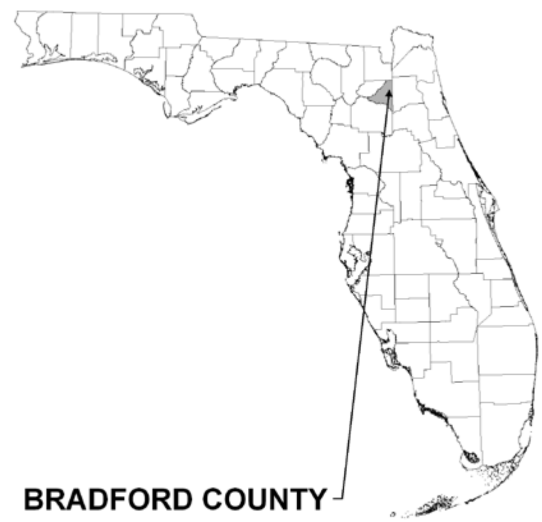
FLOOD INSURANCE STUDY



BRADFORD COUNTY, FLORIDA
AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
Bradford County (Unincorporated Areas)	120015
Brooker, Town of	120016
Hampton, City of	120627
Lawtey, City of	120628
Starke, City of	120017

REVISED

MAY 2, 2012

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
12007CV000A

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program (NFIP) have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

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

Initial Countywide FIS Effective Date: November 15, 1989

Revised Countywide FIS Effective Date: May 2, 2012

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FLOOD INSURANCE STUDY
BRADFORD COUNTY, FLORIDA AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This countywide Flood Insurance Study (FIS) investigates the existence and severity of flood hazards in, or revises and updates previous FISs/Flood Insurance Rate Maps (FIRMs) for the geographic area of Bradford County, Florida, including the Cities of Hampton, Lawtey, and Starke, the Town of Brooker, and the Unincorporated Areas of Bradford County (hereinafter referred to collectively as Bradford County).

This FIS aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This FIS has developed flood risk data for various areas of the county that will be used to establish actuarial flood insurance rates. This information will also be used by Bradford County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and will also be used by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the NFIP are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

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

1.2 Authority and Acknowledgments

The sources of authority for this FIS are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This FIS was prepared to include the unincorporated areas of Bradford County and the incorporated communities within Bradford County into a countywide format. Information on the authority and acknowledgments for this countywide FIS, as compiled from their previously printed FIS reports, is shown below.

November 15, 1989 Countywide FIS

The hydrologic and hydraulic analyses for the November 15, 1989 countywide study were performed by the U.S. Army Corps of Engineers (USACE), Jacksonville District, (the Study Contractor) for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-85-E-1822, Project Order No. 1. That study was completed in 1987.

For this countywide FIS revision, revised hydrologic and hydraulic analyses were prepared for FEMA by URS Corporation under contract with the Suwannee River Water Management District (SRWMD), a FEMA Cooperating Technical Partner (CTP).

The digital base map files were derived from Florida Department of Transportation Digital Orthophotos, produced at a scale of 1:200 from photography dated 2007.

The coordinate system used for the production of the digital FIRM is State Plane in the Florida North projection zone, referenced to the North American Datum of 1983.

1.3 Coordination

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

On March 25, 1985, an initial coordination meeting was held in the City of Starke to explain the nature and purpose of an FIS and to determine the areas to be studied in Bradford County. Representatives of the USACE and Bradford County were in attendance. In March and April 1985, discussions were held between FEMA, the USACE, and SRWMD. On February 19, 1987, a meeting was held in the City of Jacksonville with SRWMD to discuss the results of this study. On November 9, 1988, the results of the initial countywide FIS were reviewed and accepted at a final coordination meeting attended by representatives of the Study Contractor, FEMA, and the community.

For this countywide FIS revision, an initial CCO meeting was held on November 17, 2008. A final CCO meeting was held on November 5, 2009. These meetings were attended by representatives of the Study Contractor, SRWMD, FEMA, and the communities.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Bradford County. Flooding caused by overflow of the Santa Fe River, Santa Fe Lake, and Little Santa Fe Lake was studied in detail.

Additionally, the Lake Sampson, Lake Crosby, and Lake Rowell areas with reported flooding problems were studied in detail as part of this revised countywide FIS.

Limits of detailed study are indicated on the Flood Profiles (Exhibit 1) and on the FIRM (Exhibit 2).

Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The areas studied were selected with priority given to all known flood hazard areas and areas of projected development or proposed construction. The scope and methods of the study were proposed to and agreed upon by FEMA, SRWMD, and Bradford County.

2.2 Community Description

Bradford County is located in northern Florida, approximately 40 miles southeast of the City of Jacksonville. The county is bordered by Baker and Union counties on the north, Clay County on the east, and Putnam and Alachua counties on the south. Bradford County is served by U.S. Route 301; State Roads (SR) 200, 16, 100, and 225; the Norfolk Southern Railway; and the CSX railroad. Starke, the county seat, is the largest community in the county. The 2008 population estimate for the county was reported to be 29,012 (U.S. Census Bureau, 2008).

Originally established December 31, 1858, as New River County, Bradford County was renamed on December 6, 1861, to honor the first Floridian officer to be killed in the Civil War. The county is primarily agricultural, with truck crops, tobacco, timber, and livestock as major crops. A small amount of manufacturing is related to the timber industry. Bradford County is in the Gulf Coastal Lowlands physiographic area, and its topography ranges from 39.1 feet to 179.1 feet North American Vertical Datum of 1988 (NAVD 88).

The east and northeast sides of both Santa Fe Lake and Little Santa Fe Lake are in the Chipley-Leon, Osier Soil Association, which consists of nearly level to gently sloping, moderately well-drained sandy soils, and poorly drained sandy soils with an area of weakly cemented sandy subsoil. The area downstream of Little Santa Fe Lake and adjacent to the Santa Fe River up to SR 225 is in the Brighton Association, which consists of nearly level, very poorly drained organic soils in marshy areas surrounded by mineral soils. From SR 225 to the confluence of the New River, the adjacent shoreline is in the Fresh Water Swamp Association, which consists of nearly level, very poorly drained soils subject to prolonged flooding (Florida Bureau of Comprehensive Planning, 1975).

The climate of Bradford County is semi-tropical, characterized by long, hot summers and mild winters. Average temperatures vary from 55.9 degrees Fahrenheit (°F) in January to 81.4 °F in August and the average annual rainfall is 49.40 inches (U.S. Department of Commerce, National Weather Service, 1963 and 1976).

2.3 Principal Flood Problems

The most severe floods in the Santa Fe basin are associated with storms or sequences of storms that produce widespread rainfall for several days. Flooding occurs in all seasons, but maximum annual stages occur most frequently from February through April as a result of a series of frontal system storms over the basin. The area is also subject to summer and fall tropical disturbances, occasionally of hurricane intensity. Thunderstorms caused by summer air mass activity produce intense rainfall, but the duration is usually short and areal distribution is relatively small.

The September 1964 flood was the largest flood of record on the Santa Fe River. The discharge at USGS gage (No. 02321500) in the Town of Worthington Springs measured 20,000 cubic feet per second (cfs), while the USGS gage (No. 02320700) at Graham recorded 2,360 cfs. Discharges from the largest historical floods at both gage locations are listed below.

LOCATION	PEAK DISCHARGES (CFS)				
SANTA FE RIVER	1964	1934	1945	1947	1948
At SR 121	20,000	17,700	15,700	14,900	14,900
	1964	1970	1968	1960	
At SR 225	2,360	1,890	1,190	1,120	

2.4 Flood Protection Measures

Flood protection measures are not known to exist within the study area.

3.0 ENGINEERING METHODS

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

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each riverine flooding source studied in detail affecting the community.

November 15, 1989 Countywide Analyses

The USGS has been monitoring flows in the Suwannee River basin since the flood of 1928. Each year, the USGS publishes the water resources data collected, and periodically reports on the magnitude and frequency of floods. Those reports were used for the hydrologic analyses for this study and the results were coordinated with the USGS (USGS, various years).

Analyses of discharge records of all gaged locations on the Santa Fe River were used to establish peak discharge-frequency relationships throughout the river reaches. Flood recurrence frequencies were determined by log-Pearson Type III statistical analyses using methods outlined in Bulletin No. 17B (U.S. Department of the Interior, Geological Survey, 1981 revised 1982 and USACE, 1973). On the Santa Fe River, a rainfall runoff model was developed using the standard U.S. Soil Conservation Service (SCS) procedure and the HEC-1 runoff model (U.S. Department of Agriculture, SCS, 1965). The model was calibrated to the Hurricane Dora flood of 1964 and verified by statistical analyses of discharge records from four long-term gages on the Santa Fe River.

Peak discharge-drainage area relationships for the 10-, 2-, 1-, and 0.2-percent chance floods of each flooding source studied in detail in the community are shown in Table 1.

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (SQ MILES)	PEAK DISCHARGES (CFS) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
SANTA FE RIVER					
at SR 121	630	12,824	20,748	25,162	36,500
at SR 225	95	1,344	2,310	2,965	4,380

Revised Countywide Analyses

For this countywide FIS, several lake areas were analyzed in detail. The study areas are described below.

The detailed study area of Lake Sampson, Lake Crosby, and Lake Rowell is located southwest of the City of Starke, Bradford County, Florida south of SR 100 and north of County Road (CR) 225. Lake Sampson, Lake Crosby, and Lake Rowell are all interconnected with the outfall to the Sampson River on the southwest side of Lake Sampson. The total contributing drainage area for this basin associated with Lake Sampson, Lake Crosby, and Lake Rowell is approximately 52 square miles. Land use for the study area is mainly forested, agricultural, and pasture. In addition, Alligator Creek, which drains the City of Starke, also flows into the Lake Sampson, Lake Crosby, and Lake Rowell system. For the Lake Sampson, Lake Crosby, and Lake Rowell areas, Streamline Technologies ICPR v.3 unsteady flow model was used to estimate flood discharges and elevations for a series of flood frequencies including the 10, 2, 1, and 0.2 percent annual chance events.

The rainfall amounts for the 24-hour 10, 2, 1, and 0.2 percent storm events were obtained from Appendix B of Drainage Manual published by State of Florida Department of Transportation. Synthetic (Type II Florida Modified) rainfall time distribution was used to develop the ICPR models. Watershed boundaries were delineated using contours derived from the USGS Digital Elevation Model (DEM) of the study area. The SCS Curve Number Method was used in this study to compute the direct runoff resulting from each of the analyzed frequencies. Basin time of concentration was determined using the procedures outlined in the National Resource Conservation Service (NRCS) TR-55 publication. The SCS Unit Hydrograph method was used to generate the hydrographs resulting from the analyzed storms. A unit hydrograph peak factor of 323 was selected.

Elevations for floods of the selected recurrence intervals of Santa Fe Lake, Little Santa Fe Lake, Lake Sampson, Lake Crosby, and Lake Rowell are shown in Table 2, "Summary of Stillwater Elevations".

TABLE 2 - SUMMARY OF STILLWATER ELEVATIONS

FLOODING SOURCE AND LOCATION	ELEVATION (FEET NAVD 88) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
SANTA FE LAKE				
Along shoreline	142.2	142.8	143.0	143.7
LITTLE SANTA FE LAKE				
Along shoreline	142.2	142.8	143.0	143.7

TABLE 2 - SUMMARY OF STILLWATER ELEVATIONS

FLOODING SOURCE AND LOCATION	ELEVATION (FEET NAVD 88) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
LAKE SAMPSON				
Along shoreline	133.6	134.2	134.5	135.2
Backwater area located north of lake	135.7	136.6	137.0	137.7
LAKE CROSBY				
Along shoreline	133.8	134.5	134.6	135.2
LAKE ROWELL				
Along shoreline	133.6	134.2	134.5	135.2

3.2 Hydraulic Analyses

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

November 15, 1989 Countywide Analyses

Cross-section data were obtained by aerial survey of the floodplain areas and by field measurements of the main channel and immediate overbanks of the Santa Fe River (USACE, 1985). All bridges were field surveyed to obtain elevation data and structural geometry.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles and on the FIRM.

Water-surface elevations of floods of the selected recurrence intervals were computed using the HEC-2 step-backwater computer program (USACE, 1984). Roughness coefficients (Manning's "n") used in the hydraulic computation were determined by analyzing known flood events in the Bradford County reaches of the Santa Fe River. Values for the Santa Fe River range from 0.059 to 0.089 for the main channel and from 0.31 to 0.42 for the overbank areas.

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

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

Revised Countywide Analyses

For this countywide FIS, the areas presented below were studied in detail to estimate flood elevations for the selected recurrence intervals.

For the Lake Sampson, Lake Crosby, and Lake Rowell areas, the Streamline Technologies ICPR v.3 unsteady flow model was used to estimate flood levels. The development of the model schematic was performed using ArcGIS. Various sources were utilized in developing the schematic including GIS shapefiles of the transportation network, ortho-aerial photography of Bradford County, the DEM of Bradford County, field survey data and contours derived from the DEM. An ArcGIS automated subroutine was used to determine the stage-area relationships for each subbasin. Overtopping weirs were used in ICPR to transfer water between the storage areas. Structure information and the cross sections for the overtopping weirs were derived using the field survey data and the DEM for Bradford County. Starting water surface elevations for each subbasin were determined from the field survey data and DEM. An ICPR model for the study area was developed based on the information described above. Flood elevations for the lake areas are shown on the FIRM (Exhibit 2).

All qualifying bench marks within a given jurisdiction that are cataloged by the National Geodetic Survey (NGS) and entered into the National Spatial Reference System (NSRS) as First or Second Order Vertical and have a vertical stability classification of A, B, or C are shown and labeled on the FIRM with their 6-character NSRS Permanent Identifier.

Bench marks cataloged by the NGS and entered into the NSRS vary widely in vertical stability classification. NSRS vertical stability classifications are as follows:

- Stability A: Monuments of the most reliable nature, expected to hold position/elevation well (e.g., mounted in bedrock)
- Stability B: Monuments which generally hold their position/elevation well (e.g., concrete bridge abutment)
- Stability C: Monuments which may be affected by surface ground movements (e.g., concrete monument below frost line)
- Stability D: Mark of questionable or unknown vertical stability (e.g., concrete monument above frost line, or steel witness post)

In addition to NSRS bench marks, the FIRM may also show vertical control monuments established by a local jurisdiction; these monuments will be shown on the FIRM with the appropriate designations. Local monuments will only be placed on the FIRM if the community has requested that they be included, and if the monuments meet the aforementioned NSRS inclusion criteria.

To obtain current elevation, description, and/or location information for bench marks shown on the FIRM for this jurisdiction, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their Web site at www.ngs.noaa.gov.

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

3.3 Vertical Datum

All FISs and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum in use for newly created or revised FISs and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD 29). With the finalization of the North American Vertical Datum of 1988 (NAVD 88), many FIS reports and FIRMs are being prepared using NAVD 88 as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD 88. Structure and ground elevations in the community must, therefore, be referenced to NAVD 88. It is important to note that adjacent communities may be referenced to NGVD 29. This may result in differences in Base Flood Elevations (BFEs) across the corporate limits between the communities.

Prior versions of the FIS report and FIRM were referenced to NGVD 29. When a datum conversion is affected for an FIS report and FIRM, the Flood Profiles and BFEs reflect the new datum values. To compare structure and ground elevations to the 1 percent annual chance flood elevations shown in the FIS and on the FIRM, the subject structure and ground elevations must be referenced to the new datum values.

As noted above, the elevations shown in this FIS report and on the FIRM for Bradford County, Florida and Incorporated Areas, are referenced to NAVD 88. Ground, structure, and flood elevations may be compared and/or referenced to NGVD 29 by applying a standard conversion factor. The conversion factor from NGVD 29 to NAVD 88 is -0.86-foot. The BFEs shown on the FIRM represent whole-foot rounded values. For example, a BFE of 102.4 will appear as 102 on the FIRM and 102.6 will appear as 103. Therefore, users that wish to convert the elevations in this FIS to NGVD 29 should apply the stated conversion factor(s) to elevations shown on the Flood Profiles and supporting data tables in the FIS report, which are shown at a minimum to the nearest 0.1 foot.

For more information on NAVD 88, see Converting the National Flood Insurance Program to the North American Vertical Datum of 1988, FEMA Publication FIA-20/June 1992, or contact the Spatial Reference System Division, National Geodetic Survey, NOAA, Silver Spring Metro Center, 1315 East-West Highway, Silver Spring, Maryland 20910 (Internet address http://www.ngs.noaa.gov).

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

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

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent annual chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent annual chance flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 1-and 0.2-percent annual chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:24000 with a contour interval of 5 feet (USGS, 7.5 Minute Series Topographic Maps).

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

Areas studied by approximate methods were updated using a data layer known as 'wetcomp' provided by SRWMD. 'Wetcomp' combines National Wetlands Inventory (NWI) data, land use and cover, as well as hydrography features.

For the streams studied by approximate methods, only the 1-percent floodplain boundary was delineated using the FIRM for the City of Starke (FEMA, 1987); the Flood Hazard Boundary Map for Bradford County, Florida (U.S. Department of Housing and Urban Development, 1976); and topographic maps of flood-prone areas (USGS, 7.5 Minute Series Topographic Maps of Flood-Prone Areas).

4.2 Floodways

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

The floodways 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. The results of the floodway computations are tabulated for selected cross sections and are shown in Table 3, Floodway Data. The computed floodways are shown on the FIRM. In cases where the floodway and the 1-percent annual chance floodplain boundaries are either close together or collinear, only the floodway boundary is shown. Portions of the floodway for the Santa Fe River lie outside the county boundary.

The area between the floodway and the 1-percent annual chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent annual chance flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE
SANTA FE RIVER								
A	51.87	2,400[2]	30,621	0.3	76.2	76.2	77.0	0.8
B	53.44	1,400[2]	18,534	0.5	77.2	77.2	77.9	0.7
C	54.27	1,285[2]	14,063	0.6	78.1	78.1	78.9	0.8
D	55.83	1,800[2]	17,818	0.5	80.2	80.2	81.0	0.8
E	56.22	900[2]	9,705	0.9	81.1	81.1	82.0	0.9
F	57.21	800[2]	8,538	1.0	84.2	84.2	84.9	0.7
G	58.15	1,050[2]	13,768	0.3	86.8	86.8	87.6	0.8
H	59.26	820[2]	9,430	0.5	88.5	88.5	89.3	0.8
I	61.02	2,467[2]	29,075	0.2	89.7	89.7	90.6	0.9
J	62.24	2,761[2]	19,961	0.2	90.3	90.3	91.3	1.0
K	63.60	1,687[2]	10,242	0.5	93.0	93.0	94.0	1.0
L	64.57	497[2]	3,230	1.4	99.0	99.0	99.5	0.5
M	65.86	886[2]	7,294	0.6	104.5	104.5	105.4	0.9
N	67.11	590[2]	5,798	0.8	108.7	108.7	109.6	0.9
O	67.83	811[2]	7,703	0.4	110.6	110.6	111.6	1.0
P	68.72	478	3,123	0.9	113.1	113.1	113.9	0.8
Q	70.18	596[2]	5,464	0.5	123.8	123.8	124.6	0.8
R	71.46	844[2]	6,414	0.5	126.4	126.4	127.4	1.0
S	72.59	836[2]	3,113	1.0	131.4	131.4	132.3	0.9
T	73.27	1,729[2]	9,179	0.3	136.9	136.9	137.5	0.6
U	74.04	638[3]	3,198	0.1	138.5	138.5	139.5	1.0
V	74.35	376[3]	1,725	0.2	138.5	138.5	139.5	1.0
W	74.92	298[3]	567	0.7	138.9	138.9	139.8	0.9
X	75.15	322[3]	1,132	0.3	140.0	140.0	140.6	0.6
Y	75.55	333	930	0.4	140.2	140.2	140.7	0.5
Z	76.67	1,825	2,214	0.2	142.3	142.3	142.7	0.4
AA	78.16	3,250	8,055	0.0	142.9	142.9	143.6	0.7
AB	79.10	2,750	9,995	0.0	143.0	143.0	143.8	0.8

[1] Miles above mouth.
[2] This width extends beyond county boundary.
[3] This width is beyond county boundary.

TABLE 3

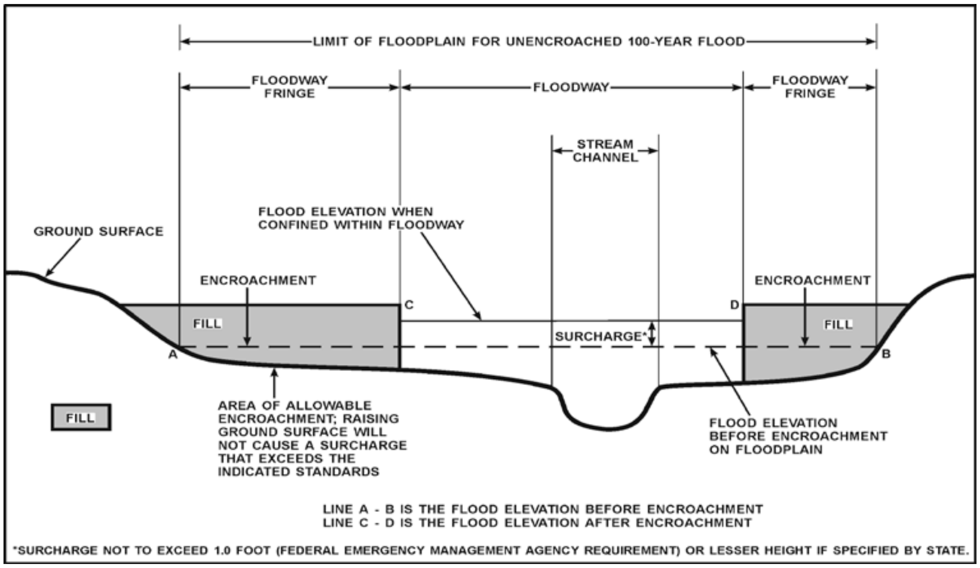
FEDERAL EMERGENCY MANAGEMENT AGENCY

BRADFORD COUNTY, FL AND INCORPORATED AREAS

FLOODWAY DATA

SANTA FE RIVER

FIGURE 1 – FLOODWAY SCHEMATIC



5.0 INSURANCE APPLICATION

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

Zone A

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

Zone AE

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

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 0.2-percent floodplain, areas within the 0.2-percent floodplain, and to areas of 1 percent flooding where average depths are less than 1 foot, areas of 1-percent flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent flood by levees. No BFEs or depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP (FIRM)

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

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

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

The countywide FIRM presents flooding information for the entire geographic area of Bradford County. Previously, separate Flood Hazard Boundary Maps (FHBMs) and/or FIRMs were prepared for each identified flood-prone incorporated community and the unincorporated areas of the county. This countywide FIRM also includes flood hazard information that was presented separately on Flood Boundary and Floodway Maps (FBFMs), where applicable. Historical data relating to the maps prepared for each community up to and including this countywide FIS, are presented in Table 4, Community Map History.

7.0 OTHER STUDIES

FISs published for Clay, Putnam, Alachua, and Union counties, Florida (FEMA, 1992, 1994, 2006, and 2009) are in agreement with this study.

Information pertaining to revised and unrevised flood hazards for each jurisdiction within Bradford County has been compiled into this FIS. Therefore, this FIS supersedes all previously printed FIS reports, FHBMs, FBFMs, and FIRMs for all of the incorporated and unincorporated jurisdictions within Bradford County.

This FIS supersedes a previously printed FIRM for the City of Starke (FEMA, June 1987) and a previously printed FHBM for Bradford County.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this FIS can be obtained by contacting FEMA, Federal Insurance and Mitigation Division, Koger Center - Rutgers Building, 3003 Chamblee Tucker Road, Atlanta, Georgia 30341.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
BROOKER, TOWN OF	AUGUST 30, 1974		NOVEMBER 15, 1989	
HAMPTON, CITY OF	NOVEMBER 15, 1989		NOVEMBER 15, 1989	
LAWTEY, CITY OF	NOVEMBER 15, 1989		NOVEMBER 15, 1989	
STARKE, CITY OF	JULY 19, 1974	MAY 28, 1976 MARCH 11, 1977	JUNE 18, 1987	
BRADFORD COUNTY UNINCORPORATED AREAS	FEBRUARY 14, 1975	JULY 9, 1976	NOVEMBER 15, 1989	

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BRADFORD COUNTY, FL
AND INCORPORATED AREAS**

COMMUNITY MAP HISTORY

9.0 REFERENCES AND BIBLIOGRAPHY

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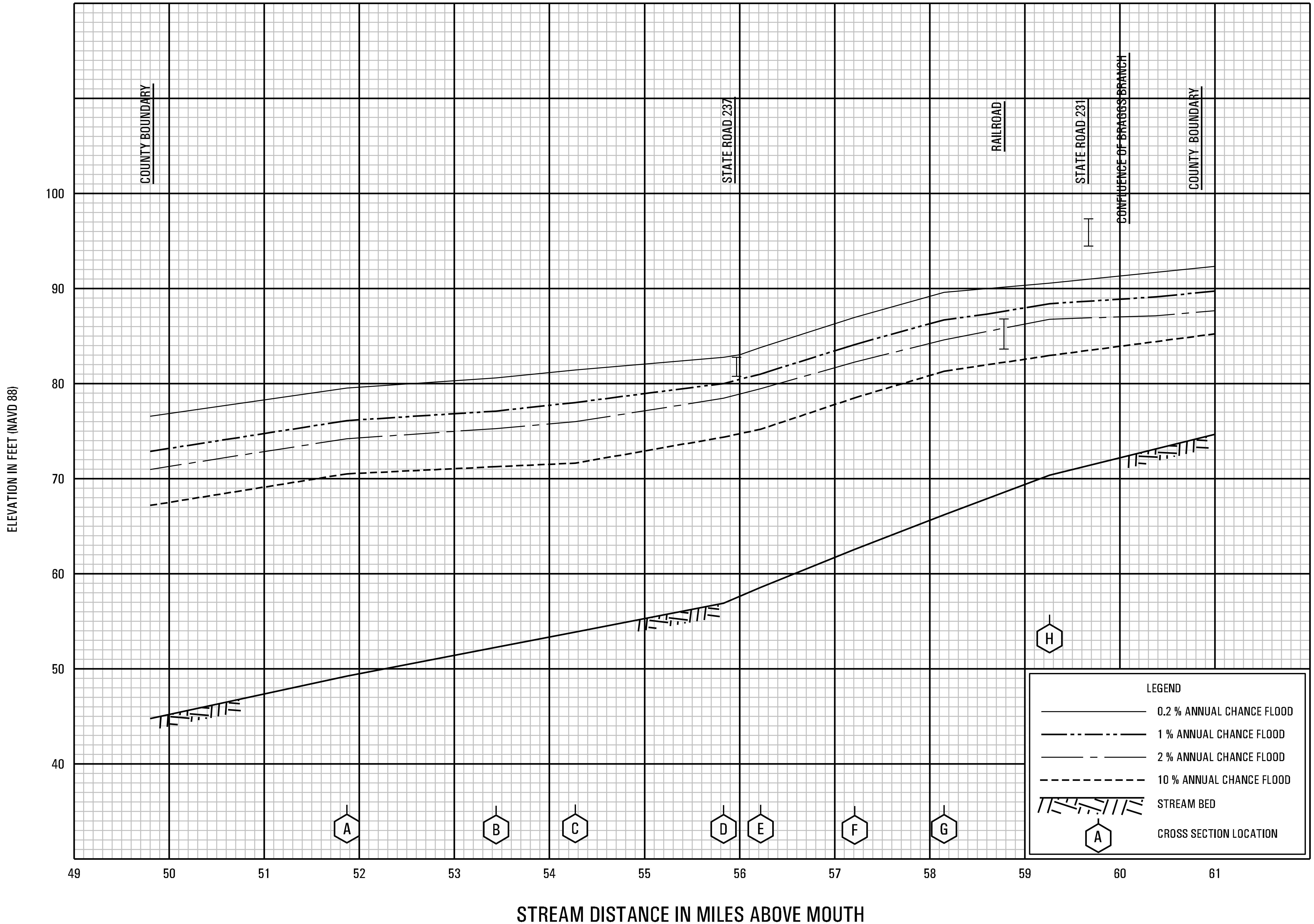


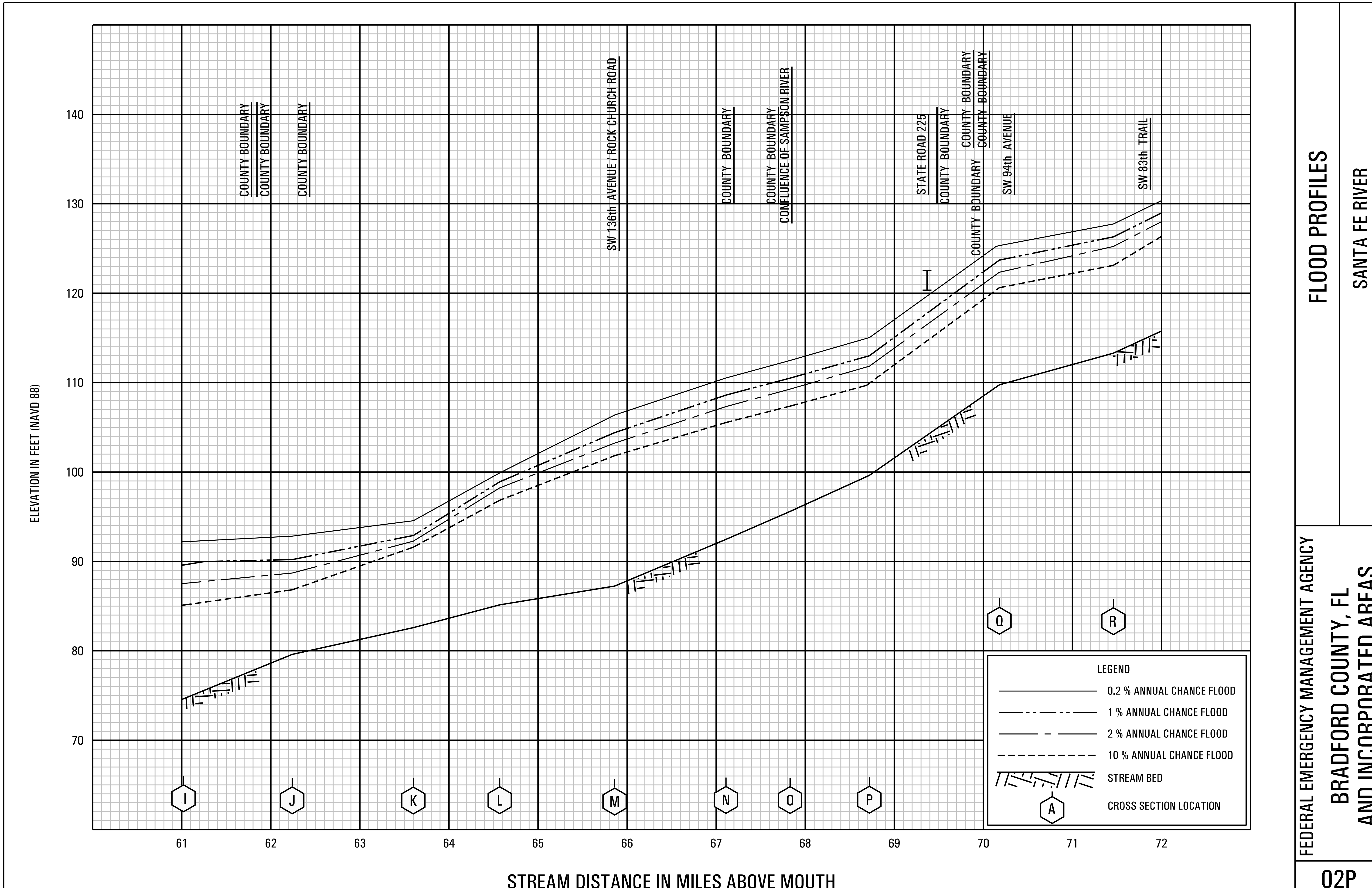
FLOOD PROFILES

SANTA FE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

BRADFORD COUNTY, FL AND INCORPORATED AREAS

01P



FLOOD PROFILES
SANTA FE RIVER
FEDERAL EMERGENCY MANAGEMENT AGENCY
BRADFORD COUNTY, FL
AND INCORPORATED AREAS
02P
ELEVATION IN FEET (NAVD 88)
STREAM DISTANCE IN MILES ABOVE MOUTH
COUNTY BOUNDARY
COUNTY BOUNDARY
COUNTY BOUNDARY
SW 136th AVENUE / ROCK CHURCH ROAD
COUNTY BOUNDARY
COUNTY BOUNDARY
CONFLUENCE OF SAMPSON RIVER
STATE ROAD 225
COUNTY BOUNDARY
COUNTY BOUNDARY
COUNTY BOUNDARY
COUNTY BOUNDARY
SW 94th AVENUE
SW 83th TRAIL
LEGEND
0.2 % ANNUAL CHANCE FLOOD
1 % ANNUAL CHANCE FLOOD
2 % ANNUAL CHANCE FLOOD
10 % ANNUAL CHANCE FLOOD
STREAM BED
CROSS SECTION LOCATION
A
I
J
K
L
M
N
O
P
Q
R
140
130
120
110
100
90
80
70
61
62
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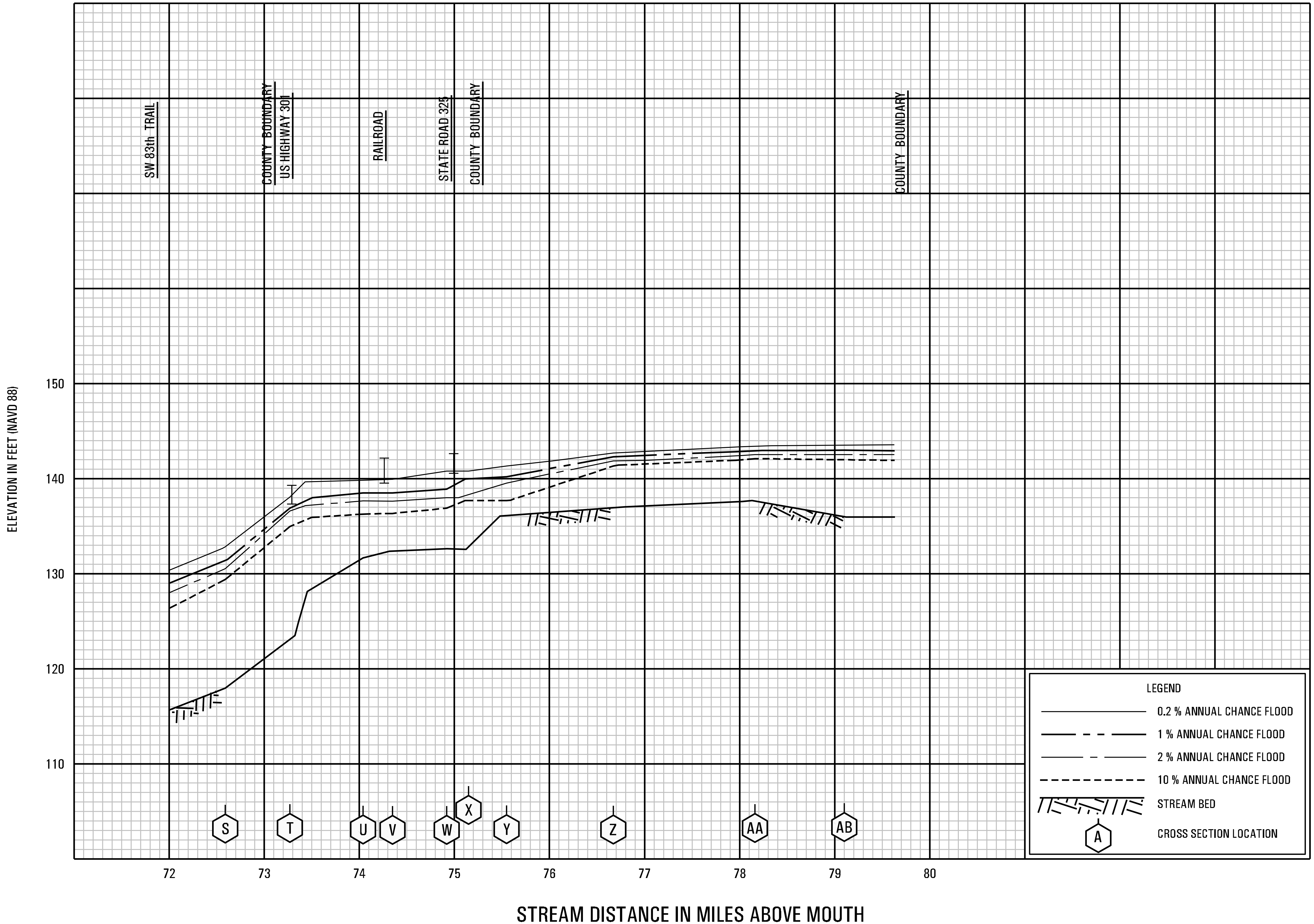

FLOOD PROFILES

SANTA FE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

BRADFORD COUNTY, FL
AND INCORPORATED AREAS

03P