Guidance for Flood Risk Analysis and Mapping

Flood Insurance Study (FIS) Report

December 2020

FEMA

Requirements for the Federal Emergency Management Agency (FEMA) Risk Mapping, Assessment, and Planning (Risk MAP) Program are specified separately by statute, regulation, or FEMA policy (primarily the Standards for Flood Risk Analysis and Mapping). This document provides guidance to support the requirements and recommends approaches for effective and efficient implementation. Alternate approaches that comply with all requirements are acceptable.

For more information, please visit the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage (www.fema.gov/flood-maps/guidance-partners/guidelines-standards). Copies of the Standards for Flood Risk Analysis and Mapping policy, related guidance, technical references, and other information about the guidelines and standards development process are all available here. You can also search directly by document title at www.fema.gov/multimedia-library.

Table of Revisions

The following summary of changes details revisions to this document subsequent to its most recent version in November 2016.

Affected Section or Subsection	Date	Description
Section 2.1	December 2020	This guidance has been updated to correct information regarding font specifications.
Section 5.4	December 2020	This guidance has been updated to revise information regarding Table 8: Levee Systems.
Section 6.3	December 2020	This guidance has been updated to add information regarding 2D evaluation lines.
Throughout document	December 2020	This guidance has been updated to revise table numbers after the removal of CBRS layers from regulatory products.

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1.0 Overview

The Flood Insurance Study (FIS) Report is a companion to the Flood Insurance Rate Maps (FIRMs) and FIRM Database in the depiction and communication of regulatory flood hazard information within a county or jurisdiction. Whereas the FIRMs depict regulatory flood hazard information in graphical format, the FIS Report presents communities and end users with information on the study methodology, data, and results in tabular format. This document supplements the FIS Report Technical Reference and provides additional guidance to support the preparation of FIS Reports in accordance with the Technical Reference.

For information on FIS Report distribution, please reference the Preliminary Distribution and Revised Preliminary Guidance, and the FIRM Index Guidance.

2.0 General Formatting and Guidance

An FIS Report Template (available at www.fema.gov/media-collection/flood-risk-templates-and-other-resources) has been provided, which complies with all the formatting guidance contained below. The FIS Report Technical Reference provides instruction regarding how to use the template and how to distinguish between text that should be included in each FIS Report vs. text that should be updated or removed depending on the specifics of the Flood Risk Project.

While the FIS Report contains some information that may be reported on a non-countywide basis (i.e., for Physical Map Revisions (PMRs)) effective FIS Reports that are already in countywide format must remain in countywide format. For example, the Map Repository information reported for an effective countywide study must remain countywide in the FIS Report Table 30, Map Repositories. The FIS Report Technical Reference specifically identifies the pieces of information that may be reported on a non-countywide basis, such as Table 26, Incorporated Letters of Map Change (LOMCs). The remainder of the existing countywide information in the FIS Report must remain in its countywide format in the revised FIS Report.

2.1 Adding Text to Body of FIS Report

In certain circumstances, it may be necessary or desired to add additional text within the body of the report to document unique situations. For example, certain states or communities may impose more restrictive floodway surcharge thresholds than the typical 1.0 foot minimum FEMA standard. In this case, it would be appropriate to add text to section 6.3 of the FIS Report—"Floodplain and Floodway Delineation"—to document these distinctions. The font and formatting guidance below should be followed in those circumstances.

The styles within the FIS Report Template should be used to preserve consistency from section to section. Text within the body of the report should use the "Body Text" style and is based on Arial font, 11 point. Body text font size should not decrease smaller than 11 point. The FIS Report Technical Reference should be referenced for more detail regarding type specifications for text.

2.2 Table Formatting

Tables should be sized to the width of the preceding text block. If a table needs to be wider than the previous text block to be readable, insert section breaks before and after the table and change the page orientation to landscape. Centered page numbers should be included at the bottom of tables in landscape orientation. Column width can be adjusted as needed to accommodate data.

If a table is split between two pages, consider adding a header for each page with "(continued)" next to the title. In general, rows should not be allowed to split between pages unless this causes too many page breaks and large areas of white space. For example, the Principal Flood Problems table may contain rows with long descriptive passages, so the rows are permitted to split between pages.

It is preferred that text in tables should be Arial, 11 point, single spaced with 3 point before and after (row height not specified) except for the Floodway Data Table (FDT). The FDT is 0 point before and after each row—row height is governed by paragraph spacing rather than specifying row height. However, text size in tables may be reduced to accommodate data as long as readability is not reduced.

Table captions should be formatted as follows:

- Arial, 11 point
- Bold and centered
- 12 point spacing before and 6 point spacing after the caption

Text or dates in tables should be left aligned (for running text or longer content that wraps in the cell) or centered. Headings in tables should be centered at the bottom of the cell.

Numeric data in tables should be aligned on decimal points or right-aligned (if no decimals are present in the entire column). Numbers greater than 999 should include a comma appropriately placed. Numbers using decimal points should be rounded to the tenth place.

When using numbered footnotes, the numbers should be assigned in order starting at the top-left table cell and working top to bottom, column by column. The example table below shows how this should look. Any variations from this should be consistently applied within the FIS Report.

Footnote numbers are applied in the context of the entire table when a table spans multiple pages. Please see the FIS Report Technical Reference for full information on footnote numbering requirements.

Table 1: Footnote Numbering Guidance

Name	Community	Value[3]	Notes
Entry A	Community A	4.5	Text here
Entry B	Community A[2]	5.6	Text here
Entry C[1]	Community A	2.2	Text here
Entry D	Community B	10.1	Text here
Entry E	Community B	8.3	Text here

[1] Footnote 1

[2] Footnote 2

[3] Footnote 3

3.0 Report Cover

The FIS Report Template provides two examples of different covers that can be used. Figure 1 shows the preferred option, whereas Figure 2 shows the option that can be used when there are more communities within the county than can be shown on the cover in the Figure 1 style.

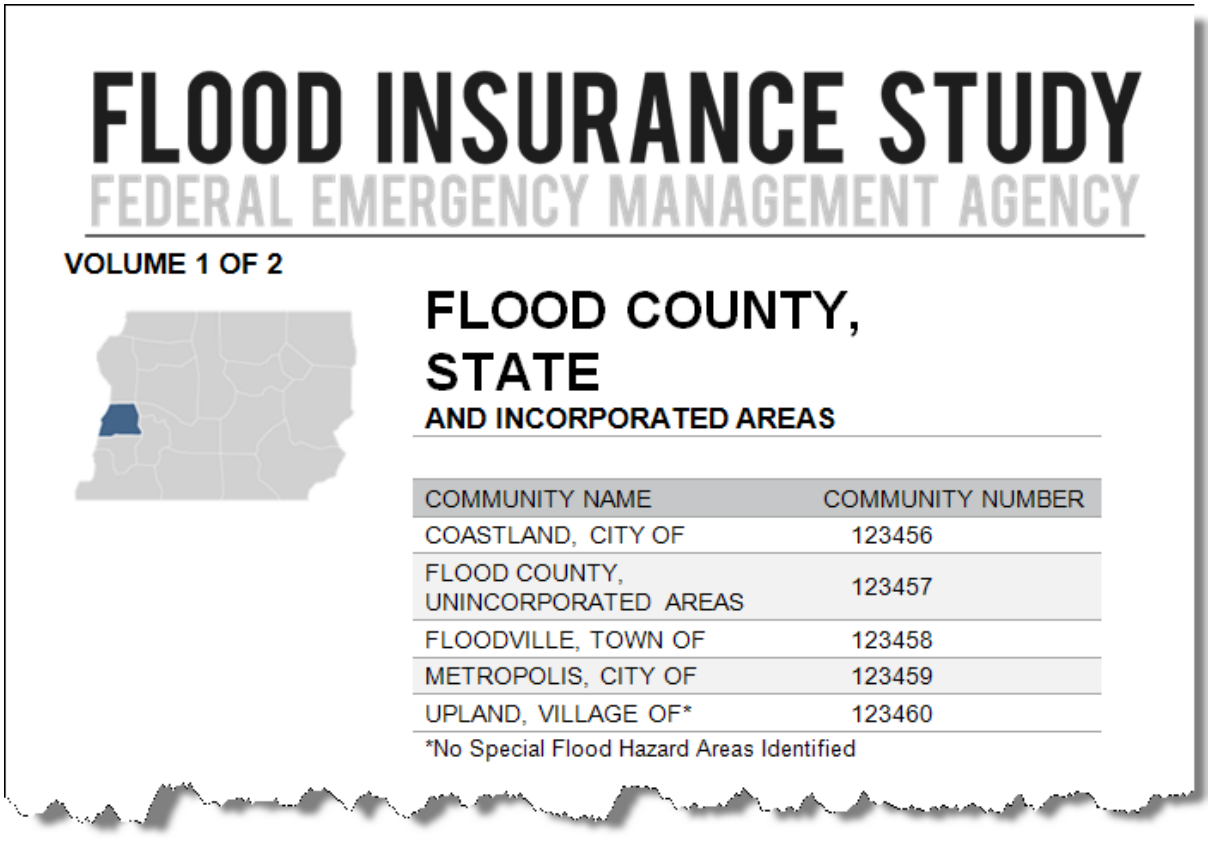


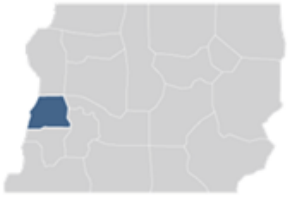
Figure 1: FIS Report Cover – Option 1 (Preferred)

For Option 1, community names and Community Identifiers (CIDs) are shown in Arial, 12 point. For Option 2, community names and CIDs are shown in Arial, 10 point.

FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 2



FLOOD COUNTY, STATE

AND INCORPORATED AREAS

COMMUNITY NAME	NUMBER	COMMUNITY NAME	NUMBER
COASTLAND, CITY OF	123456	WATER O, CITY OF	123475
FLOOD COUNTY, UNINCORPORATED AREAS	123457	WATER P, CITY OF	123476
FLOODVILLE, TOWN OF	123458	WATER Q, CITY OF	123477
METROPOLIS, CITY OF	123459	WATER R, CITY OF	123478
UPLAND, VILLAGE OF*	123460	WATER S, CITY OF	123479
WATER A, CITY OF	123461	WATER T, CITY OF	123480
WATER B, CITY OF	123462	WATER U, CITY OF	123481
WATER C, CITY OF	123463	WATER V, CITY OF	123482
WATER D, CITY OF	123464	WATER W, CITY OF	123483
WATER E, CITY OF	123465	WATER X, CITY OF	123484
WATER F, CITY OF	123466	WATER Y, CITY OF	123485
WATER G, CITY OF	123467	WATER Z, CITY OF	123486
WATER H, CITY OF	123468	WATER Z1, CITY OF	123487
WATER I, CITY OF	123469	WATER Z2, CITY OF	123488
WATER J, CITY OF	123470	WATER Z3, CITY OF	123489
WATER K, CITY OF	123471	WATER Z4, CITY OF	123490
WATER L, CITY OF	123472	WATER Z5, CITY OF	123491
WATER M, CITY OF	123473	WATER Z6, CITY OF	123492
WATER N, CITY OF	123474	WATER Z7, CITY OF	123493

*No Special Flood Hazard Areas Identified

Figure 2: FIS Report Cover – Option 2

Regardless of which cover format is used, the effective date and "VOLUME X of X" text on the cover should use Arial, 14 point, bold font. The FIS number is shown in Arial, 12 point, bold.

If all the community names do not fit in their entirety on the cover following the Option 2 format, the following two alternatives may be used, in order of preference:

1. Option 3A: Reduce the font size for the “COMMUNITY NAME” and “NUMBER” headings and for the community names and CIDs to Arial, 8 point font. If all the community names still do not fit on the cover, then
2. Option 3B: Do not list any communities on the cover, and instead include the following note on the cover referencing Table 1: Listing of National Flood Insurance Program (NFIP) Jurisdictions for the complete listing of communities. Figure 3 shows how this would look on the cover.

   “See Table 1: Listing of NFIP Jurisdictions for a complete listing of the communities represented in this Flood Insurance Study Report.”

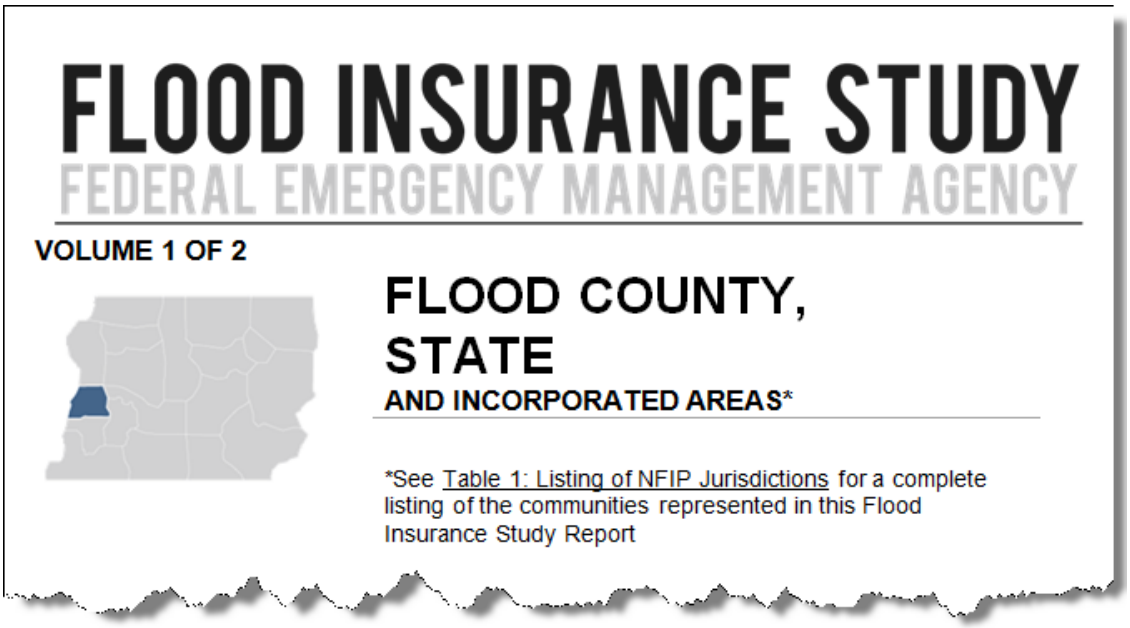


Figure 3: FIS Report Cover – Option 3B

4.0 Report Text

As outlined in the FIS Report Technical Reference and shown in the FIS Report Template, some sections contain **bold, blue** text to represent text that could be used if applicable, but that can be changed if not relevant to the Flood Risk Project. As an example, much of section 5.3 “Coastal Analyses” in the FIS Report Template is written this way. Since there are variations in how coastal studies are performed depending on the coast (Pacific, Atlantic, and Gulf of Mexico, or Great Lakes), it is appropriate that the text in this section be updated as necessary to communicate the specifics of the coastal analysis performed.

5.0 Table Guidance

The FIS Report Technical Reference should be referenced for table-specific information that must be followed in the preparation of the FIS Report. However, additional guidance for select tables is presented below.

5.1 Community Names

Community names appear as one of the columns in Tables 1, 2, 3, 8, 10, 22, 27, 28, 29, and 30. In these tables, it is preferred that community names be entered in the format of "Floodville, Town of" rather than "Town of Floodville." This should help the reader locate their community more quickly. However, regardless of which approach is used, the depiction of community names within the FIS Report tables should be consistent.

5.2 FIRM Panel Numbers

FIRM panel numbers appear as one of the columns in Tables 1, 8, and 26. In these tables, where more than one panel number must be entered in a cell, panel numbers can be separated by commas, semi-colons, or carriage returns. Whichever approach is selected should be applied consistently throughout the FIS Report.

5.3 Table 2: Flooding Sources Included in this FIS Report

The following guidance provides examples to help clarify how to populate this table, and the conditions that define when a unique record should be added to this table.

Table 2: Example of 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
Big Ocean	Coastland, City of; Flood County, Unincorporated Areas	Entire Coastline	Entire Coastline	N/A	16.3		N	VE, AE, AO	1989
Culvert Creek	Flood County, Unincorporated Areas	Confluence with Inundation River	2.3 miles upstream of confluence of Ripple Creek	99999998	0.7		N	AE	1997
Inundation River	Flood County, Unincorporated Areas; Metropolis, City of	Confluence with Big Ocean	Approximately 2,000 feet upstream of State Highway 999	99999998	12.5		Y	AE	2007
Inundation River	Flood County, Unincorporated Areas; Metropolis, City of	Approximately 2,000 feet upstream of State Highway 999	Confluence of North Fork Inundation River and South Fork Inundation River	99999998	3.8		N	A	1997
Lily Pond	Metropolis, City of	Pear Tree Circle	Westwood Lane	99999997		1.6	N	AE	2002
North Fork Inundation River	Coastland, City of; Flood County, Unincorporated Areas	Confluence with Inundation River	0.7 miles upstream of Lilac Stream	99999998	4.2		Y	AE	2010
South Fork Inundation River	Flood County, Unincorporated Areas	Confluence with Inundation River	3.2 miles upstream of confluence of Culvert Creek	99999998	3.8		Y	AE	2010
West River and Zone A Tributaries	Flood County, Unincorporated Areas	Confluence of West River with Inundation River	1 square mile drainage area of all Zone A streams	99999998	206.8		N	A	2010
Wood Branch and Zone A Tributaries	Flood County, Unincorporated Areas; Floodville, Town of	Confluence of Wood Branch with North Fork Inundation River	1 square mile drainage area of all Zone A streams	99999998	58.7		N	A	2009

Each record in FIS Report Table 2 reflects a unique engineering study performed on a certain date. Each flooding source should have its own entry in the table. The exception to this can be for Zone A streams. If more than 20 Zone A streams are included, consider listing only large named streams and combine other Zone A streams into one entry, assuming that entry reflects the same study date. “West River and Zone A Tributaries” and “Wood Branch and Zone A Tributaries” are examples of how multiple Zone A flooding sources within a watershed can be grouped together. Similarly, due to the nature of the engineering methodology by which shallow flooding or ponding areas are often identified on FIRMs, it may be appropriate to group these areas together as one or several entries in the table, so long as the total length/area columns reflect the engineering study in whole. Flexibility is allowed in determining the best way to communicate these types of studies in this table.

Flooding sources that have more than one study from which the mapping on the FIRM is based should be split accordingly into multiple entries. Figure 4 shows an example of this type of situation for Inundation River, which is mapped on the FIRM as both Zone A and AE, based on two separate studies performed. Note in the example for Table 2 above that rather than combine those details into one entry, Inundation River is separated into two entries in the table, to reflect the corresponding limits shown in Figure 4.

Figure 4: Example of Flooding Source Studied by Multiple Methods

Due to the nature of the topography, flooding situations, and/or study methodologies for certain flooding sources, it may be necessary to list multiple flood zones in the "Zone shown on FIRM" column for certain entries in the table. In the example in Figure 5, if (for whatever reason) the decision was made to map the Flood Creek study results in this area as both Zone AE and Zone AO, then the Flood Creek entry in Table 2 should report "AE, AO" in the "Zone shown on FIRM" column. However, if the AO Zone was determined and mapped based on a study separate from the Flood Creek analysis (such as from an interior drainage analysis, shallow flooding analysis, etc.), then that should be reported as its own entry in Table 2.

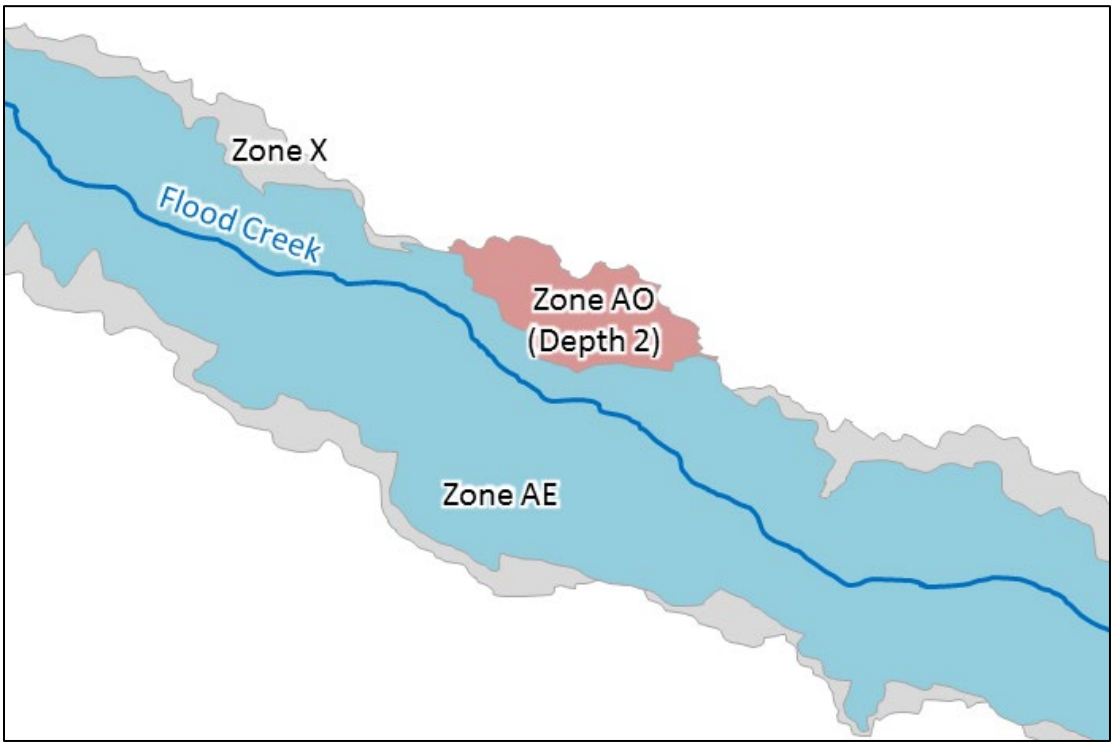


Figure 5: Example of Flooding Source with Multiple Mapped Zones on FIRM

For streams whose downstream limits terminate within the backwater of a larger stream, it is not necessary to determine the point at which the stream comes out of backwater as the "Downstream Limit" in this table. The downstream limit can be reported as "Confluence with…" in those cases.

5.4 Table 8: Levee Systems

For levee systems that have multiple owners or maintaining agencies, or if multiple levee segment sponsors, the "Levee Owner(s) / Sponsor(s)" field can be appended to display all entities. For example, if Floodville Waterworks was the levee owner, but the levee was maintained by Flood County Department of Public Works, the entry in the "Levee Owner(s) / Sponsor(s)" field might look something like the following:

Table 3: Example of FIS Report Table 8 – Levee Systems

Community	Flooding Source	NLD Levee System ID	NLD Levee System Name	Levee System Status on Effective FIRM	FIRM Panel(s)	Levee Owner(s) / Sponsor(s)
Floodville, Town of	Inundation River	1901990990	Floodville Levee System	Non-Accredited	12345C0245X	Floodville Waterworks (maintained by Flood County Dept. of Public Works)

When applying a levee seclusion zone to a study, levee systems that have not been demonstrated to meet the requirements of 44CFR 65.10 should be properly identified in this table.

FIS narrative text for Section 4.4 (corresponding to the information in this table) is provided in the FIS Report Template.

5.5 Table 9: Summary of Discharges

The Summary of Discharges table is primarily intended to report discharges for streams mapped as Zone AE on the FIRMs. It is, therefore, not required to be populated for Zone A streams. However, adding Zone A streams to this table is not a restriction. It may be desired to add discharge entries for larger Zone A streams within the Flood Risk Project.

Typically, seclusion mapping should not affect the discharges for the secluded flooding source and therefore no seclusion mapping notation would be needed for the Summary of Discharges Table. Please see the FIS Report Technical Reference for full details on applying Levee Seclusion to the "Summary of Discharges" table.

5.6 Table 11: Stream Gage Information used to Determine Discharges

The Stream Gage Information table provides information to assist in identifying and locating the referenced gage as well as the reported drainage area and period of record used for the gage discharge analysis. If historic peaks are used in the discharge analysis in combination with a systematic record, the historic peaks should be listed in a footnote to Table 11.

5.7 Table 12: Summary of Hydrologic and Hydraulic Analyses

Consider Table 12 as the additional engineering data to supplement the non-coastal flooding source entries in Table 2. As such, there should be a 1:1 match between the entries in Table 12 with the non-coastal flooding sources in Table 2. For example, if a stream was split into two entries in Table 2 to reflect the different study methodologies, then Table 12 should show the same two entries.

The following list provides recommendations for the type of information that could be included in the "Special Considerations" column of the table, depending on the specifics of the study.

- Unique methods for capturing hydraulic structure or stream channel dimensions in the engineering models

- Method used for obtaining starting water-surface elevations in the model
- Methods used for estimating channel and overbank roughness values (Manning's "n')
- Methods used to analyze and map levee systems
- Methods used to analyze ice jam effects
- Model calibration information
- Use of gage records for hydrologic analysis along with any unique considerations that may have been applied of that analysis
- Anything else that would help the reader more fully understand the hydrologic and/or hydraulic results for that particular flooding source

5.8 Table 13: Roughness Coefficients

As with Table 2, as opposed to listing each model-backed Zone A stream as its own entry in this table, it is acceptable to group Zone A streams together into one (or several) entries. In this case, the Channel and Overbank Manning's "n" values reported should be representative of the entire range of n-values used for all the listed streams.

5.9 Table 20: Stream-Based Vertical Datum Conversion

If the same vertical datum conversion factor was applied to multiple flooding sources within the Flood Risk Project, those flooding sources can be grouped together as one entry within Table 20. In this case, flooding source names can be separated by commas, semicolons, or carriage returns within the table cell.

5.10 Table 23: Floodway Data

As depicted below, one of the Floodway Data Table (FDT) examples shown in the FIS Report Technical Reference and FIS Report Template illustrates how asterisks can be used for cross-sections where a floodway was not computed or mapped.

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[2]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A[1]	12,930	*	*	*	11.4	11.4	*	*
B	13,165	25	98	4.5	12.2	12.2	13.2	1.0
C	13,315	47	210	2.1	12.8	12.8	13.5	0.7
D	13,835	71	279	1.6	12.9	12.9	13.7	0.8
E	14,345	29	85	4.7	14.1	14.1	14.4	0.3
F[1]	14,425	*	*	*	14.6	14.6	*	*
G[1]	14,695	*	*	*	15.5	15.5	*	*
H	14,985	53	144	2.8	16.2	16.2	16.3	0.1
I	15,785	28	98	2.2	17.2	17.2	17.4	0.2
J	16,465	22	80	2.7	18.4	18.4	19.3	0.9
K	17,965	19	69	3.2	19.8	19.8	20.3	0.5

Figure 6: Floodway Data Table Example for Cross-Sections with No Floodway

As a point of clarification, this does not mean that a FDT must be prepared for streams that have mapped cross-sections, but for which a floodway has not been computed or mapped at all (such as for some "limited detail" streams). Rather, for study reaches that have a mapped floodway, the use of asterisks is a way to identify the cross-sections where a floodway was not

modeled or mapped, for whatever reason. However, if a flooding source has a mapped floodway and mapped cross-sections on the FIRM, then it should have a FDT in the FIS Report.

The FIS Report Technical Reference also contains an example FDT for flooding sources containing cross-sections that are in areas controlled by coastal flooding processes and where the Base Flood Elevation (BFE) is the product of a coastal and riverine combined rate of occurrence analysis. Because a riverine cross section may traverse more than one coastal flood zone with differing static BFEs due to varying surge elevations or differences in wave action, it is often difficult to list a regulatory BFE in the FDT. Therefore, for cross sections that are located in a coastal floodplain, the regulatory water surface elevation is not populated, and a footnote is added indicating that the BFE at the cross section is controlled by coastal flooding and the user must refer to the FIRM for the regulatory BFE (e.g., "Controlled by coastal flooding—see Flood Insurance Rate Map for regulatory base flood elevation").

In areas where the BFE is based on the coastal and riverine combined rate of occurrence results, a footnote is added to the regulatory water surface elevation for the applicable cross sections indicating "Combined probability with coastal flooding from [coastal flooding source]." The example FDT in the FIS Report Technical Reference shows how these footnotes would be used.

The FIS Report Technical Reference also contains an example FDT for flooding sources affected by a levee system seclusion zone. In some circumstances, a seclusion boundary may cover a portion or all of a flooding source that was restudied and will be shown as such on the non-secluded portion of the FIRM. It is necessary to seclude information for these streams in this case. Additional information and notes must also be added to the FIS Report which are covered in the FIS Report Technical Reference, as well as the FIS Report Template.

Lastly, The FIS Report Technical Reference also contains example FDTs where a 2-D model, or hybrid 1-D, 2-D model was used to compute the floodway extents. For these analyses, cross section references are not available, or in the case of hybrid 1-D, 2-D models, may not span the entire width of the floodway. As a result, the information displayed on the FDT are referenced to evaluation lines set within the floodway extent. See the Floodway Analysis and Mapping Guidance document for additional information on evaluation lines. Footnotes are included in the FIS Report Technical Reference example FDTs to inform users that the data contained in the table is based off of 2-D model results.

5.11 Table 27: Community Map History

The following guidance provides examples to help clarify how to populate this table, and the specific situations represented by several of the entries in the table.

Table 4: Example of FIS Report 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)
Coastland, City of	02/15/1973	02/15/1973	10/10/1980 06/23/1975	09/28/1984	12/31/2011 07/23/2008 02/14/2005 09/02/1998
Flood County, Unincorporated Areas	11/01/1974	11/01/1974	09/06/1977	08/15/1984	12/31/2011 07/23/2008 10/26/2002 02/18/1998
Floodville, Town of	04/15/1975	04/15/1975	N/A	12/15/1984	07/23/2008 01/05/2003 05/26/1998
Metropolis, City of[1]	11/01/1974	11/01/1974	09/06/1977	08/15/1984	12/31/2011 07/23/2008 10/26/2002 02/18/1998
Upland, Village of[2, 3]	07/23/2008	N/A	N/A	07/23/2008	12/31/2011
Water, City of[3]	07/23/2008	N/A	N/A	07/23/2008	N/A

[1] Dates for this community were taken from Flood County, Unincorporated Areas
[2] No Special Flood Hazard Areas Identified
[3] This community did not have a FIRM prior to the first countywide FIRM for Flood County

In the example Community Map History table, 7/23/2008 is the date when the first countywide FIRMs were produced.

The City of Metropolis could be an example of a community that was newly incorporated from within another jurisdiction (normally the unincorporated areas of a county) or a community that has simply been using the unincorporated county FIRM without being formally recognized on the FIRM panel(s). In either case, the footnote shown for Metropolis should be used. If a community becomes flood-prone solely due to the annexation of flood-prone lands shown on a published FIRM, the same would apply.

Although the Village of Upland has no Special Flood Hazard Areas (SFHAs) identified, the example showing a FIRM revision date of 12/31/2011 reflects a situation where at least one of the FIRM panels upon which the Village of Upland is located has been updated, most likely due to a PMR that revised a flooding source outside the Village of Upland corporate limits.

The City of Water example reflects a community that never had a community-based Flood Hazard Boundary Map (FHBM) or FIRM. Its first time being shown on a map was when the countywide FIRMs were produced.

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

If a flooding source has more than one study from which the mapping on the FIRMs is based (such as Inundation River in the Table 2 example), then additional text may be added below the "Flooding Source" name to distinguish the studies from one another. The example below shows how this could be accomplished.

Table 5: Example of 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
Inundation River (Zone AE)	07/23/2008	State DNR	MAS-B-1234	March 2007	Flood County, Unincorporated Areas; Metropolis, City of
Inundation River (Zone A)	02/18/1998	ABC Engineers, Inc.	MAS-B-1234	March 1997	Flood County, Unincorporated Areas; Metropolis, City of

6.0 Figure Guidance

The FIS Report now includes the FIRM Index as Figure 1. The FIRM Notes to Users that were previously printed on the FIRM Index and individual panels are now included in the FIS Report as Figure 2. The Legend that was printed on individual FIRM panels is included as Figure 3. Refer to the FIRM Panel Technical Reference for Notes to Users and Legend elements that are still shown on the FIRM.

Figures should be the width of the preceding text block. If they need to be wider than the previous text block to be readable, or to be on their own page (such as for the FIRM Index, coastal transect map, etc.), section breaks can be inserted before and after the figure so that there is more room to display the figure. The orientation of pages that contain figures can only be portrait or landscape. Include centered page numbers at the bottom of figures in landscape orientation.

Captions are Arial, 11 point, bold; centered; with 12 point spacing before and 6 point spacing after. Text in figures should be at least the size of body text.

If a figure is not relevant to the study, the figure does not need to be included in the report. As outlined in the FIS Report Technical Reference, the figure heading number should remain in the report, but the figure itself can be replace by the words "Not Applicable to this Flood Risk Project".

6.1 FIRM Notes to Users

The FIS Report Technical Reference contains the list of required and potential notes that should be included as Figure 2 in the FIS Report, depending on the specifics of the Flood Risk Project. As shown in the Technical Reference and the FIS Report Template, notes that are shown in **bold navy** font should only be included if they are applicable to the Flood Risk Project. If necessary, these notes can be customized or modified slightly from how they are written in the

FIS Report Technical Reference, if doing so would improve the communication of information. However, it is expected that this will be the exception rather than the norm, and the study-specific notes can be used as-is for most Flood Risk Projects.

6.2 Flood Profiles

The FIS Report Technical Reference should be referenced for additional information regarding the flood profiles in the FIS Report. The Flood Profile Guidance document contains additional guidance regarding the creation and display of flood profile information for select flooding sources in the FIS Report.

The FIS Report Technical Reference also contains an example profile for flooding sources affected by a levee system seclusion zone. In some circumstances, a seclusion boundary may cover a portion or all of a flooding source that was restudied and will be shown as such on the non-secluded portion of the FIRM. It is necessary to seclude information for these streams in this case. Additional information and notes must also be added to the FIS Report which are covered in the FIS Report Technical Reference, as well as the FIS Report Template.

6.3 FIS Inserts for 2D modeling

If the water surface elevation is not adequately captured by the published BFEs and evaluation line elevations on the FIRM, an insert will be added to the FIS to better convey the results of 2D modeling. One option is the annotated grid, where water surface elevations are published at set locations throughout the modeled 2D area. The water surface elevation at an area of interest can be determined by measuring the distance from known landmarks.

The figure below provides an example of an annotated grid presented in place of a profile in the FIS Report. Currently other options to better define the water surface elevations and replace the flood profile requirement are being evaluated. The appropriate FIS grid insert and format should be discussed with community officials and the FEMA Project Officer.If a different option besides those defined here, The FEMA Project Officer must concur prior to development.

The page format of the FIS grid insert can be 11” x 17” format and an index can be included if more than one page is needed to capture entire 2D area.

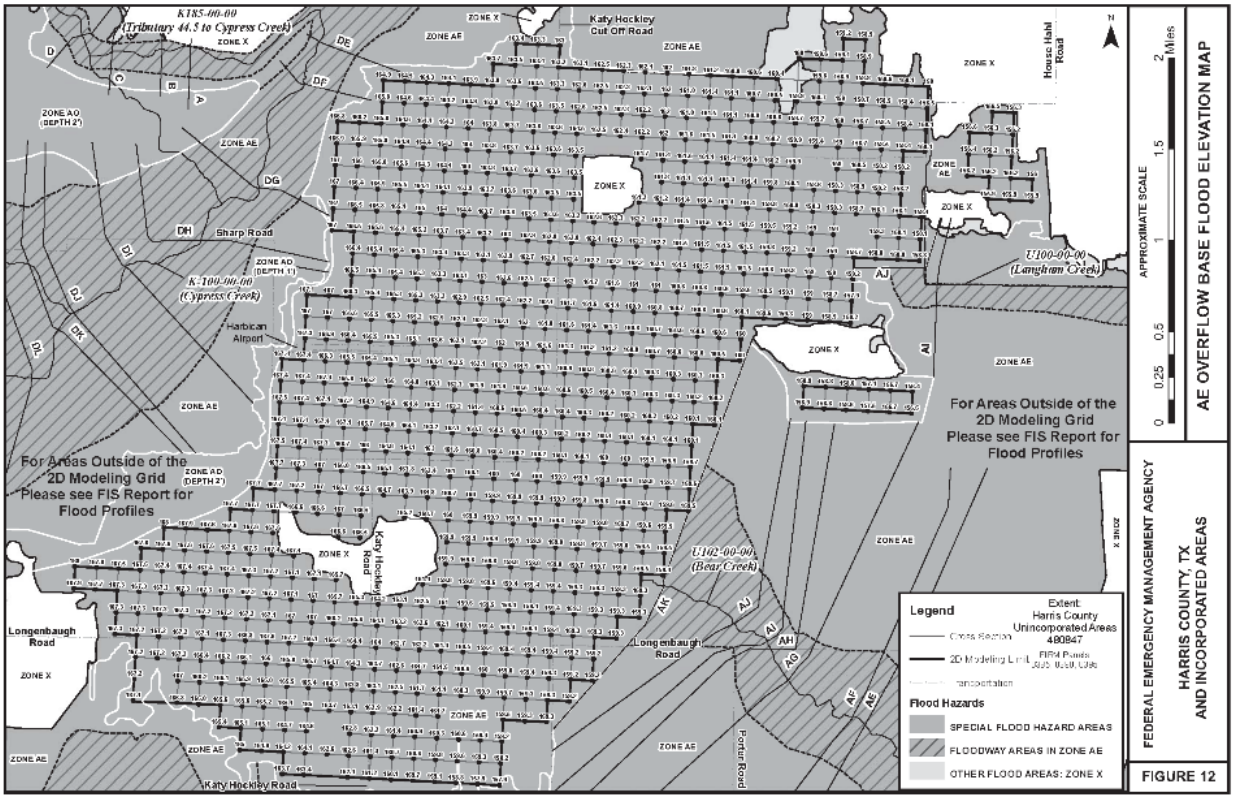


Figure 7: Annotated grid presented in place of profile in FIS report