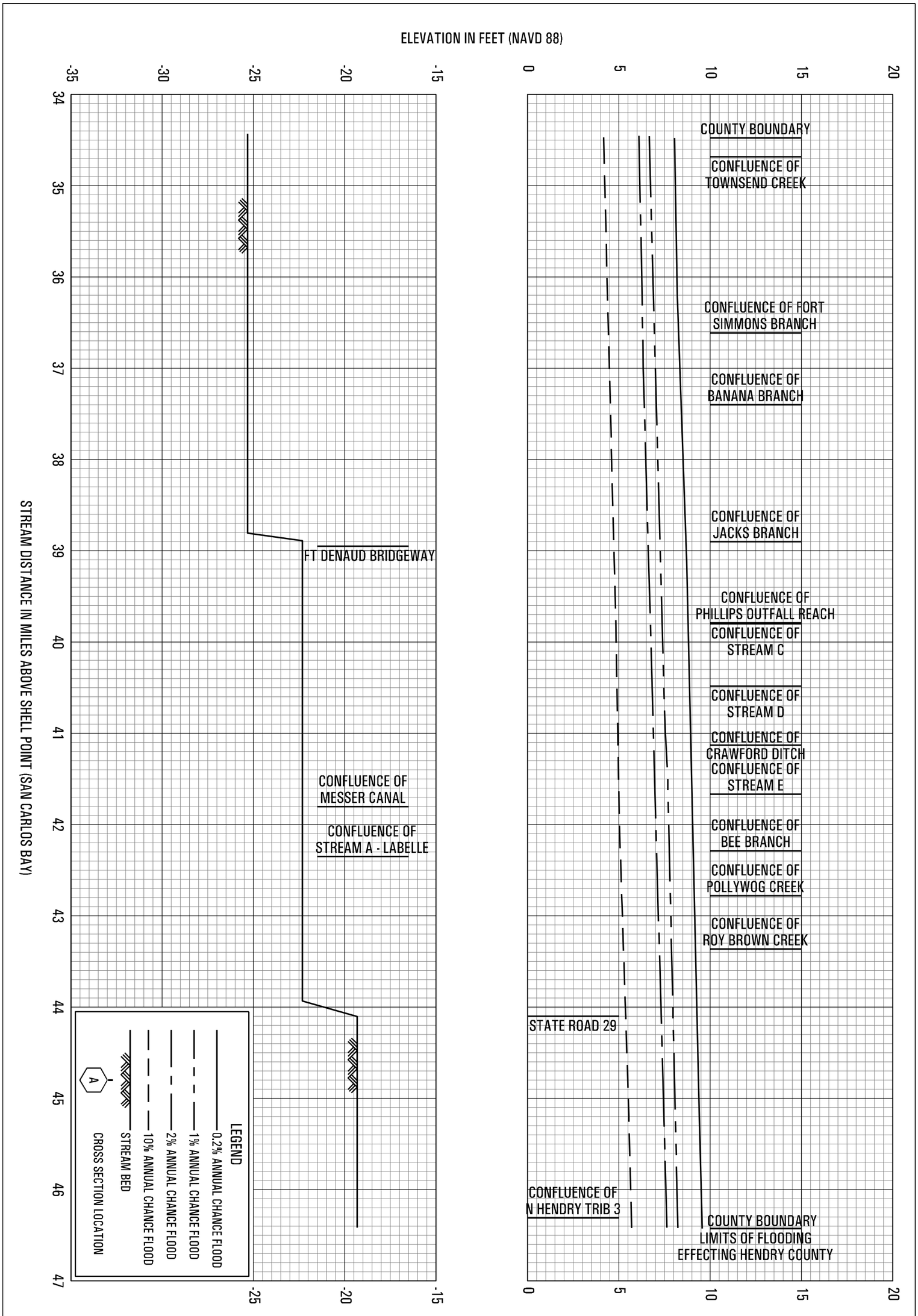
A B C D E F G H

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

FLOOD PROFILES

BEE BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY
HENDRY COUNTY, FL
AND INCORPORATED AREAS



02P

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FL

AND INCORPORATED AREAS

FLOOD PROFILES

CALOOSAHATCHEE RIVER

FLOOD PROFILES

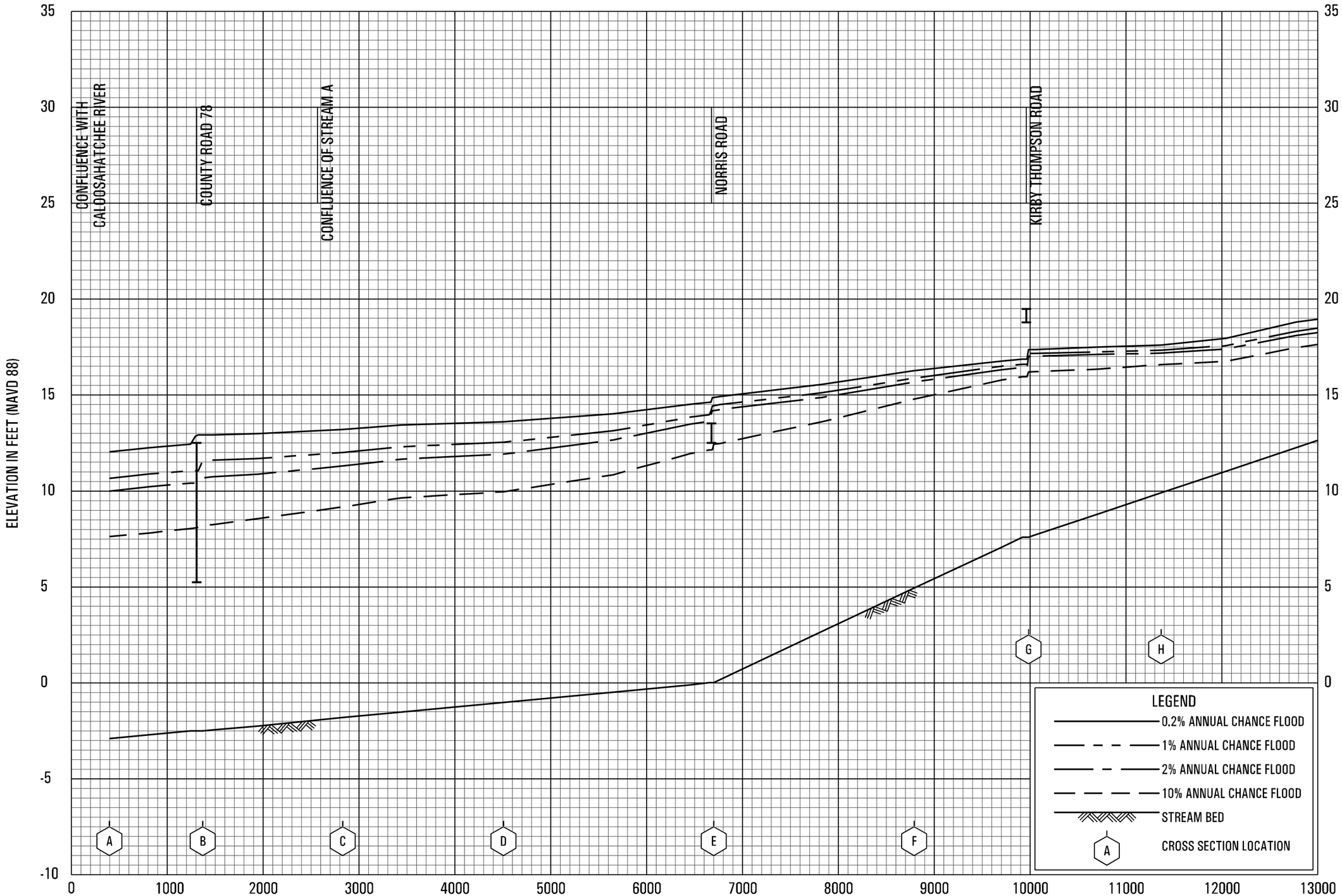
CANAL 139

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FL

AND INCORPORATED AREAS

03P



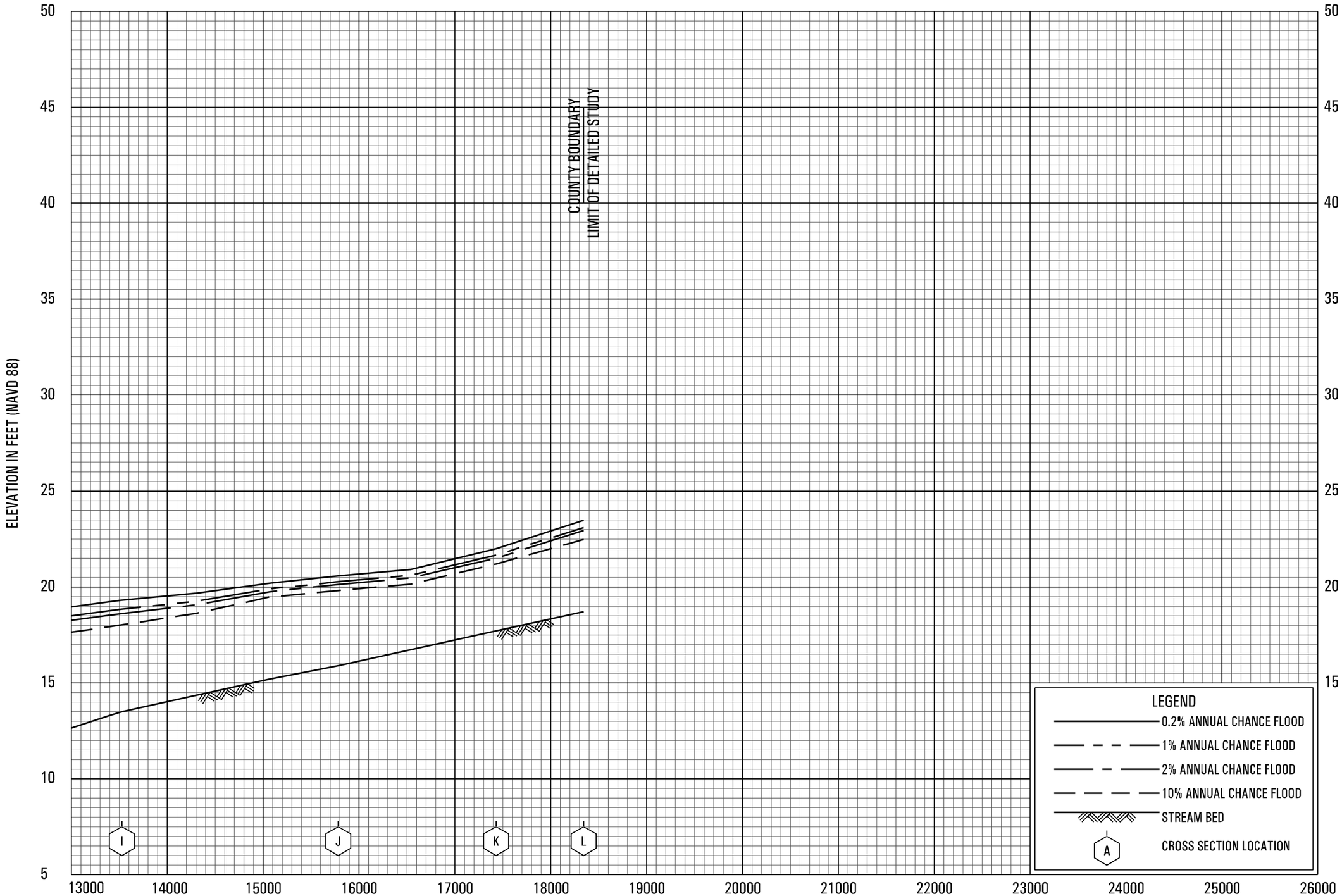
FLOOD PROFILES

JACKS BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FL

AND INCORPORATED AREAS



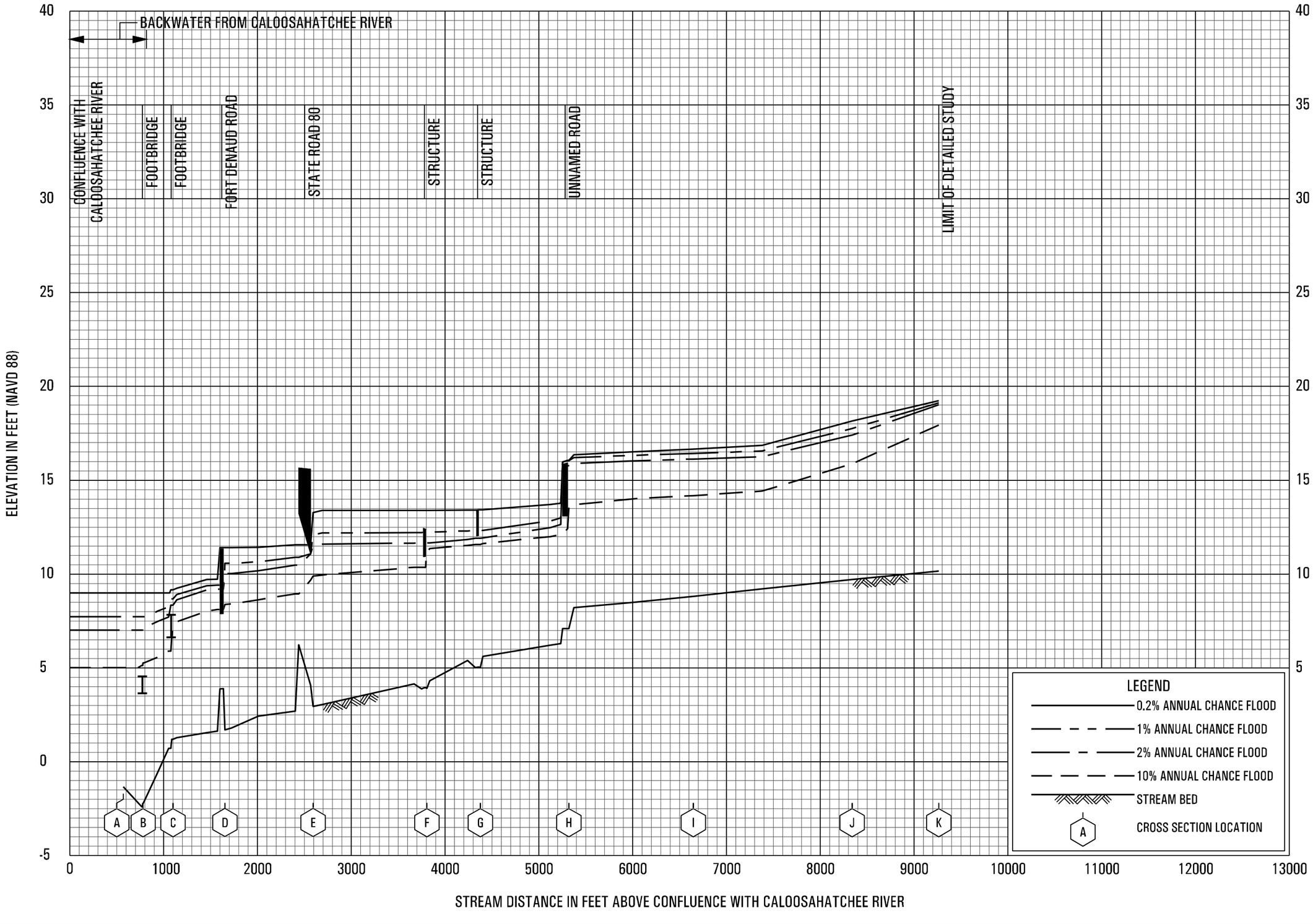
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JACKS BRANCH

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HENDRY COUNTY, FL

AND INCORPORATED AREAS



FLOOD PROFILES

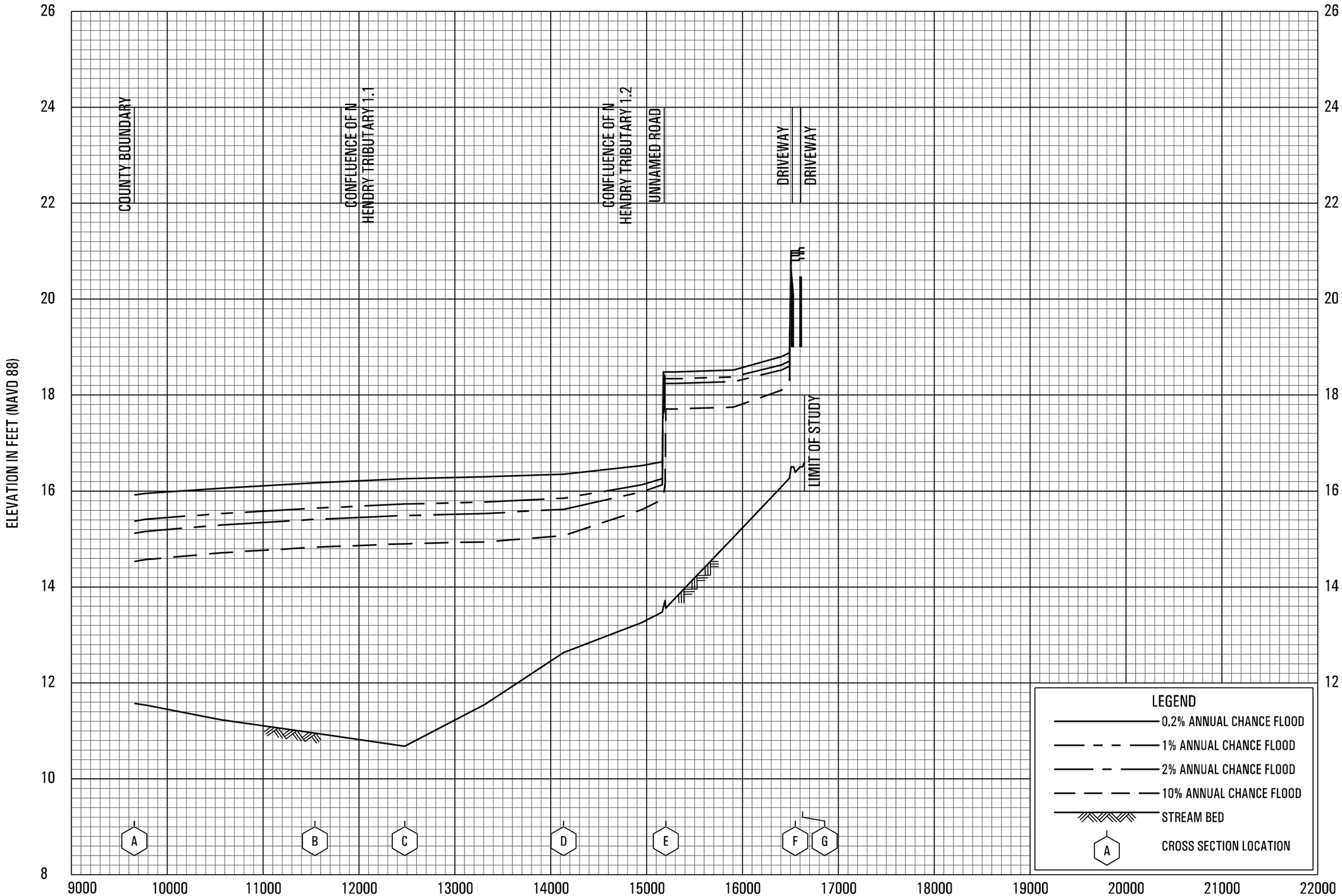
MESSER CANAL

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FL

AND INCORPORATED AREAS

06P



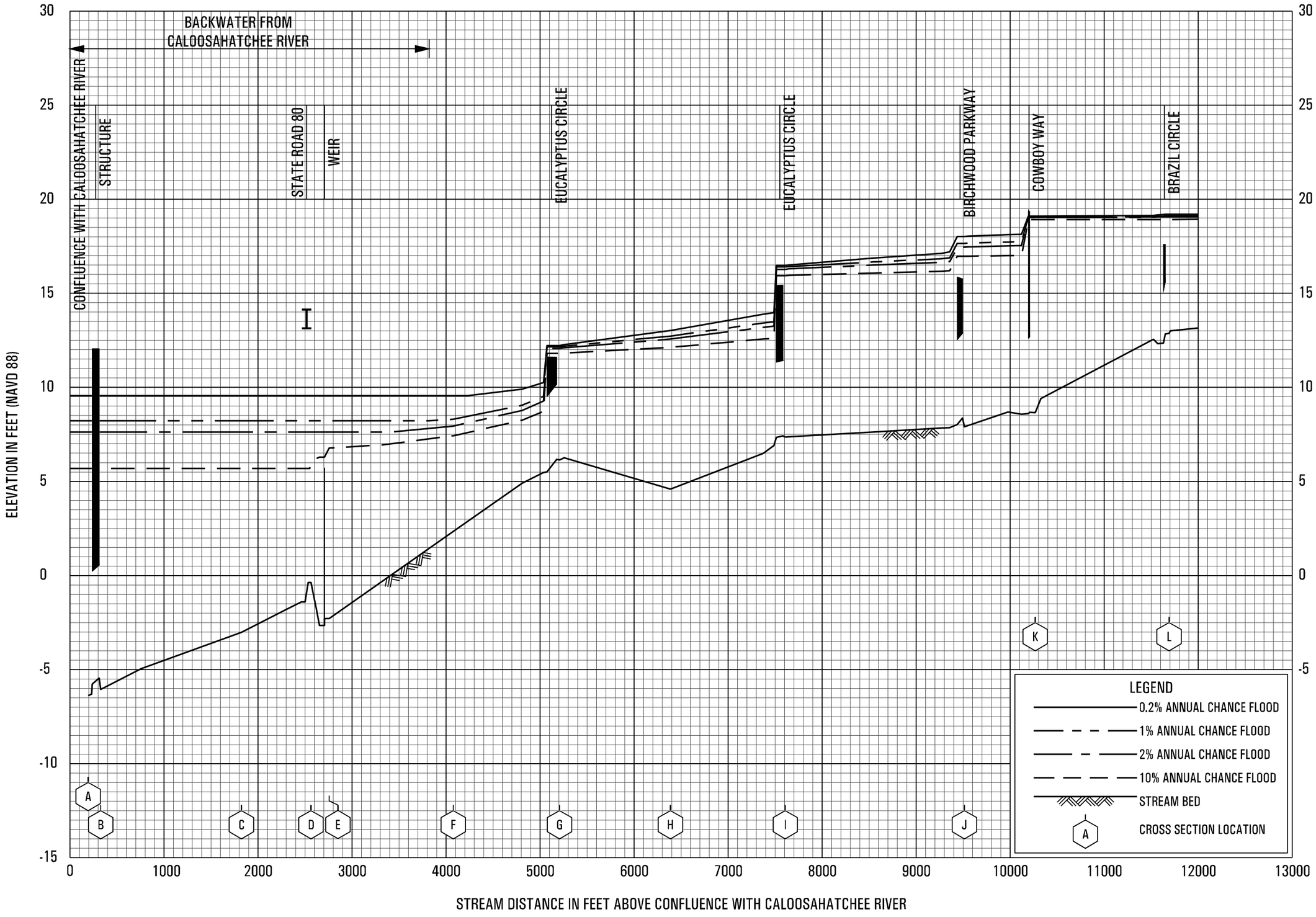
FLOOD PROFILES

N HENDRY TRIBUTARY 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FL

AND INCORPORATED AREAS



FLOOD PROFILES

N HENDRY TRIBUTARY 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FL

AND INCORPORATED AREAS

08P

ELEVATION IN FEET (NAVD 88)

35
30
25
20
15
10
5
0
-5
-10

SW RAINTREE BOULEVARD
CONFLUENCE OF N HENDRY TRIBUTARY 3.2
E SOMERSET DRIVE
SW RAINTREE BOULEVARD
LIMIT OF DETAILED STUDY
CONFLUENCE OF N HENDRY TRIBUTARY 3.1

M
N
O
P
Q

12000 13000 14000 15000 16000 17000 18000 19000 20000 21000 22000 23000 24000 25000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH CALOOSAHATCHEE RIVER

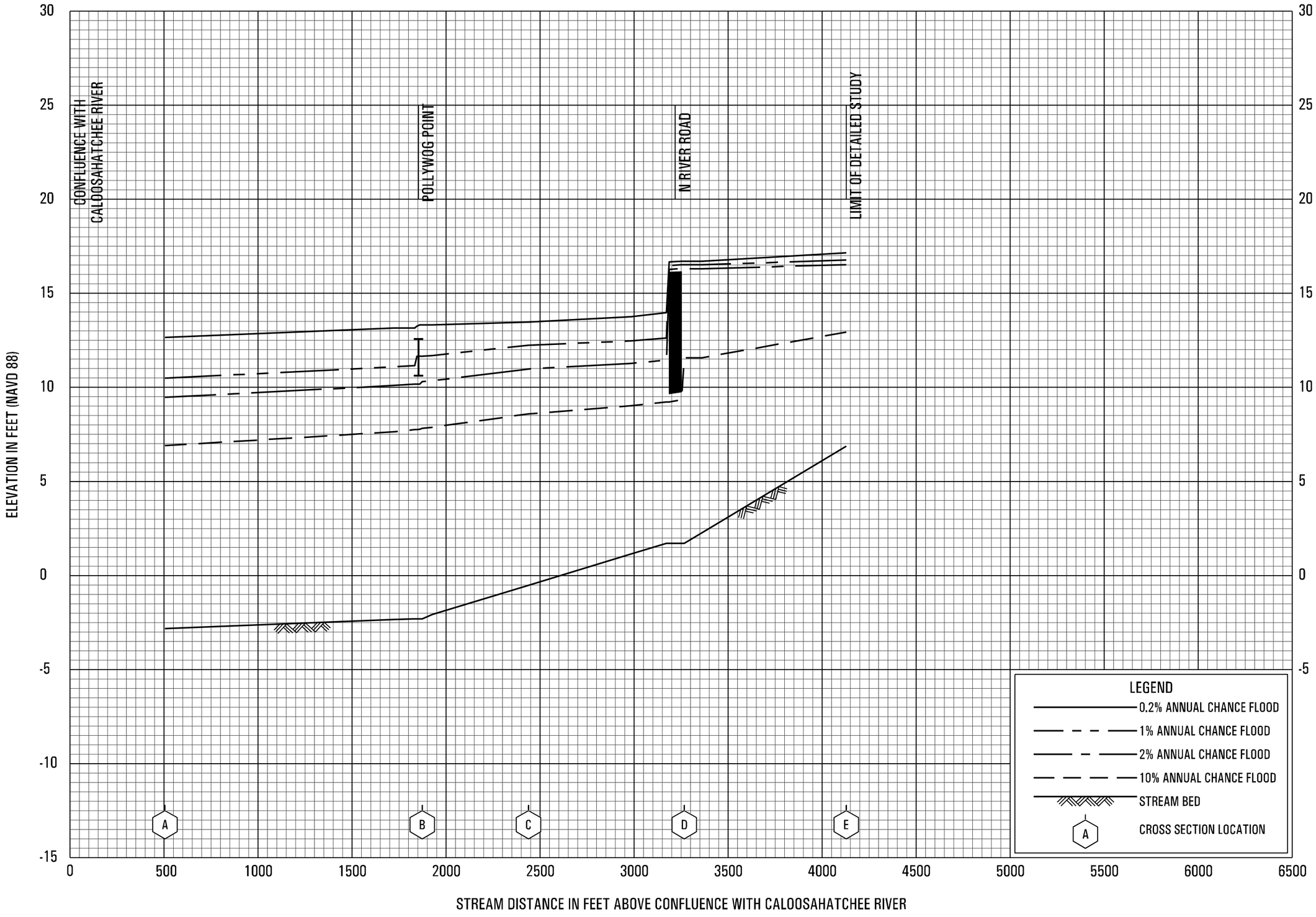
LEGEND
- 0.2% ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- A — CROSS SECTION LOCATION

FLOOD PROFILES

N HENDRY TRIBUTARY 3

FEDERAL EMERGENCY MANAGEMENT AGENCY
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AND INCORPORATED AREAS

09P



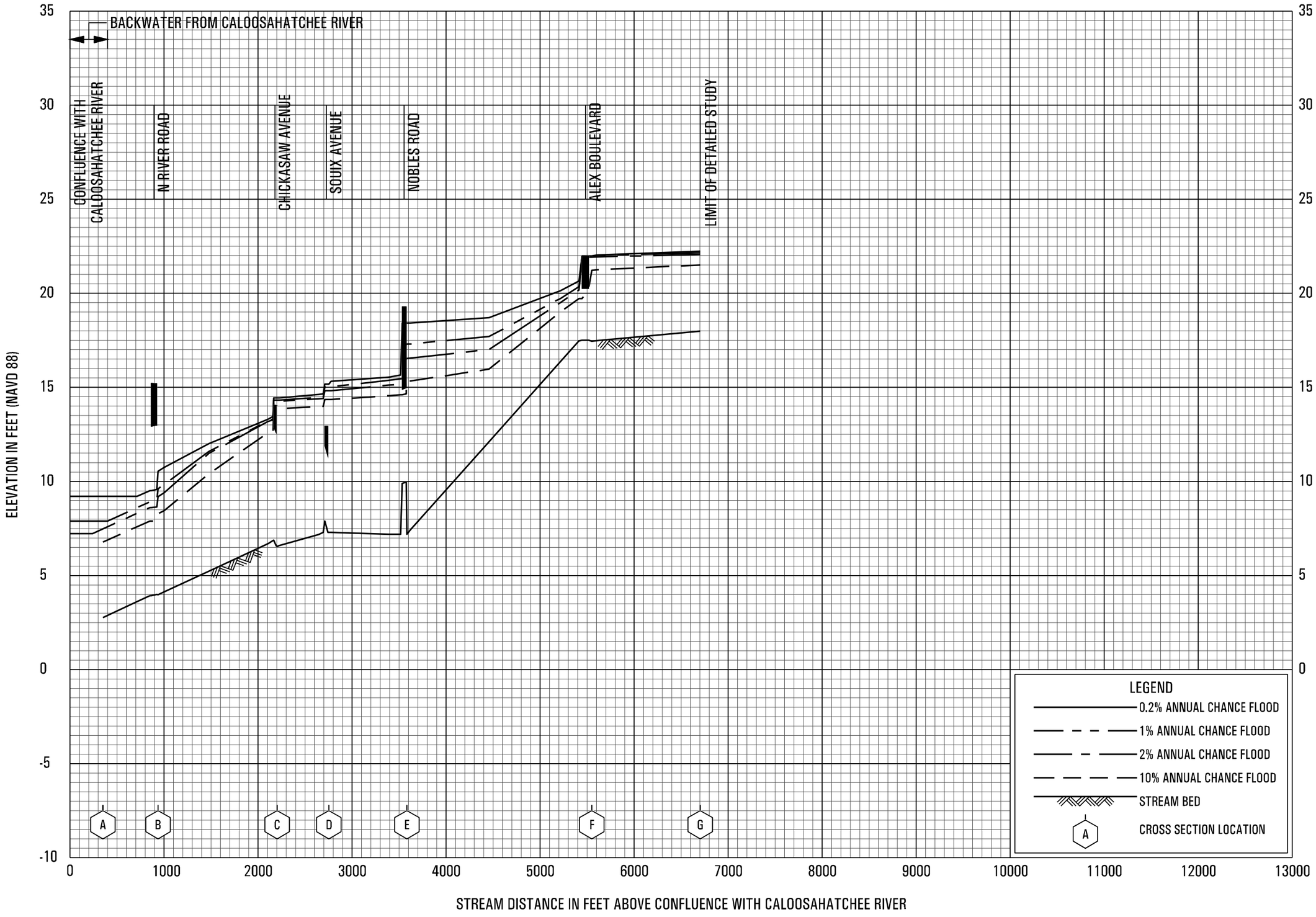
FLOOD PROFILES

POLLYWOG CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

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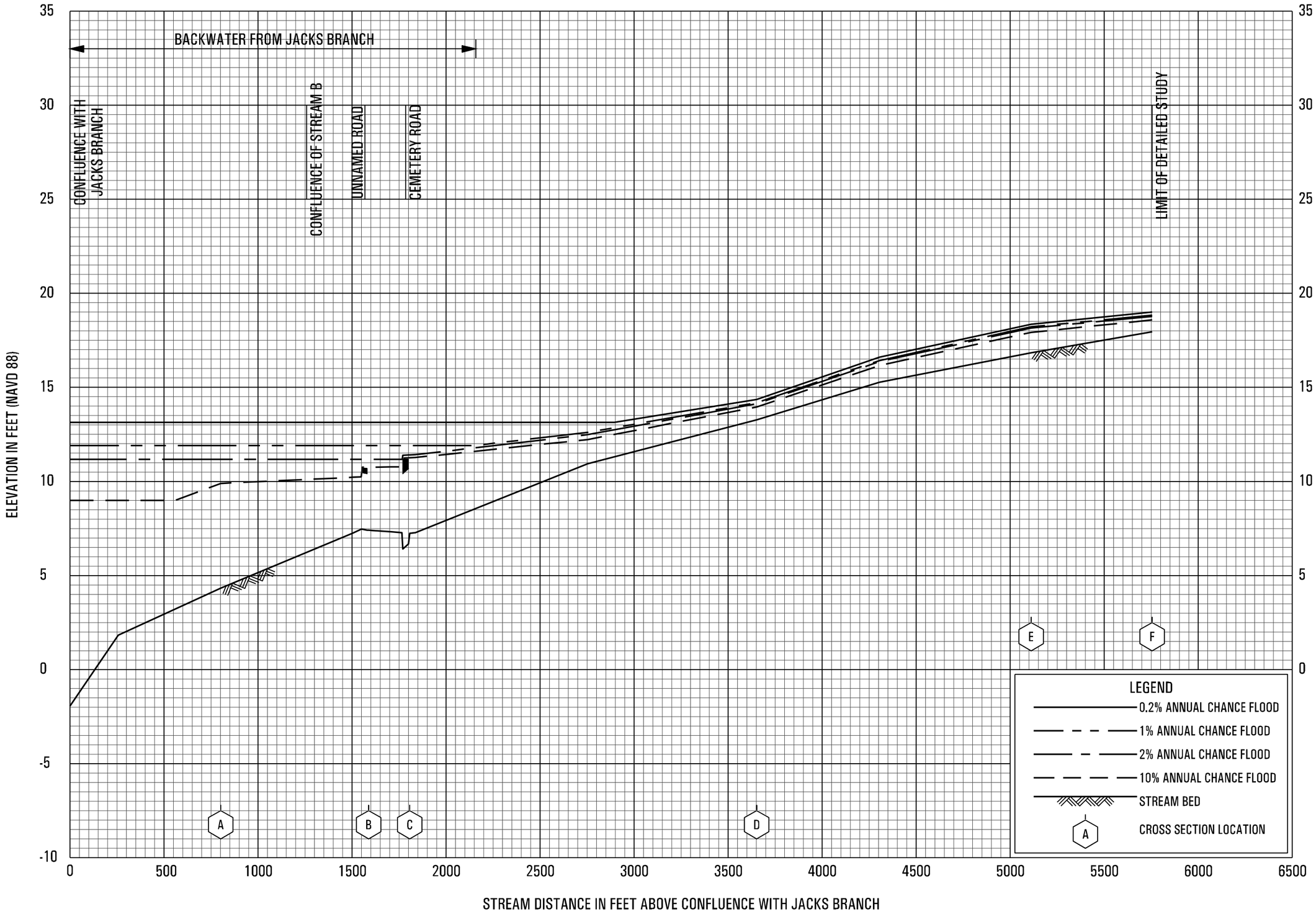
FLOOD PROFILES

ROY BROWN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

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AND INCORPORATED AREAS



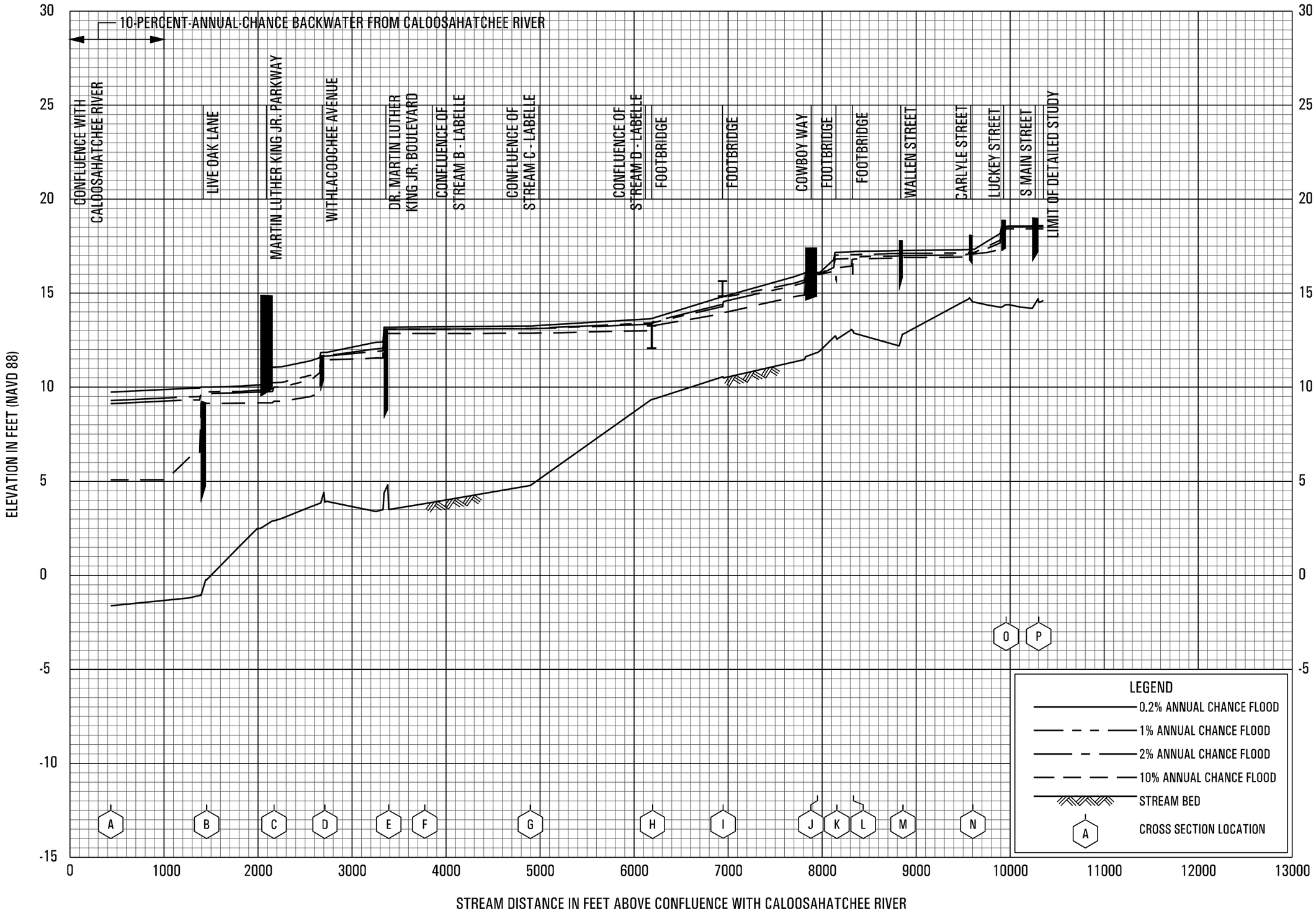
FLOOD PROFILES

STREAM A

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FL

AND INCORPORATED AREAS



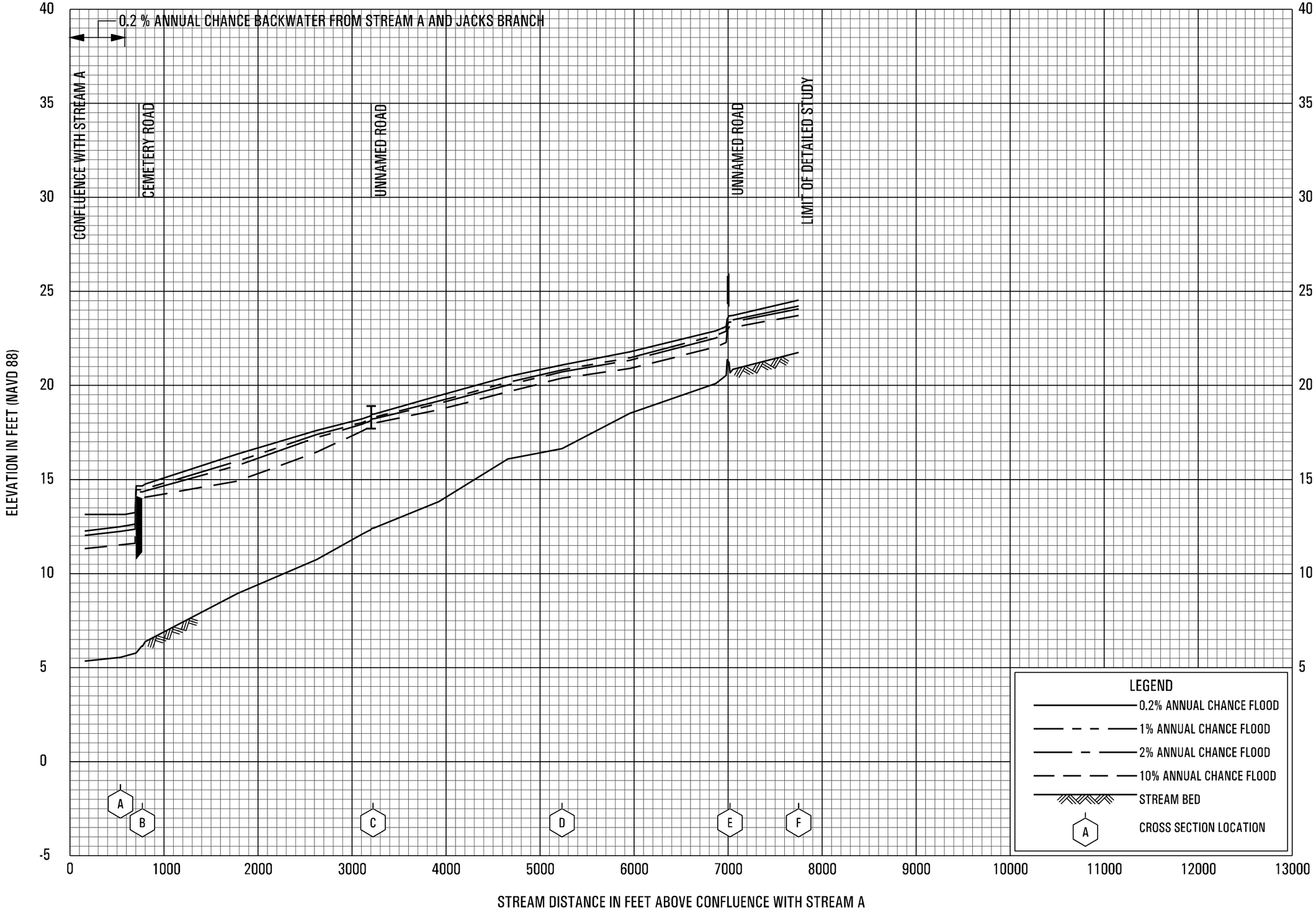
FLOOD PROFILES

STREAM A - LABELLE

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FL

AND INCORPORATED AREAS



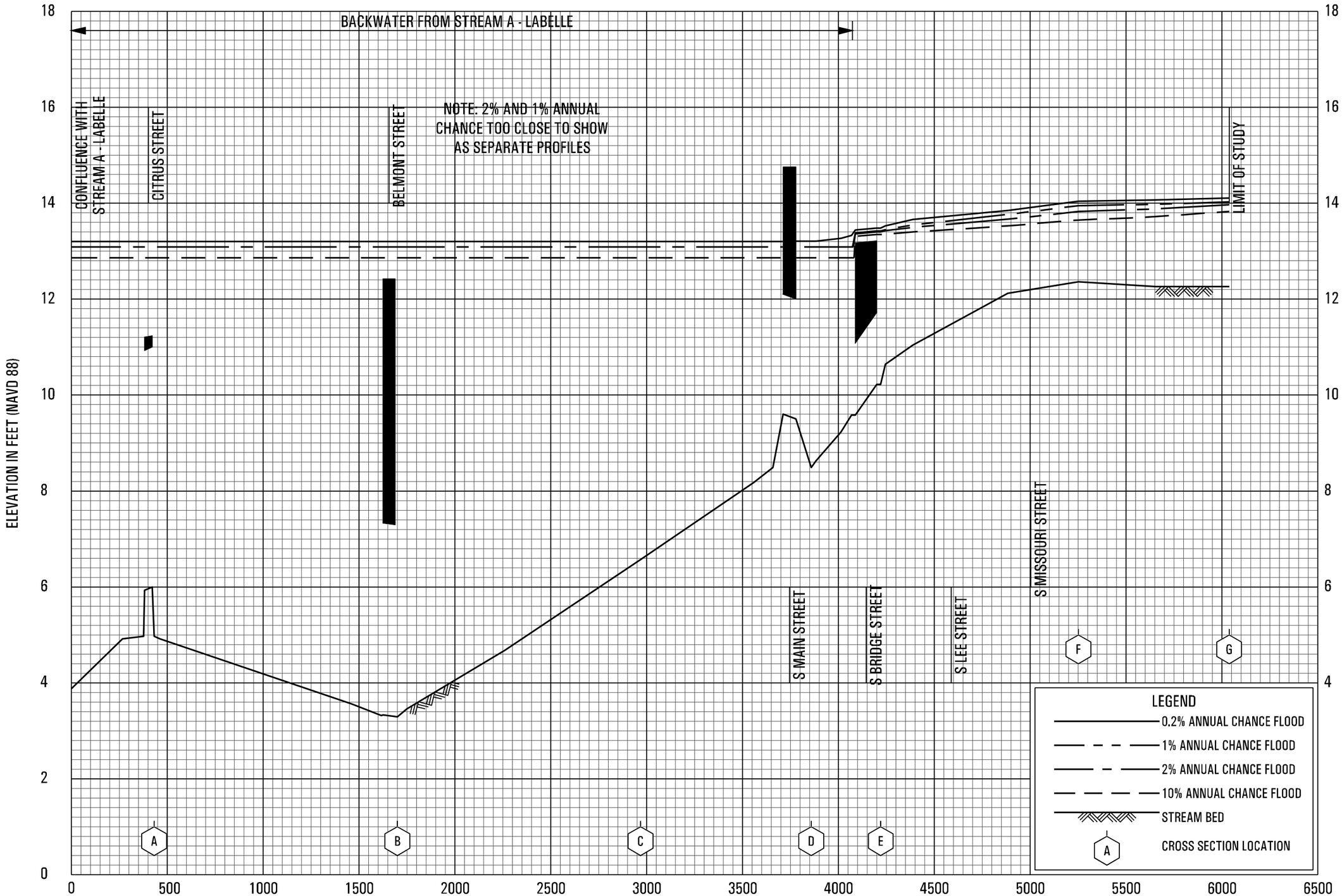
FLOOD PROFILES

STREAM B

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FL

AND INCORPORATED AREAS



FLOOD PROFILES

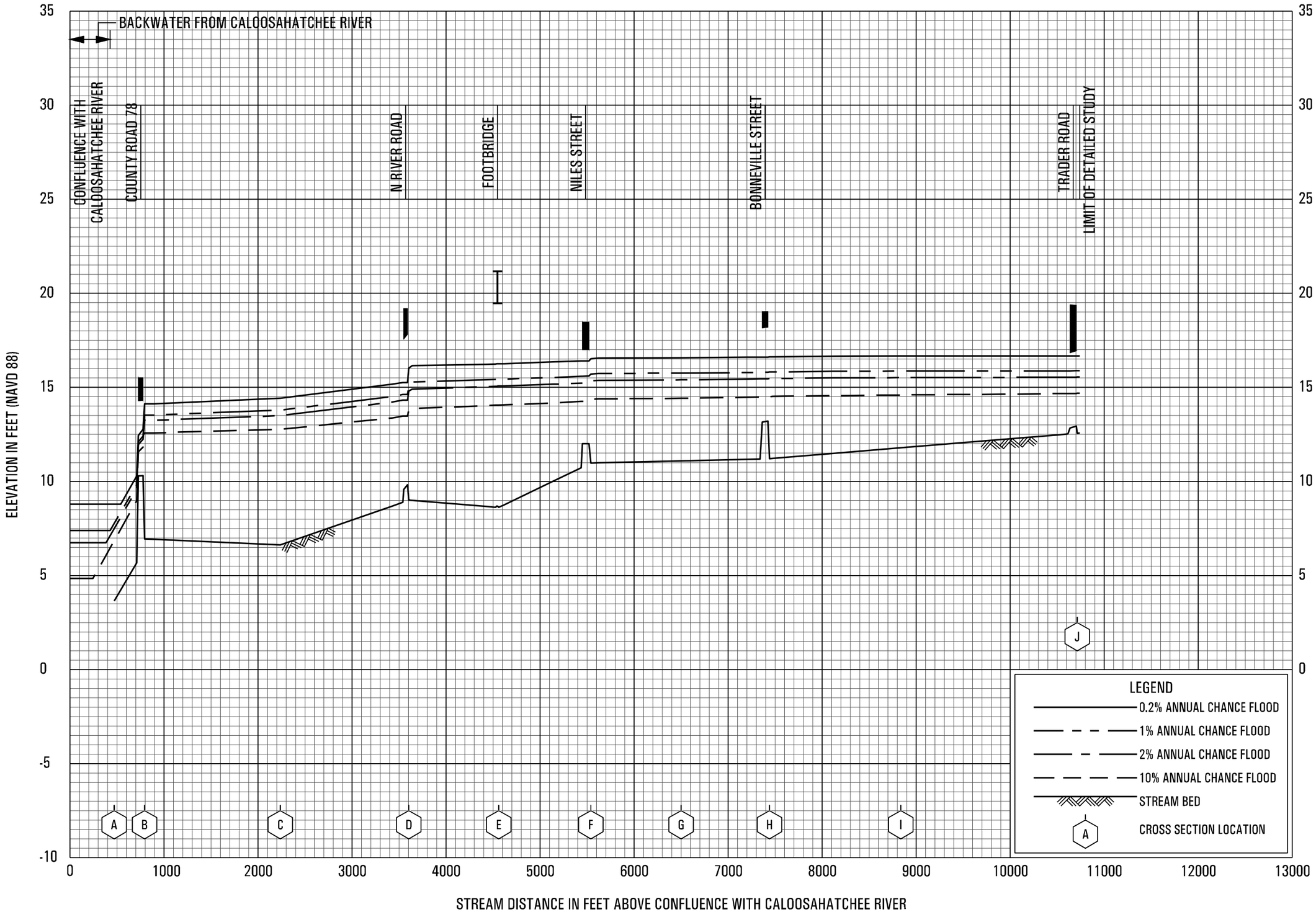
STREAM B - LABELLE

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FL

AND INCORPORATED AREAS

15P



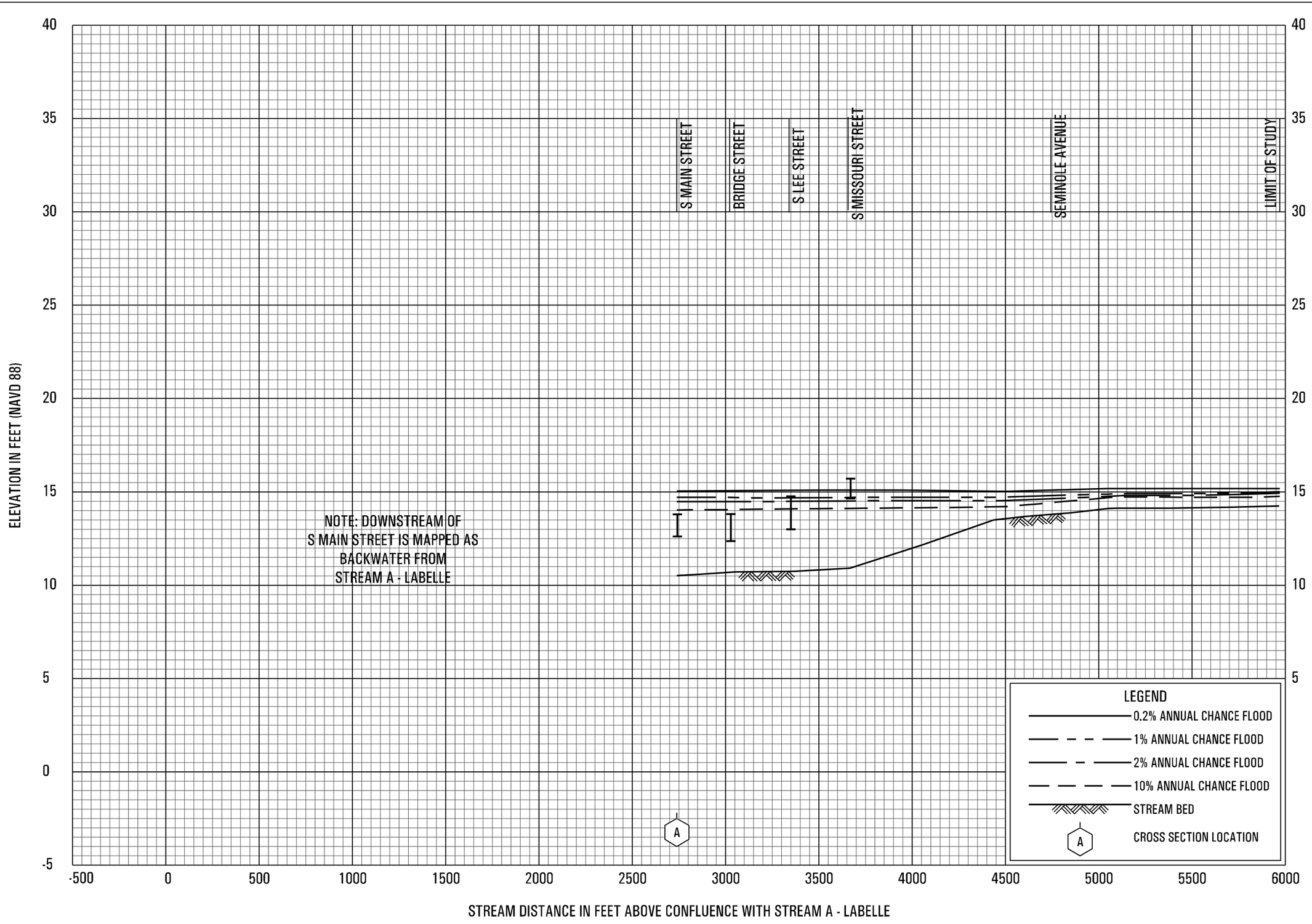
FLOOD PROFILES

STREAM C

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FL

AND INCORPORATED AREAS



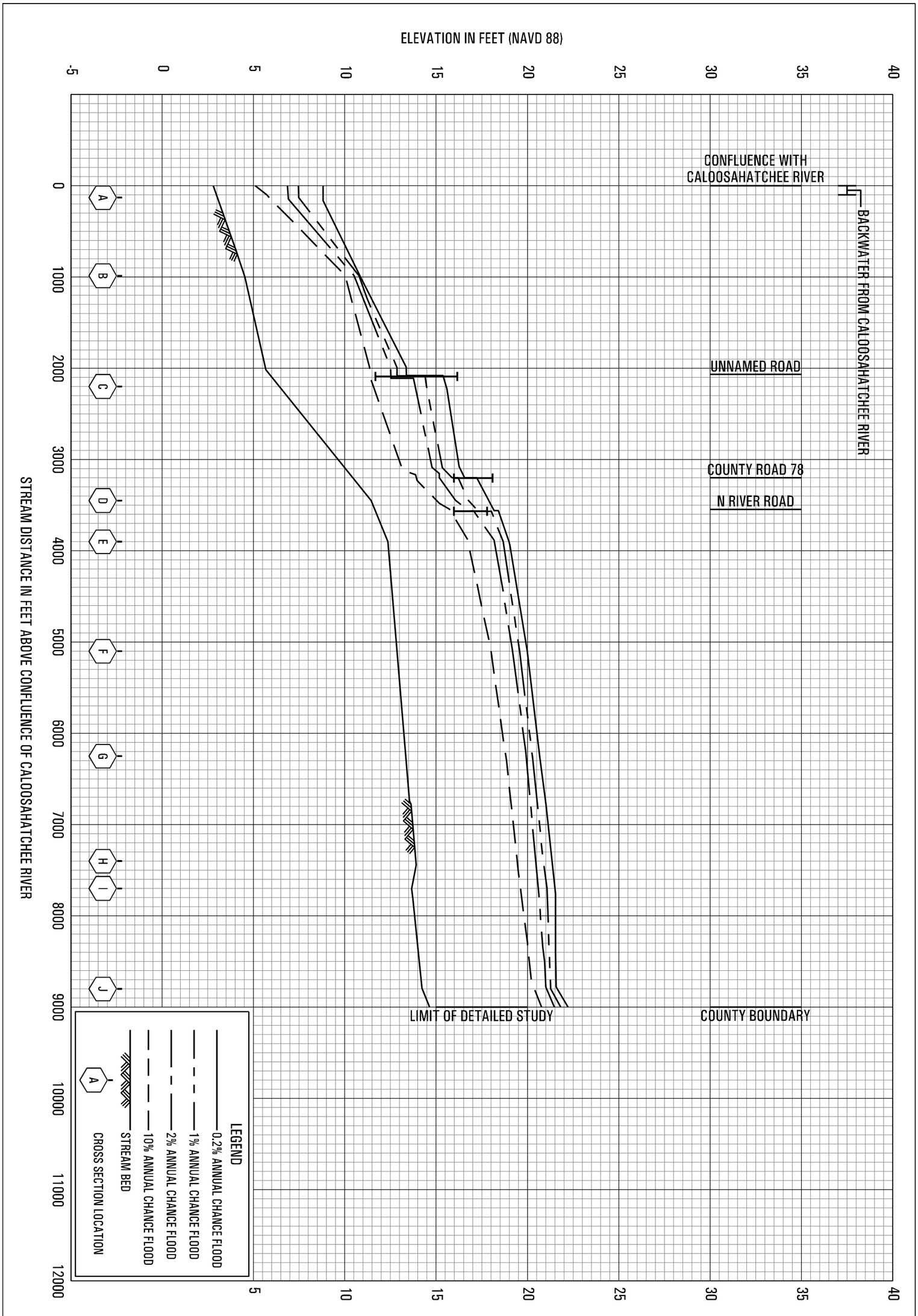
FLOOD PROFILES

STREAM C - LABELLE

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FL

AND INCORPORATED AREAS



18P

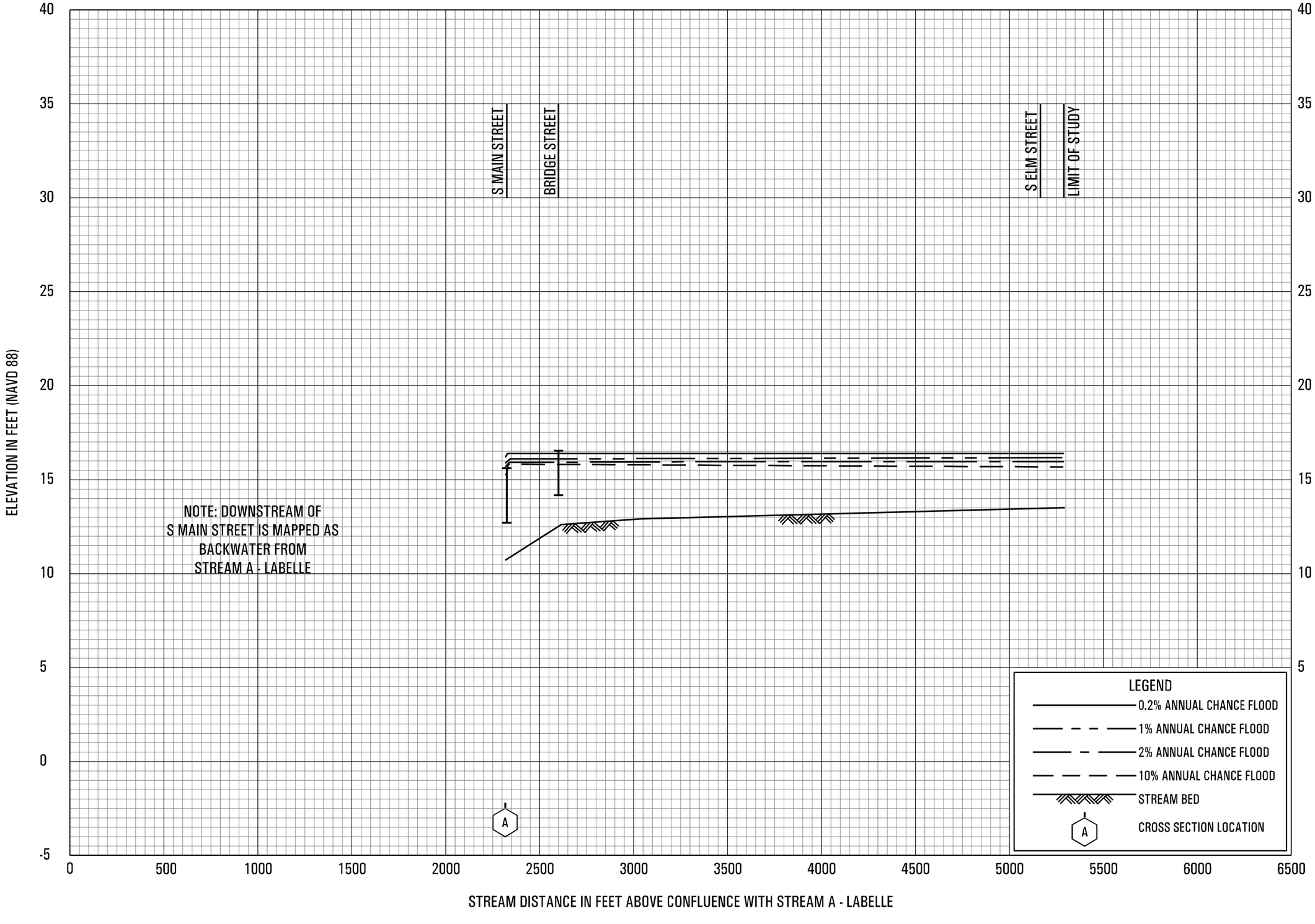
FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FL

AND INCORPORATED AREAS

FLOOD PROFILES

STREAM D



FLOOD PROFILES

STREAM D - LABELLE

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FL

AND INCORPORATED AREAS

FLOOD PROFILES

STREAM E

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FL

AND INCORPORATED AREAS

FLOOD PROFILES

STREAM F - LABELLE

FEDERAL EMERGENCY MANAGEMENT AGENCY

HENDRY COUNTY, FL

AND INCORPORATED AREAS