

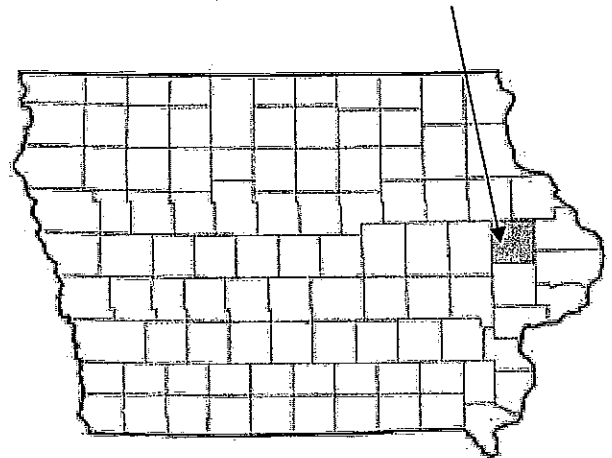
FLOOD INSURANCE STUDY



JONES COUNTY, IOWA AND INCORPORATED AREAS

Jones County

COMMUNITY NAME	COMMUNITY NUMBER
ANAMOSA, CITY OF	190174
CENTER JUNCTION, CITY OF	190433
JONES COUNTY (UNINCORPORATED AREAS)	190919
*MARTELLE, CITY OF	190775
MONTICELLO, CITY OF	190175
MORLEY, CITY OF	190770
OLIN, CITY OF	190176
*ONSLow, CITY OF	190791
OXFORD JUNCTION, CITY OF	190177
WYOMING, CITY OF	190434



*NO SPECIAL FLOOD HAZARD AREAS IDENTIFIED

EFFECTIVE

APRIL 4, 2011



Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
19105CV000A

**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) report may not contain all data available within the Community Map Repository. It is advisable to contact the Community Map Repository for any additional data.

The Federal Emergency Management Agency (FEMA) may revise and republish part or all of this FIS at any time. In addition, FEMA may revise part of this FIS report by the Letter of Map Revision (LOMR) process, which does not involve republication or redistribution of the FIS report. Therefore, users should consult with community officials and check the Community Map Repository to obtain the most current FIS report components.

Selected Flood Insurance Rate Map panels for this community contain information that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels (e.g., floodways, cross sections). In addition, former flood hazard zone designations have been changed as follows:

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

Initial Countywide FIS Effective Date: April 4, 2011

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EXHIBITS

EXHIBIT 1 -	Flood Profiles	
	Kitty Creek	Panel 01P
	Maquoketa River	Panel 02P
	Unnamed Stream	Panel 03P
EXHIBIT 2 -	Digital Flood Insurance Rate Map Index	
	Digital Flood Insurance Rate Maps	

**FLOOD INSURANCE STUDY
JONES COUNTY, IOWA AND INCORPORATED AREAS**

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and supersedes the FIS reports, Flood Insurance Rate Maps (FIRMs) and/or Flood Boundary and Floodway Maps (FBFM) in the geographic area of Jones County, Iowa, including the Cities of Anamosa, Center Junction, Martelle, Monticello, Morley, Olin, Onslow, Oxford Junction and Wyoming; and the Unincorporated Areas of Jones County (hereinafter referred to collectively as Jones County) and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood-risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR. 60.3.

Please note that the City of Cascade is geographically located in Jones and Dubuque Counties. The City of Cascade will not be included in this FIS report.

Please note that the Cities of Martelle and Onslow have no identified special flood hazard areas.

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

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

1.2 Authority and Acknowledgements

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

Information on the authority and acknowledgements for the previously printed FIS and FIRMs for Jones County is shown below:

City of Monticello	The hydrologic and hydraulic analyses for the 1978 Monticello FIS report were performed by Stanley Consultants, Inc. for the Federal Insurance Administration (FIA), under Contract
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No. H-4005. This work, which was completed in July 1977, covered all significant flooding sources affecting the City of Monticello (Reference 1).

Flood Insurance Studies for the Cities of Anamosa, Center Junction, Martelle, Morley, Olin, Onslow, Oxford Junction and Wyoming and the unincorporated areas of Jones County have not been published.

The hydrologic and hydraulic analyses and floodplain mapping for approximate study reaches included in this updated study were performed by Stantec Consulting Services Inc. (Stantec) for FEMA Region VII under Contract No. EMK-2001-CO-2018, Task Order No. 32. This work was completed in May 2007.

Digital conversion of previously effective detailed study areas, incorporation of floodplain mapping for new and revised approximate study reaches and the conversion of the unincorporated and incorporated areas of Jones County into countywide format were performed by Stantec for FEMA Region VII under Contract No. EMK-2001-CO-2018, Task Order HST0040. This work was completed in May 2009.

In addition to incorporating the existing FIS for the City of Monticello, this countywide FIS included incorporation of approved Letters of Map Change (LOMCs).

The vertical datum for elevation data was shifted to North American Vertical Datum of 1988 (NAVD88). The digital floodplain data was merged into a single, updated DFIRM. The DFIRM includes 2005 orthophotography, political boundaries, road centerlines with street names, railroads with names, rivers, lakes, streams, and elevation reference marks. The basemap information was obtained from the Jones County GIS Department, U.S. Geologic Survey (USGS) and National Geodetic Survey.

1.3 Coordination

The purpose of an initial Consultation and Coordination Officer (CCO) meeting is to discuss the scope of the FIS. A final CCO meeting is held to review the results of the study.

For the prior City of Monticello FIS, historical data was obtained from city officials; a flood control study conducted by the U. S. Army Corps of Engineers (USACE), Rock Island District; and the local newspaper, The Monticello Express. The hydraulic and hydrologic analyses were coordinated with the USACE, Rock Island District. During the course of the work by Stanley Consultants, Inc., flood elevations, flood boundaries, and floodway delineations were reviewed by community officials, personnel of the Iowa Natural Resources Council, the FIA, and Stanley Consultants, Inc. at an intermediate meeting held on June 15, 1977. On May 11, 1978, the results of the work were reviewed and accepted at a final coordination meeting attended by representatives of the above mentioned groups.

Flood Insurance Studies for the Cities of Anamosa, Center Junction, Martelle, Morley, Olin, Onslow, Oxford Junction, and Wyoming; and the Unincorporated Areas of Jones County have not been previously published.

For this countywide FIS, an initial CCO meeting was held on November 8, 2006 and attended by representatives of FEMA Region VII, Stantec (Study Contractor), Jones County, City of Anamosa, City of Wyoming, City of Olin, and the City of Monticello. The results of the study were reviewed at the final CCO meeting held on July 7, 2009, and attended by representative of FEMA Region VII, Iowa Department of Natural Resources, Stantec (Study Contractor), Jones County and the Cities of Anamosa, Olin and Wyoming. All problems raised at that meeting have been addressed in this study.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the geographic area of Jones County, Iowa, including the incorporated communities listed in Section 1.1.

New approximate studies were performed and effective approximate studies were revised with new hydrologic and hydraulic analyses and floodplain mapping.

The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development or proposed construction at the time of the previous City of Monticello Flood Insurance Study. The flooding sources studied previously by detailed methods and converted to digital format for this FIS are presented in Table 1.

TABLE 1. Flooding Sources Studied by Detailed Methods

<u>Flooding Source Study</u>	<u>Limits of Detailed Study</u>
Kitty Creek	From 0.4 miles downstream of First Street to 0.6 miles upstream of State Highway 38.
Maquoketa River	From 1,000 feet downstream of US Highway 151 Business Route to 0.7 miles upstream.
Unnamed Stream	From 0.2 miles downstream of U.S. Highway 151 Business Route to 1.1 miles upstream of the Chicago, Milwaukee, St. Paul and Pacific Railroad.

This countywide FIS also incorporates the determination of letters issued by FEMA resulting in LOMCs. All LOMCs in Jones County for which information could be found are summarized in the Summary of Map Amendment (SOMA) included in the Technical Support Data Notebook (TSDN) associated with this

FIS update. Copies of the SOMA may be obtained from the Community Map Repository.

2.2 Community Description

Jones County encompasses approximately 577 square miles and is located in the eastern part of Iowa. It is bounded on the north by the Counties of Dubuque and Delaware, east by the Counties of Jackson and Clinton, south by Cedar County, and west by Linn County. U.S. Census Bureau's 2008 population estimate for Jones County is 20,346 persons (Reference 2). The county seat is the City of Anamosa.

The following section is a compilation of previously published community description information from earlier FIS reports.

City of Monticello

The City of Monticello is located in the upper third of the Maquoketa River basin in north-central Jones County, in eastern Iowa. The population of Monticello has increased by 10 percent or more in each of the four decades preceding 1970, reaching 3,509 in 1970. Population growth is expected to continue as in the past, increasing to approximately 5,700 by the year 2020. The estimated 2007 population for the City of Monticello was 3,710 (Reference 2). The city is a service and trading center for the surrounding agricultural area and supports considerable light manufacturing. More than 20 industrial establishments are engaged in manufacturing, the chief items being steel buildings, hydraulic equipment containers, and farm equipment (Reference 3).

The Maquoketa River originates in Fayette County, and flows about 115 miles in a southeasterly direction through gently rolling farmland, cutting through the northeast corner of Monticello on its course to the Mississippi River in Jackson County. The drainage basin is long and narrow with the majority of the land used for agricultural purposes. Scattered large limestone formations outcrop the glacial till throughout the basin. The basin receives 33 inches of normal annual precipitation, about 90 percent of which falls as rain. Temperatures range from about -30 degrees Fahrenheit (°F) to 108°F (Reference 4).

Kitty Creek, a sizable tributary of the Maquoketa River, flows in a northerly direction through Monticello and joins the river just east of the corporate limits. The unnamed stream provides drainage for agricultural land west of the community and much of southwestern Monticello. Several small transitory streams drain central Monticello and flow into Kitty Creek.

2.3 Principal Flood Problems

Low-lying areas of Monticello are subject to periodic flooding from the Maquoketa River and Kitty Creek. The most severe flooding has occurred as a result of heavy rainfall. The maximum flood of record on the Maquoketa River occurred in July 1947, causing damage estimated at \$13,500 (Reference 3).

Severe flooding also occurred in July 1951 and March 1960. Damage from the Maquoketa River affects primarily the local golf course and a portion of the Kitty Creek floodplain. About 34 residencies, nine commercial, and three industrial establishments located on the west bank of Kitty Creek, are subject to periodic flooding (Reference 3). Recent Kitty Creek floods occurred in 1951, 1954, and twice in 1969. Damage in 1969 was estimated at \$20,000 for each occurrence (Reference 3).

2.4 Flood Protection Measures

No flood protection measures were identified in Jones County and Incorporated Areas.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods 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 one (1) year are considered. For example, the risk of having a flood that equals or exceeds the 1-percent annual chance flood in any 50-year period is approximately 40 percent (4 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analysis

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied by detailed methods affecting the community.

For the new and revised approximate studies included in this FIS, 1-percent-annual-chance discharges were calculated using regression equations presented in United States Geological Survey (USGS) Water Resource Investigation Report (WRIR) 00-4233 (Reference 5).

In the absence of flow records for the Maquoketa River at Monticello, a synthetic frequency curve was developed by the USACE, using the frequency statistics of the Little Maquoketa River at Durango, and the Maquoketa River at both Manchester and Maquoketa. The means and standard deviations of these stations were plotted against drainage area and corresponding values were interpolated for Monticello. These values were compared with a regional plot of the same for neighboring streams (Reference 3).

The frequency curve for Kitty Creek was also developed by the USACE, and was synthetically estimated using regional characteristics of neighboring streams of similar nature (Reference 3). These values were checked with regression equations developed for east-central Iowa by the USGS (Reference 3), and the thesis, "Regional Flood Frequency Determinations in Iowa," submitted by R.E. Hermanson at Iowa State University in 1964 (Reference 3).

The 10-, 2-, and 1-percent-annual-chance peak discharges for the unnamed stream in southwest Monticello were developed using the Iowa Natural Resources Council regional relationships relating basin characteristics to streamflow data (Reference 6). These relationships were developed by computing frequency curves from gaging station data in the region using a log-Pearson Type III distribution analysis. The regional equations were then derived by regressing each set of frequency discharges on several basin and climatic parameters. The 0.2-percent-annual-chance frequency discharge was developed by fitting the lower frequency discharges to a log-Pearson Type III curve.

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

Table 2. Summary of Discharges for Detailed Riverine Studies

FLOODING SOURCE AND LOCATION	Drainage Area (square miles)	Peak Discharges (cubic feet per second)			
		10-Percent- Annual- Chance Event	2-Percent- Annual- Chance Event	1-Percent- Annual - Chance Event	0.2-Percent- Annual- Chance Event
KITTY CREEK At confluence with Maquoketa River	51	5,100	11,000	14,500	25,500
MAQUOKETA RIVER 750 feet downstream of U.S. Highway 151 (Below confluence with Kitty Creek)	649	17,900	29,600	35,900	53,700
650 feet downstream of U.S. Highway 151 (Above confluence with Kitty Creek)	598	17,200	28,500	34,500	51,500
UNNAMED STREAM At Mouth	2.2	970	1,960	2,510	4,000

3.2 Hydraulic Analysis

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

For the new and revised approximate studies in this updated FIS, hydraulic analyses for the 1-percent-annual-chance flood event were performed using the USACE Hydrologic Engineering Center River Analysis Software (HEC-RAS) model, version 3.1.3 (Reference 7).

Models for revised approximate study reaches contained unsurveyed cross-sections with an average spacing of approximately 0.4 miles and did not include structures, such as bridges and culverts. Cross-section geometry data was created using the USGS 1/3 arc-second National Elevation Dataset (NED) Digital Elevation Model (DEM).

Aerial imagery was used to determine a Manning's roughness coefficient for the approximate hydraulic models. Field reconnaissance was not performed for approximate studies. A representative overbank and channel Manning's roughness coefficient was selected for each study reach. Roughness values ranged from 0.030 to 0.075 for the overbanks and 0.030 to 0.054 for the channel.

Detail-studied streams that were not re-studied as part of this map update may include a "profile base line" on the maps. This "profile base line" provides a link to the flood profiles included in the FIS report. The detail-studied stream centerline may have been digitized or redelineated as part of this revision. The "profile base lines" for these streams were based on the best available data at the time of their study and are depicted as they were on the previous FIRMs. In some cases where improved topographic data was used to redelineate floodplain boundaries, the "profile base line" may deviate significantly from the channel centerline or may be outside the Special Flood Hazard Area (SFHA).

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

For the Maquoketa River and Kitty Creek, cross section data and roughness coefficients (Manning's "n") were obtained from the Rock Island District USACE. The stream bed, bridges, and other structures on the stream were field surveyed to obtain elevation data and structural geometry. Elevation data for the floodplain were obtained from contour maps (Reference 8). Roughness

coefficients for the main channel range from 0.035 to 0.045; the roughness value for the floodplain is 0.065. For the unnamed stream in southwest Monticello, cross section data for the stream bed and floodplain were obtained by field survey. Bridges were also surveyed to obtain elevation data and structural geometry. Roughness coefficients were estimated by field inspection at each cross section. Roughness values for the main channel range from 0.030 to 0.070; roughness values for the flood plain range from 0.035 to 0.040.

Water-surface profiles for the Maquoketa River and Kitty Creek were developed using the USACE HEC-2 step-backwater computer program (Reference 9).

The Maquoketa River starting water-surface elevation was found by the slope-area method. The starting water-surface elevations for Kitty Creek correspond to like-frequency flood elevations for the Maquoketa River.

The Unnamed Stream starting water-surface elevation was determined by like-frequency flooding from Kitty Creek. Water-surface profiles for the unnamed stream were developed using a step-backwater model developed by Stanley Consultants, Inc. (Reference 10). Flood profiles were drawn showing computed water-surface elevations to an accuracy of 0.5 foot for floods of the selected recurrence intervals (Exhibit 1).

Flood elevations can be raised by debris or ice jams. The hydraulic analyses for this study are based only on unobstructed flow. The flood elevations shown on the Flood Profiles (Exhibit 1) are considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail, and if the channel and overbank conditions remain essentially the same as ascertained during the study.

3.3 Vertical Datum

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

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD88. Effective information for this FIS report was converted from NGVD29 to NAVD88 using a countywide average conversion of -0.1 feet ($\text{NAVD88} = \text{NGVD29} - 0.1 \text{ feet}$). Structure ground elevations in the community must, therefore, be referenced to NAVD88. It is important to note that adjacent counties may be referenced to NGVD29. This may result in differences in Base Flood Elevations (BFEs) across the corporate limits between the communities.

For more information on NAVD88, see the FEMA publication entitled *Converting the National Flood Insurance Program to the North American Vertical Datum of 1988* (FEMA, June 1992), or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242
(301) 713-4172 (fax)

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

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

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

4.1 Floodplain Boundaries

In order to provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base for floodplain management purposes. The 0.2-percent-annual-chance flood is employed to indicate additional areas of flood risk in the community. For each stream studied by detailed methods, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries within the City of Monticello were interpolated using topographic maps at a scale of 1:4800, with a contour interval of two feet (Reference 8); outside of the City of Monticello, the boundaries were interpolated using the USGS 1/3 arc-second NED from the DEM.

The small unnamed transitory stream draining northeast through northern Monticello and an area along the railroad tracks from Kitty Creek were added but these were not previously shown on the Flood Hazard Boundary Map (FHBM) (Reference 1).

The 1- and 0.2-percent-annual-chance floodplain boundaries are shown on the FIRM. 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 the areas of moderate flood hazards (Zone X). In cases where the 1- and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary has been shown.

Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 1-percent-annual-chance floodplain boundary is shown on the DFIRM. Approximate 1-percent-annual-chance floodplain boundaries were delineated using digital basemap information, including 1999 orthophotography and the USGS 1/3 arc-second NED from the DEM. Approximate flood boundaries in some portions of the study area were digitized from the previous FHBMs.

4.2 Floodways

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

The floodways presented in this FIS report and on the DFIRM 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 have been tabulated for selected cross sections (Table 3). In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown.

Along streams where floodways have not been computed, the community must ensure that the cumulative effect of development in the floodplain will not cause more than a 1.0-foot increase in the base flood elevations at any point within the community.

The area between the floodway and the 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water surface elevation of the 1-percent-annual-chance flood more than 1.0

foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are presented in Figure 1.

In the digital conversion efforts, the floodway was not recalculated. As a result, there may be areas where the previous floodway did not fit within the boundaries of the 1-percent-annual-chance floodplain. Therefore, in these areas, the floodway was reduced. Table 3, Floodway Data Table lists the water surface elevations, with and without floodway, the mean velocity in the floodway, and the location and area at each surveyed cross section as determined by hydraulic methods.

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

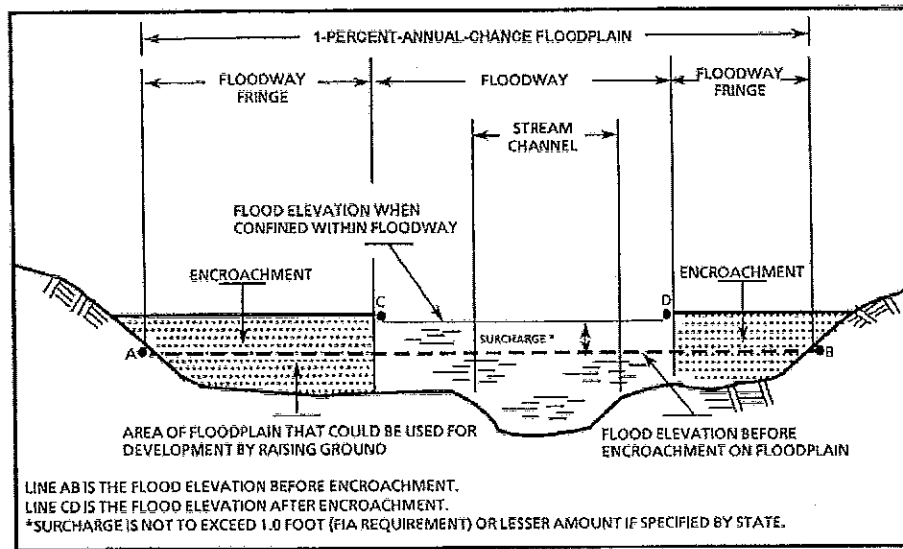


FIGURE 1. Floodway Schematic

FLOODING SOURCE		FLOODWAY				1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE	
Kitty Creek									
A	1,452 ¹	457	2,770	5.2	802.9	801.5 ³	802.5	1.0	
B	2,260 ¹	672	4,543	3.2	803.9	803.6 ³	804.6	1.0	
C	2,410 ¹	715	3,412	4.2	805.5	805.5	806.3	0.8	
D	3,274 ¹	652	4,217	3.4	806.8	806.8	807.8	1.0	
E	4,338 ¹	185	1,705	8.5	809.7	809.7	809.7	0.0	
F	4,608 ¹	264	2,423	6.0	810.1	810.1	811.1	1.0	
G	5,328 ¹	633	5,604	2.6	811.5	811.5	812.5	1.0	
H	6,616 ¹	759	6,340	2.3	812.2	812.2	813.1	0.9	
Maquoketa River									
A	2,355 ²	1,489	15,849	2.2	802.8	802.8	803.8	1.0	
B	2,495 ²	1,520	16,744	2.1	803.3	803.3	804.2	0.9	
C	5,315 ²	1,156	8,653	4.0	804.1	804.1	805.0	0.9	

¹Feet Above Confluence with Maquoketa River. ²Feet Above Downstream Side of Dam. ³Elevations Without Considering Backwater Effect From Maquoketa River

FLOODWAY DATA
Kitty Creek - Maquoketa River

FEDERAL EMERGENCY MANAGEMENT AGENCY
JONES COUNTY, IA
AND INCORPORATED AREAS

Table 3

FLOODING SOURCE		FLOODWAY				1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)		
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Unnamed Stream								
A	2,420	46	321	7.8	819.7	819.7	820.7	1.0
B	2,568	384	1,793	1.4	823.1	823.1	824.1	1.0
C	2,768	417	1,836	1.4	823.2	823.2	824.2	1.0
D	2,880	424	2,211	1.1	823.7	823.7	824.7	1.0
E	4,020	233	1,039	2.4	824.3	824.3	825.3	1.0
F	5,584	67	378	6.6	827.2	827.2	828.2	1.0

¹Feet Above Confluence With Kitty Creek

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FLOODWAY DATA

Unnamed Stream

Table 3

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

Zone AE

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

Zone X

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

6.0 FLOOD INSURANCE RATE MAP

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

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

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

The current Flood Insurance Rate Map presents flooding information for the geographic area of Jones County. Historical data relating to the maps prepared for each community are presented in Table 4, Community Map History.

7.0 OTHER STUDIES

This FIS incorporates all previously published FISs and FIRMs for the incorporated and unincorporated areas within Jones County.

This report either supersedes or is compatible with all previous studies published on streams studied in this report and should be considered authoritative for the purposes of the National Flood Insurance Program.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting Flood Insurance Mitigation Division, FEMA, Region VII, 9221 Ward Parkway, Suite 300, Kansas City, Missouri 64114-3372.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISION DATE	EFFECTIVE FIRM DATE	FIRM REVISIONS DATE
ANAMOSA, CITY OF	JUNE 28, 1974	FEBRUARY 27, 1976	AUGUST 19, 1987	None
CENTER JUNCTION, CITY OF	APRIL 4, 2011	None	APRIL 4, 2011	None
JONES COUNTY UNINCORPORATED AREAS	APRIL 22, 1977	None	SEPTEMBER 30, 1988	None
MARTELLE, CITY OF ¹	N/A	None	N/A	None
MONTICELLO, CITY OF	JUNE 28, 1974	APRIL 30, 1976	APRIL 2, 1979	None
MORLEY, CITY OF	APRIL 4, 2011	None	APRIL 4, 2011	None
OLIN, CITY OF	AUGUST 30, 1974	MARCH 26, 1978	FEBRUARY 1, 1987	None
ONSLOW, CITY OF ¹	N/A	None	N/A	None
OXFORD JUNCTION, CITY OF	JUNE 21, 1974	JANUARY 16, 1976	AUGUST 19, 1985	None
WYOMING, CITY OF	NOVEMBER 12, 1976	SEPTEMBER 28, 1982	SEPTEMBER 4, 1985	None

¹ No Special Flood Hazard Areas Identified

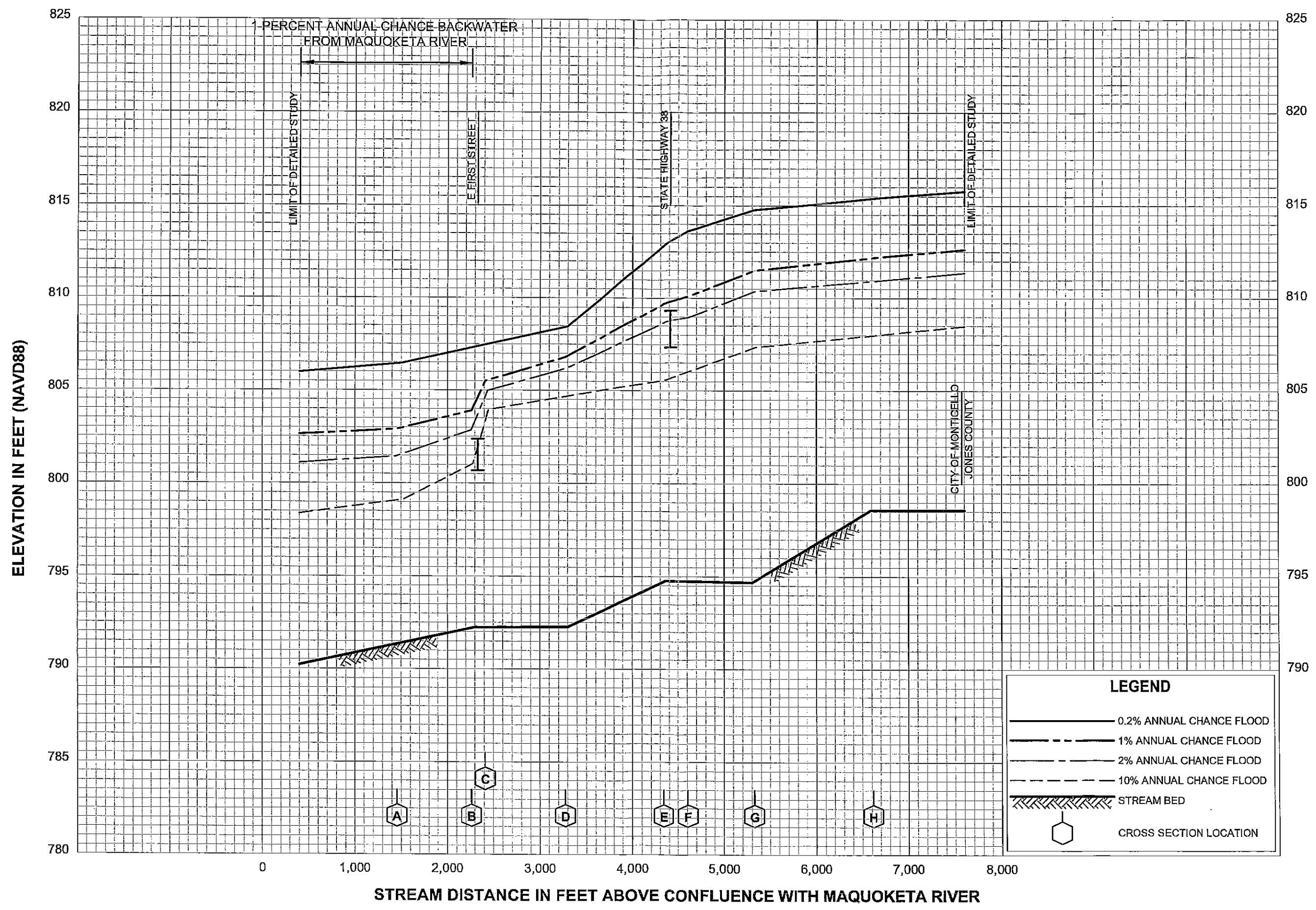
FEDERAL EMERGENCY MANAGEMENT AGENCY
**JONES COUNTY, IOWA
AND INCORPORATED AREAS**

COMMUNITY MAP HISTORY

Table 4

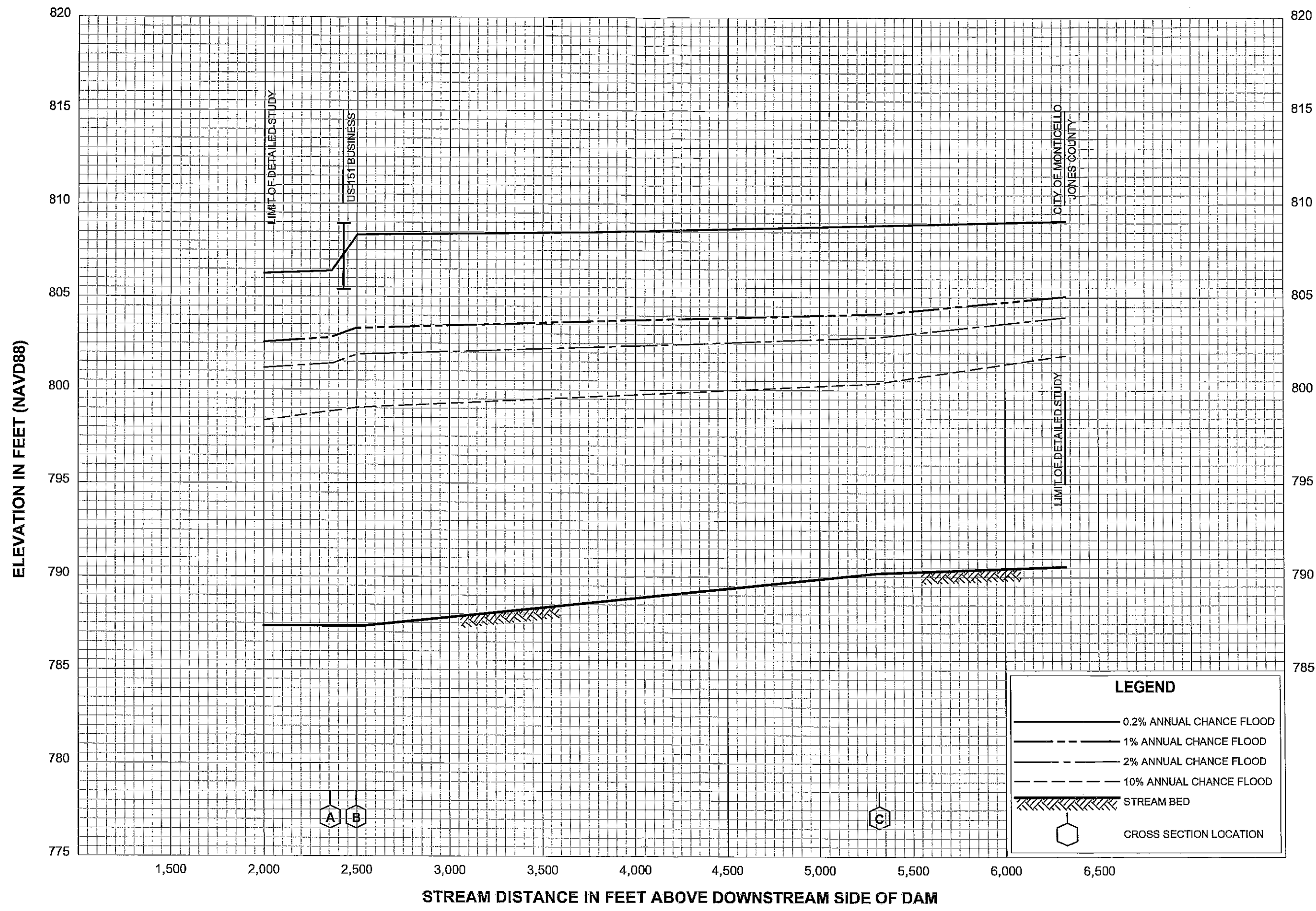
9.0 BIBLIOGRAPHY AND REFERENCES

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3. U.S. Army Corps of Engineers, Rock Island District, Monticello, Iowa, Detailed Project Report for Flood Control, October 1974.
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6. U.S. Geological Survey, (The Iowa Natural Resources Council cooperating), Iowa Natural Resources Council Bulletin No. 11, Floods in Iowa: Technical Manual for Estimating their Magnitude and Frequency, Oscar G. Lara, March 1973.
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9. U.S. Army Corps of Engineers, Hydrologic Engineering Center, Step-Backwater Computer Program, HEC-2 Water-Surface Profiles, 1972.
10. Stanley Consultants, Inc., Computer Program CH20A Backwater and Flood Plain.



FLOOD PROFILES
KITTY CREEK

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**FLOOD PROFILES
MAQUOKETA RIVER**

FEDERAL EMERGENCY MANAGEMENT AGENCY
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