Map MODERNIZATION

Federal Emergency Management Agency

FEMA's Flood Hazard Mapping Program

Guidelines and Specifications *for* Flood Hazard Mapping Partners

Appendix M: Guidance for Preparing and Maintaining Technical and Administrative Support Data

FEDERAL EMERGENCY MANAGEMENT AGENCY

www.fema.gov/fhm/dl_cgs.shtm

April 2003

Summary of Changes for Appendix M, Guidance for Preparing and Maintaining Technical and Administrative Support Data

The Summary of Changes below details changes to Appendix M that have been made subsequent to the initial publication of these *Guidelines* in February 2002. These changes represent new or updated guidance for Flood Hazard Mapping Partners**.**

Date	Affected Section(s)/ Subsection(s)	Description of Changes
April 2003	M.2.1	Referenced and added Figure M-1, a sample inventory that Mapping Partners may use for TSDN submittals, and added clarification for the length of time that submitting Mapping Partners must maintain duplicate copy of submitted data (3 years).
April 2003	M.2.1.1, M.2.2	Clarified requirements for submittal of various TSDN Indexes and inserted Indexes on page following first reference.
April 2003	M.2.1.2	Added paragraphs covering general TSDN requirements for coastal flooding analyses, shallow flooding analyses, ice-jam flooding analyses, and alluvial fan flooding analyses.
April 2003	M.2.1.3	Added Certification Compliance Form as Figure M-11.
April 2003	M.2.1.4	Clarified requirements for submittal of various TSDN Indexes and inserted Indexes on page following first reference.
April 2003	M.2.1.5	Clarified requirements for submittal of various TSDN Indexes and inserted Indexes on page following first reference.
April 2003	M.3.1.1	Clarified requirements for receiving Mapping Partner review of Engineering Analyses submitted in support of community-initiated map revision.
April 2003	M.3.1.4	Clarified requirements for receiving Mapping Partner review of Miscellaneous Reference Materials submitted in support of community-initiated map revision.

Appendix M

Guidance for Preparing and Maintaining Technical and Administrative Support Data

This Appendix describes the requirements that the Federal Emergency Management Agency (FEMA) and its Flood Hazard Mapping Partners must meet for preparing, submitting, and maintaining the technical and administrative support data generated for the Flood Hazard Mapping Program. Specifically, this Appendix covers the requirements for the Technical Support Data Notebook (TSDN).

The TSDN contains all of the support data for a community for which FEMA published a flood hazard map and revisions to that flood hazard map. The requirements in this Appendix apply to data produced by FEMA Flood Hazard Mapping Partners and submitted to FEMA.

M.1 Background **[February 2002]**

In May 1989, FEMA issued the first version of its *Guide for Preparing Technical Support Data Notebook*. A revised version of the Guide was published in January 1990. The Guide, when originally published, applied to FEMA-contracted studies and restudies and established procedures for the development and maintenance of the TSDN for each flood study prepared by FEMA's Study Contractors and Technical Evaluation Contractors.

Since that time, FEMA has expanded the requirement to include map revisions submitted by community officials under Part 65 of the National Flood Insurance Program (NFIP) regulations and to mapping activities completed by communities, regional agencies, and State agencies participating in the Cooperating Technical Partners (CTP) Program. (Interested Mapping Partners may obtain more information about the CTP Program from the FEMA Flood Hazard Mapping Website at http://www.fema.gov/fhm/ctp_main.shtm.)

This Appendix, which supersedes the January 1990 Guide, details the requirements that Mapping Partners must follow in preparing and submitting technical and administrative support data to FEMA in the TSDN format. This Appendix also details the requirements that FEMA and the Mapping Partners that are processing and managing the data shall meet in processing and managing the data in the TSDN format.

For special circumstances, where guidance for a particular Flood Map Project or map revision is not provided by these Guidelines, the Mapping Partner that is preparing and submitting the data and the Mapping Partner that is processing and maintaining the data for FEMA shall resolve issues through consultation with the FEMA Lead for the Flood Map Project or map revision. The FEMA Lead for most Flood Map Projects shall be the FEMA Regional Project Officer (RPO); however, the FEMA Lead for some Flood Map Projects shall be the Project Officer (PO) at FEMA Headquarters. For most map revisions, the PO at FEMA Headquarters will be the FEMA Lead.

M.2 Preparation and Submittal Requirements [April 2003]

M.2.1 FEMA-Contracted Flood Map Projects [April 2003]

For FEMA-contracted Flood Map Projects (including projects initiated under the CTP Program), the Mapping Partner that is preparing and submitting data (hereinafter referred to as the submitting Mapping Partner) shall organize deliverable materials in the TSDN format. The submitting Mapping Partner shall submit the deliverable materials to the Mapping Partner that processes and maintains the data (hereinafter referred to as the receiving Mapping Partner).

The TSDN is to be divided into five major sections, each encompassing a separate category of information typically generated by the submitting Mapping Partner during the course of a Flood Map Project. These major sections are:

1. General Documentation;
2. Engineering Analyses;
3. Draft Flood Insurance Study (FIS) Report;
4. Mapping Information; and
5. Miscellaneous Reference Materials.

The requirements for the five sections of the TSDN are outlined in Subsections M.2.1.1 through M.2.1.5, respectively.

Materials that cannot be physically included in the TSDN because of size or volume must be bound and clearly labeled and identified as exhibits to the TSDN.

When submitting data, the submitting Mapping Partner shall prepare a transmittal letter to accompany the TSDN for each FEMA-contracted Flood Map Project or Cooperating Technical Partners (CTP) Program Flood Map Project. The submitting Mapping Partner shall ensure that the transmittal letter identifies the communities that are affected by the Flood Map Project.

In the transmittal letter or as an attachment to the transmittal letter, the submitting Mapping Partner shall provide an inventory of the materials submitted. A detailed inventory form, such as the example provided as Figure M-1, will help reduce the review and processing time for the receiving Mapping Partner.

TSDN CATEGORY	DATA TYPE	DATA SUBMITTED
General Documentation	Special Problem Reports Index	
	Special Problem Reports	
	Contact Reports Index	
	Contact Reports	
	Meeting Minutes/Reports Index	
	Meeting Minutes/Reports	
	Correspondence with/from FEMA	
	Correspondence with/from Contractor	
	Other General Correspondence	
Engineering Analyses	Hydrologic Analyses Index	
	Summary Report of Hydrologic Analyses	
	Computer Models, Calculations, and Execution	
	Summary Report for Independent QA/QC	
	Hydraulic Analyses Index	
	Cross Section Information	
	Floodway Analyses	
	Key To Cross-Section Labeling	
	Computer Models, Calculations, and Execution	
	Cross-Section Plots	
	Computer Models, Calculations, and Execution	
	Summary Report for Independent QA/QC	
	Key To Transect Labeling	
	Transect and Surge Data	
	Wave Height Information	

Figure M-1. TSDN Inventory Form

TSDN CATEGORY	DATA TYPE	DATA SUBMITTED
Engineering Analyses (Cont'd)	Computer Models, Calculations, and Execution	
	Summary Report for Independent QA/QC	
	Shallow Flooding Models, Calculations, and	
	Summary Report for Independent QA/QC	
	Ice-Jam Flooding Models, Calculations, and	
	Summary Report for Independent QA/QC	
	Alluvial Fan Flooding Models, Calculations,	
	Summary Report for Independent QA/QC	
Draft FIS Report	FIS Report Narrative (Complete)	
	FIS Report Narrative (Revisions Summary)	
	Summary of Discharges Table	
	Floodway Data Table	
	Summary of Elevations Table	
	Transect Locations Table	
	Surge Elevations Table	
	Flood Profiles	
	Certification of Compliance for Work	
	Other Relevant Data	
Mapping Information	Mapping Information Index	
	Topographic Mapping (Hardcopy Version)	
	Topographic Mapping (Digital Version)	
	Summary Report for Independent QA/QC	
	Work Maps (Hardcopy Version)	
	Work Maps (Digital Version)	

Figure M-1. TSDN Inventory Form (Cont'd)

TSDN CATEGORY	DATA TYPE	DATA SUBMITTED
Mapping Information (Cont'd)	Work Map Delineation Summary	
	Preliminary DFIRM (Hardcopy Version)	
	CD-ROM with DFIRM Data	
	USGS Digital Orthophoto Quadrangle(s)	
	Soil and Vegetation Maps	
	USGS Topographic Quadrangle Maps	
	Flood Hazard Boundary Map	
	Community Maps	
	All Other Maps	
	DFIRM Database Data (Basic)	
	DFIRM Database Data (Enhanced)	
	Digital Data Submission Checklist	
	Narrative	
	Photogrammetric Survey Documentation	
	GPS Survey Documentation	
Miscellaneous Reference Materials	Field Survey Notes/Notebook	
	SCS/NRCS Flood Hazard Analyses Report(s)	
	USGS Floodplain Information Report(s)	
	USACE Feasibility Study Reports	
	Watershed Studies	
	Site Visit Photographs	
	Community Population and Demographic	
	Tax Base Reports	
	Legal References	
	(Other Relevant Materials)	

Figure M-1. TSDN Inventory Form (Cont'd)

The submitting Mapping Partner shall retain copies of all Project-related data for a period of 3 years. The submitting Partner will need these data for responding to the following:

- Questions from FEMA or the receiving Mapping Partner during the review of the final draft materials;
- Protests and appeals submitted to FEMA during the 90-day appeal period;
- Other concerns and issues that may develop during the processing of the revised Flood Insurance Study (FIS) report and Flood Insurance Rate Map (FIRM).

The submitting Mapping Partner also shall ensure that a clearly labeled cover appears on each TSDN volume submitted. (See sample cover in Figure M-2.)

For each section of the TSDN, the submitting Mapping Partner shall ensure all information is neatly recorded on the required index and annotated to indicate whether the product is one of several others and whether it pertains only to the appropriate community. The submitting Mapping Partner also shall ensure the materials submitted are complete and of original quality. If the submitting Mapping Partner submits hard copies of the indexes, the indexes must be completed in pen or dark pencil.

M.2.1.1 General Documentation [April 2003]

In the General Documentation section, the submitting Mapping Partner shall include all written documentation, filed in reverse chronological order that pertains to the general processing of the Flood Map Project. This section shall provide a comprehensive chronology of all Special Problem Reports (SPRs), contact reports (i.e., telephone conversation records), meeting minutes/reports, and general correspondence developed during the performance of the Flood Map Project. Additional information about each type of material is provided below.

Special Problem Reports

An SPR identifies any special problems or issues encountered by the submitting Mapping Partner during the performance of the Flood Map Project. The SPR is to include written documentation generated or received by the submitting Mapping Partner that pertains to specific problem identification and/or special processing requirements. The submitting Mapping Partner shall submit a summary of the SPR as shown in Figure M-3. The submitting Mapping Partner also shall submit the Special Problem Report Index (Figure M-4), which will include the date, title, and exhibit number for each SPR submitted to FEMA for the Flood Map Project.

[SWR1]

TECHNICAL SUPPORT DATA NOTEBOOK

For

_____

(COMMUNITY NAME AND STATE)

FLOOD INSURANCE STUDY/ MAP REVISION

SUBMITTED BY: _____

DATE SUBMITTED: _____

Figure M-2. Technical Support Data Notebook Cover

SPECIAL PROBLEM REPORT

DATE: _____

CONTRACT/ AGREEMENT NUMBER:

_____

COMMUNITY NAME: _____

SUBMITTED BY:_____

_____

PROBLEM AREA

TECHNICAL COORDINATION ☐

UNRESOLVED ☐

DISCRIPANCIES ☐

UNREALISTIC SCHEDULE ☐

OTHER ☐ _____

DETAILED EXPLANATION

_____

PROPOSED SOLUTION

Figure M-3. Special Problem Report Summary Form

SPECIAL PROBLEM REPORTS INDEX		
Community Name and State:		
Community ID No.		
Compiled By:		
Date TSDN Submitted:		
Report Date	**Report Title**	**Exhibit No.**
[SWR2]		

Figure M-4. Special Problem Reports Index

Contact Reports

Contact reports i include all written records or verbal communication regarding the Flood Map Project that have been documented by the submitting Mapping Partner. With this documentation, the submitting Mapping Partner shall submit a Contact Report Index sheet containing dates contacts were made, names of the individuals contacted, and the names of the government agencies or firms the contacts represent. (See Figure M-5.)

Meeting Minutes/Reports

Meeting minutes/reports include written summaries of discussions in meetings between the submitting Mapping Partner, FEMA, and other parties, including all agencies and firms contacted during the Project Scoping phase of the Flood Map Project. They typically include minutes of standard meetings, including the Project Scoping meeting and the initial and final community coordination meetings held by FEMA with each community affected by the Flood Map Project. With meeting minutes/records, the submitting Mapping Partner shall provide the Meeting Minutes/Reports Index, which contains the dates of the minutes/reports, meeting dates, and meeting types. (See Figure M-6.)

General Correspondence

General correspondence is the written correspondence generated or received by the submitting Mapping Partner concerning the Flood Map Project and may include letters; transmittals; memorandums; general status reports and queries; and internal communications, routing slips, and notes. Contractual documents, such as signed Statements of Work or Mapping Activity Statements, are not to be included in this section of the TSDN or anywhere else in the TSDN.

CONTACT REPORT INDEX		
Community Name and State:		
Community ID No.		
Compiled By:		
Date TSDN Submitted:		
Report Date	**Report Subject**	**Firm/Agency Contacted**
[SWR3]		

Figure M-5. Contact Report Index

MEETING MINUTES/REPORTS INDEX		
Community Name and State:		
Community ID No.		
Compiled By:		
Date TSDN Submitted:		
Minutes/Report Date	**Meeting Date**	**Meeting Type/Topic**
[SWR4]		

Figure M-6. Meeting Minutes/Reports Index

M.2.1.2 Engineering Analyses [April 2003]

This section of the TSDN is to include all coastal, riverine or other flood hazard engineering support data that were developed during the performance of the Flood Map Project. Such support data as cross-section and/or transect information, basin characteristics, hydrologic and hydraulic calculations, graphs, nomographs, profile and cross-section plots, and any other engineering support data would be included.

The submitting Mapping Partner shall ensure the following categories of data are included in this section of the TSDN as appropriate for each Flood Map Project:

- Riverine hydrologic and hydraulic analyses;
- Coastal flooding analyses;
- Shallow flooding analyses;
- Ice-jam flooding analyses;
- Alluvial fan flooding analyses;
- Key to Cross-Section Labeling; and
- Key to Transect Labeling.

The requirements for each category are provided below.

Riverine Hydrologic and Hydraulic Analyses

The purpose of this subsection of the TSDN is to provide FEMA with comprehensive documentation and supporting data for the riverine hydrologic and hydraulic (H&H) analyses performed by the submitting Mapping Partner. The submitting Mapping Partner shall ensure that the indexes and accompanying supporting data for the H&H analyses are included in this section of the TSDN and meet the following requirements:

- Data are arranged in alphabetical order according to the flooding source/stream name.
- Data are properly labeled to identify the submitting Mapping Partner and the name(s) of community(ies) and State.
- Information on the type of model used, date of analysis, and exhibit number(s) assigned to those analyses that cannot be physically included in the TSDN because of size or volume are included.

With the riverine H&H data, the submitting Mapping Partner shall provide a Hydrologic Analyses Index (Figure M-7) and a Hydraulic Analyses Index (Figure M-8) as appropriate for the Flood Map Project.

The submitting Mapping Partner shall ensure that the following general requirements are met:

- Hydrologic support data developed for the Flood Map Project are provided. Such data may include basin characteristics, normal depth calculations, log-Pearson Type III calculations, regional regression equation calculations, frequency-discharge curves, and other relevant data.

- Hydraulic support data and calculations for riverine flooding sources that were developed for the Flood Map Project are provided. Such data may include cross-section information (i.e., area, velocity, elevation calculations); floodway analyses; cross-section plots; computer models, calculations, and execution runs; and any other relevant data.

- The input files and results of the H&H analyses are delivered in both hardcopy (paper) and soft copy (electronic) format.

- If paper copies of the computer models used or generated for the Flood Map Project are too large to include in the TSDN, those copies are to be individually bound and labeled according to the community and flooding source to which they apply, properly identified by exhibit number, and listed on the appropriate index .

- Copies of computer models on diskette or CD-ROM are packaged in computer envelopes or binders, labeled properly, identified by exhibit number, and listed on the appropriate index .

The submitting Mapping Partner shall ensure that photographic or mapping information that may have been used in the development of the riverine H&H models are **not** included in this section. Such information shall be included in the "Mapping Information" section of the TSDN, which is discussed in Subsection M.2.1.4.

HYDROLOGIC ANALYSES INDEX				
Community Name:			**State:**	
Community ID No.				
Compiled By:				
Date TSDN Submitted:				
Flooding Source/ Stream Name	**Hydrologic Method/ModelUsed**	**Method/ Model Analysis Date**	**Exhibit No.**	
			Paper Copy	**Electronic Media**
[SWR5]				

Figure M-7. Hydrologic Analyses Index

HYDRAULIC ANALYSES INDEX				
Community Name:			**State:**	
Community ID No.				
Compiled By:				
Date TSDN Submitted:				
Flooding Source/ Stream Name	**Hydraulic Method/Model Used**	**Method/ Model Analysis Date**	**Exhibit No.**	
			Paper Copy	**Electronic Media**
[SWR6]				

Figure M-8. Hydraulic Analyses Index

Coastal Flooding Analyses

The purpose of this subsection of the TSDN is to provide FEMA with comprehensive documentation and supporting data for coastal flooding analyses performed by the submitting Mapping Partner for the Flood Map Project. The submitting Mapping Partner shall ensure that supporting data meet the following requirements:

- Data are arranged in alphabetical order according to the flooding source.
- Data are properly labeled to identify the submitting Mapping Partner and the name(s) of community(ies) and State.
- Information on the type of model used, date of analysis, and exhibit number(s) assigned to those analyses that cannot be physically included in the TSDN because of size or volume are included.

The submitting Mapping Partner shall consult Appendix D of these Guidelines for comprehensive information on the data that must be submitted. However, the submitting Mapping Partner shall, at a minimum, ensure that the following general requirements are met:

- Hydrologic support data developed for the Flood Map Project are provided.
- Hydraulic support data and calculations (e.g., transect and surge data, wave height information) for coastal flooding sources that were developed for the Flood Map Project are provided.
- The input files for the computer programs and results of the analyses are delivered in both hard copy (paper) and soft copy (electronic) format.
- If paper copies of the computer models used or generated for the Flood Map Project are too large to include in the TSDN, those copies are to be individually bound and labeled according to the community and flooding source to which they apply, properly identified by exhibit number, and listed on the index sheet.
- Copies of computer models on diskette or CD-ROM are packaged in computer envelopes or binders, labeled properly, identified by exhibit number, and listed on the index sheet.

The submitting Mapping Partner shall ensure that photographic or mapping information that may have been used in the development of the models are **not** included in this section. Such information shall be included in the "Mapping Information" section of the TSDN, which is discussed in Subsection M.2.1.4.

Shallow Flooding Analyses

The purpose of this subsection of the TSDN is to provide FEMA with comprehensive documentation and supporting data for shallow flooding analyses performed by the submitting Mapping Partner for the Flood Map Project. The submitting Mapping Partner shall ensure that supporting data meet the following requirements:

- Data are arranged in alphabetical order according to the flooding source.
- Data are properly labeled to identify the submitting Mapping Partner and the name(s) of community(ies) and State.
- Information on the type of model used, date of analysis, and exhibit number(s) assigned to those analyses that cannot be physically included in the TSDN because of size or volume are included.

The submitting Mapping Partner shall consult Appendix E of these Guidelines for comprehensive information on the data that must be submitted. However, the submitting Mapping Partner shall, at a minimum, ensure that the following general requirements are met:

- Hydrologic support data developed for the Flood Map Project are provided.
- Hydraulic support data and calculations (including hand calculations) that were developed for the Flood Map Project are provided.
- The input files for the computer programs and results of the analyses are delivered in both hard copy (paper) and soft copy (electronic) format.
- If paper copies of the computer models used or generated for the Flood Map Project are too large to include in the TSDN, those copies are to be individually bound and labeled according to the community and flooding source to which they apply, properly identified by exhibit number, and listed on the index sheet.
- Copies of computer models on diskette or CD-ROM are packaged in computer envelopes or binders, labeled properly, identified by exhibit number, and listed on the index sheet.

The submitting Mapping Partner shall ensure that photographic or mapping information that may have been used are **not** included in this section. Such information shall be included in the "Mapping Information" section of the TSDN, which is discussed in Subsection M.2.1.4.

Ice-Jam Flooding Analyses

The purpose of this subsection of the TSDN is to provide FEMA with comprehensive documentation and supporting data for ice-jam flooding analyses performed by the submitting Mapping Partner for the Flood Map Project. The submitting Mapping Partner shall ensure that supporting data meet the following requirements:

- Data are arranged in alphabetical order according to the flooding source.
- Data are properly labeled to identify the submitting Mapping Partner and the name(s) of community(ies) and State.
- Information on the type of model used, date of analysis, and exhibit number(s) assigned to those analyses that cannot be physically included in the TSDN because of size or volume are included.

The submitting Mapping Partner shall consult Appendix F of these Guidelines for comprehensive information on the data that must be submitted. However, the submitting Mapping Partner shall, at a minimum, ensure that the following general requirements are met:

- Hydrologic support data developed for the Flood Map Project are provided.
- Hydraulic support data and calculations that were developed for the Flood Map Project are provided.
- The input files for the computer programs and results of the analyses are delivered in both hard copy (paper) and soft copy (electronic) format.
- If paper copies of the computer models used or generated for the Flood Map Project are too large to include in the TSDN, those copies are to be individually bound and labeled according to the community and flooding source to which they apply, properly identified by exhibit number, and listed on the index sheet.
- Copies of computer models on diskette or CD-ROM are packaged in computer envelopes or binders, labeled properly, identified by exhibit number, and listed on the index sheet.

The submitting Mapping Partner shall ensure that photographic or mapping information that may have been used are **not** included in this section. Such information shall be included in the "Mapping Information" section of the TSDN, which is discussed in Subsection M.2.1.4.

Alluvial Fan Flooding Analyses

The purpose of this subsection of the TSDN is to provide FEMA with comprehensive documentation and supporting data for alluvial fan flooding analyses performed by the submitting Mapping Partner for the Flood Map Project. The submitting Mapping Partner shall ensure that supporting data meet the following requirements:

- Data are arranged in alphabetical order according to the flooding source.
- Data are properly labeled to identify the submitting Mapping Partner and the name(s) of community(ies) and State.
- Information on the type of model used, date of analysis, and exhibit number(s) assigned to those analyses that cannot be physically included in the TSDN because of size or volume are included.

The submitting Mapping Partner shall consult Appendix G of these Guidelines for comprehensive information on the data that must be submitted. However, the submitting Mapping Partner shall, at a minimum, ensure that the following general requirements are met:

- Hydrologic support data developed for the Flood Map Project are provided.
- Hydraulic support data and calculations that were developed for the Flood Map Project are provided.
- The input files for the computer programs and results of the analyses are delivered in both hard copy (paper) and soft copy (electronic) format.
- If paper copies of the computer models used or generated for the Flood Map Project are too large to include in the TSDN, those copies are to be individually bound and labeled according to the community and flooding source to which they apply, properly identified by exhibit number, and listed on the index sheet.
- Copies of computer models on diskette or CD-ROM are packaged in computer envelopes or binders, labeled properly, identified by exhibit number, and listed on the index sheet.

The submitting Mapping Partner shall ensure that photographic or mapping information that may have been used are **not** included in this section. Such information shall be included in the "Mapping Information" section of the TSDN, which is discussed in Subsection M.2.1.4.

Key to Cross-Section Labeling and Key to Transect Labeling

The purpose of this subsection of the TSDN is to provide FEMA with comprehensive cross-referencing between field survey notes, draft report and map materials, riverine hydraulic analyses, coastal flooding analyses, and (if readily available) U.S. Environmental Protection Agency (EPA) Reach File Numbers.

For each riverine flooding source where a hydraulic analysis was performed, the submitting Mapping Partner shall complete and maintain a Key to Cross-Section Labeling. (See Figure M-9.) For each coastal flooding source where a hydraulic analysis was performed, the submitting Mapping Partner shall complete and maintain a Key to Transect Labeling. (See Figure M-10.) In each Key, the Mapping Partner shall identify the cross-section and transect information developed.

M.2.1.3 Draft Flood Insurance Study Report [February 2002]

The submitting Mapping Partner shall ensure that the "Draft FIS Report" section of the TSDN contains all relevant components for FEMA's technical review, processing, and publication of the FIS report, including the following:

- FIS report text;
- Required tables (e.g., Summary of Discharges, Summary of Stillwater Elevations, Transect Locations, Surge Elevations, Floodway Data Tables), which may vary depending on the Flood Map Project;
- Flood Profiles, if appropriate;
- Transect Location Map, if appropriate;
- Certification of compliance for work completed (Figure M-11); and
- Other relevant text, tabular, and graphic materials.

The exact requirements for the FIS report will be established during the Project Scoping stage of the Flood Map Project and will be documented in the SOW or MAS.

KEY TO CROSS-SECTION LABELING		
Community Name:		State:
Community ID No.		
Compiled By:		
Date TSDN Submitted:		
Prepared By:		
Flooding Source:		
Run Date:		
Field Survey Section No.	**Cross-Section Letter in FIS Report**	**Computer Stationing**
[SWR7]		

Figure M-9. Key To Cross-Section Labeling

KEY TO TRANSECT LABELING			
Community Name:			
Community ID No.			
Compiled By:			
Date TSDN Submitted:			
Prepared By:			
Flooding Source:			
Run Date:			
Reviewed By:			
Date Reviewed:			
WHAFIS Version:			
Field Survey Transect No.	**Transect No. in Draft FIS Report**	**EPA Reach Field No.**	**Transect No. in Final FIS Report**
[SWR8]			

Figure M-10. Key To Transect Labeling

CERTIFICATION OF COMPLIANCE	
Project Name:	
Statement of Work No.:	
Interagency Agreement No.:	
CTP Agreement No.:	
Statement/Agreement Date:	
Certification Date:	

	Tasks/Activities Covered by This Certification (Check All That Apply)
❑	**Entire Project**
❑	**Topographic Data Development**
❑	**Hydrologic Analyses**
❑	**Hydraulic Analyses**
❑	**Coastal Flood Hazard Analyses**
❑	**Floodplain Mapping**
❑	**Other (Specify):**

This is to certify that the work summarized above was completed in accordance with the statement/agreement cited above and all amendments thereto, together with all such modifications, either written or oral, as the Regional Project Officer and/or Assistance Officer or their representative have directed, as such modifications affect the statement/agreement, and that all such work has been accomplished in accordance with the provisions contained in *Guidelines and Specifications for Flood Hazard Mapping Partners* cited in the contract document, and in accordance with sound and accepted engineering practices within the contract provisions for respective phases of the work.

Name:
Title:
Firm/Agency Represented:
Registration No.:
Signature:

This form must be signed by a representative of the firm contracted to perform the work who is registered as a Professional Engineer or by the responsible official of a government agency.

Figure M-11. Certification of Compliance Form

M.2.1.4 Mapping Information [April 2003]

The submitting Mapping Partner shall ensure that all mapping and related information generated for the Flood Map Project is provided to FEMA in the "Mapping Information" section of the TSDN. The following information is to be included:

- Topographic maps;
- Work maps;
- Base maps;
- Aerial photographs;
- Soil and vegetation maps;
- U.S. Geological Survey topographic quadrangle maps;
- Flood Hazard Boundary Maps;
- Community maps; and
- All other maps (manual and digital).

In preparing the TSDN for submittal to FEMA, the submitting Mapping Partner shall:

- Ensure that all information is properly labeled with the correct Mapping Partner name, submittal date, and community name. This information must include the type of map, the date of the map, the number of map sheets, and the exhibit numbers assigned to those maps that cannot be included in the TSDN because of size limitations.
- List all supplemental materials, such as topographic maps and aerial photographs, with a concise explanation of how the final work maps were delineated.
- Ensure mapping information is included within the TSDN binder or bound and labeled separately and identified by exhibit number.
- Ensure that all digital data submitted meet the requirements outlined in Appendix L for data format, structure, delivery media, and documentation.
- Prepare and complete the Mapping Information Index. (See Figure M-12.) The Mapping Information Index sheet(s) will assist data users in identifying the mapping data and information generated during the Flood Map Project. These index sheets also will be used to reference the map data that are not be physically located within the TSDN itself.
- Identify and label as an exhibit all map data that, due to format, size, or other limitations, cannot be physically located within the TSDN.

MAPPING INFORMATION INDEX							
Community Name:				**State:**			
Community ID No.							
Compiled By:							
Date TSDN Submitted:							
Type/Purpose of Map	**Date**	**Paper Copy**		**Electronic Media**			
		No. of Sheets	**Exhibit No.**	**File Type**	**File Name**	**Projection**	**Exhibit No.**
[SWR9]							

Figure M-12. Mapping Information Index

- Write a brief narrative, using the form shown in Figure M-13, to explain any additional procedure used to create the final work maps (e.g., whether field inspection or spot surveying was done to enhance the accuracy of the final work maps).

- List all supplemental materials (e.g., topographic maps, aerial photographs) with an accompanying explanation of how those materials relate to the work maps.

If photogrammetric processes were used, FEMA may request that the submitting Mapping Partner provide the following in the Mapping Information section of the TSDN:

- Documentation for the most recent calibration of the aerial camera and stereoplotter(s);

- Details on the flying height and camera focal length;

- Estimated "C Factor(s)" of the stereoplotter(s) used on the project; and

- Aerial triangulation reports, which are described in Appendix A, Subsection A.7.2 of these Guidelines.

If Global Positioning System (GPS) surveys were performed as part of the Flood Map Project, the submitting Mapping Partner shall provide the GPS documentation described in Appendix A of these Guidelines. This includes data categorized by the National Oceanic and Atmospheric Administration as follows:

- B-file—Project information, station position information, survey measurements, occupation notes, and synchronization information;

- D-file—Station descriptions and/or recovery notes for all new and/or newly occupied stations;

- G-file—Differential coordinates, standard errors, correlations, and related information required for a least-squares adjustment of a GPS field project; and

- R-file—Files created by the GPS receiver that contain the phase data of each satellite observed and any other files created by the receiver that are necessary during processing.

WORK MAP DELINEATION SUMMARY	
Community Name and State:	
Community ID No.	
Compiled By:	
Date TSDN Submitted:	
Work Map Scale:	
Work Map Contour Interval:	
Work Map Projection and Horizontal Datum:	
Work Map File Name:	
Work Map File Type:	
Work Map File Media:	
General Comments on Work Map	

Figure M-13. Work Map Delineation Summary

M.2.1.5 Miscellaneous Reference Materials [April 2003]

The submitting Mapping Partner shall include all other support materials developed or used during the Flood Map Project in the "Miscellaneous Reference Materials" section of the TSDN. The submitting Mapping Partner shall compile an inventory of all essential and nonessential materials for the Flood Map Project and shall list these materials on the Miscellaneous Reference Materials Index. (See Figure M-14.) The submitting Mapping Partner shall submit the completed Miscellaneous Reference Materials Index with the TSDN.

The submitting Mapping Partner shall include such reference materials as field survey notes and notebook, watershed studies, site visit photographs, community population and demographic studies, tax base reports, and legal references in this section.

M.2.2 Data Generated by Receiving Mapping Partner [February 2002]

There are two instances in which the receiving Mapping Partner must physically incorporate materials in the TSDN prepared by the submitting Mapping Partner. First, the receiving Mapping Partner shall complete the appropriate portion of the Key to Cross-Section Labeling and/or Key to Transect Labeling sheets contained in the TSDN.

Second, during the processing of the draft and final report and map materials, FEMA may direct the receiving Mapping Partner to revise some of the technical support data included in the TSDN to correct discrepancies or errors in the original data supplied by the submitting Mapping Partner. In such cases, the receiving Mapping Partner shall mark the data determined to be in error as "VOID." The receiving Mapping Partner also shall remove the void data from the TSDN and insert the revised data.

When adding revised data to the TSDN, the receiving Mapping Partner shall properly label and place the data in the correct section. The receiving Mapping Partner shall maintain the void data until processing of the report and map has been completed (i.e., when the new or revised FIS report and FIRM become effective); at that time, the receiving Mapping Partner shall discard the void data.

MISCELLANEOUS REFERENCE MATERIALS INDEX		
Community Name:		
Community ID No.		
Compiled By:		
Date TSDN Submitted:		
Item Date	**Item Description**	**Exhibit No.**
[SWR10]		

Figure M-14. Miscellaneous Reference Materials Index

M.2.3 Community-Initiated Map Revisions **[February 2002]**

For map revisions initiated by community officials under Part 65 of the NFIP regulations, FEMA does not require the submitting Mapping Partner (i.e., the community or other revision requester) to submit supporting data in the TSDN format. However, FEMA strongly encourages the use of the TSDN format to ensure all supporting data are submitted and clearly labeled for future reference.

To support a Map Revision under Part 65 of the NFIP regulations, the submitting Mapping Partner shall submit the following materials:

- Correspondence from the requester, the community, and, where applicable, the State, or other interested parties;
- Technical support data, such as calculations, graphs, charts, technical reports, diskettes, and computer printouts containing both input and detailed output for hydrologic and/or hydraulic analyses;
- Project location;
- Topographic, survey, and tax mapping information;
- Aerial photographs;
- Design drawings; and
- Annotated copies of effective NFIP maps; Flood Profiles; and tables (e.g., Summary of Discharges, Summary of Stillwater Elevations, Floodway Data, Transect Locations).

In most cases, the submitting Mapping Partner for a map revision request shall follow the same organizational and reproducible quality standards discussed in Subsection M.2.1 for FEMA-contracted Flood Map Projects. Specifically, whenever possible, the receiving Mapping Partner (i.e., the Mapping Partner assigned to review and process the map revision request for FEMA) shall provide guidance to the submitting Mapping Partner. This guidance, either by issuing written directions or through telephone conversations, shall clarify proper labeling and data identification requirements, as well as requirements concerning the legibility of materials that must be reproduced.

To the extent possible, the receiving Mapping Partner shall review all submitted support data for compliance with FEMA requirements for the identification, labeling, completeness, and quality of the data.

M.3 Processing and Maintenance Requirements [April 2003]

M.3.1 FEMA-Contracted Flood Map Projects [February 2002]

After receiving the draft submittal and TSDN from the submitting Mapping Partner, the receiving Mapping Partner shall perform a cursory review of the TSDN. The purpose of this cursory review is to ensure that all sections are complete and that all data are labeled in a neat, clear, and organized manner in accordance with the guidance in Section M.2.

The receiving Mapping Partner shall ensure that a completed index form is included for each section of the TSDN. If any information is missing, mislabeled, or not labeled, the receiving Mapping Partner shall contact the submitting Mapping Partner for clarification. If the receiving Mapping Partner determines during the initial review that the TSDN does not conform to the guidelines in Section M.2, the receiving Mapping Partner shall consult with the FEMA Lead (either the RPO or PO) to determine which Mapping Partner must revise the TSDN submittal to bring it into compliance with FEMA requirements.

When data are common to more than one community, the TSDN for each community must contain a complete copy of the shared data, or the location of the data must be cross-referenced to a form for each section and subsection of the TSDN. To maintain the integrity of the original TSDN submittal, the receiving Mapping Partner shall make copies of any data needed during the review of the draft materials and production of the Preliminary FIRM and FIS report. The receiving Mapping Partner shall maintain the original data in the TSDN for eventual digital storage.

Additional guidance regarding the individual sections of the TSDN is provided in Subsections F.3.1.1 through F.3.1.4.

M.3.1.1 Engineering Analyses [April 2003]

The receiving Mapping Partner shall verify that both paper copies and digital copies of computer models on diskette or CD-ROM are maintained with the TSDN. The receiving Mapping Partner shall store the electronic media to ensure their integrity and that they are readily accessible for retrieval and use in responding to both internal and external information requests.

The receiving Mapping Partner shall perform a cursory review to verify the following:

- The Key to Cross-Section Labeling and/or Key to Transect Labeling include comprehensive cross referencing among the field survey notes; draft report and map materials; hydraulic computer analysis; and, if readily available, EPA Reach File Numbers.
- The Key to Cross-Section Labeling and/or Key to Transect Labeling are complete.

- The information in each Key to Cross-Section Labeling and/or Key to Transect Labeling pertains to only one flooding source.
- The information in each Key to Cross-Section Labeling and Key to Transect Labeling is presented in order from the mouth or point farthest downstream to the point farthest upstream.
- The materials in this section pertain only to the Flood Map Project.
- All materials in this section are legible; properly labeled; easily identified by Flood Map Project and community; and complete.

M.3.1.2 Flood Insurance Study Report Data [February 2002]

The receiving Mapping Partner shall review the "FIS Report Data" section of the TSDN provided by the Mapping Partner to ensure the following:

- The draft FIS report section contains all relevant components prepared by the submitting Mapping Partner, including draft text, Flood Profiles, data tables, and certification statement of work accomplished.
- This section includes only the most up-to-date record copies of the draft FIS report.
- The draft materials in this section pertain only to the appropriate community.
- All materials in this section are legible; properly labeled; easily identified by community; complete; and of original, reproducible quality.

M.3.1.3 Mapping Information [February 2002]

The receiving Mapping Partner shall review the "Mapping Information" section of the TSDN provided by the Mapping Partner to ensure the following:

- The section includes comprehensive mapping information relating to the processing of the Flood Map Project.
- The digital data included meet the requirements in Appendices K and L of these Guidelines.
- All materials in this section are legible; properly labeled; easily identified by Flood Map Project, community, and flooding source; complete; and of original, reproducible quality.

M.3.1.4 Miscellaneous Reference Materials [April 2003]

The receiving Mapping Partner shall verify that all materials included in this section of the TSDN are properly labeled and exhibit number(s) are assigned to those materials that cannot be included in the TSDN because of size or volume. The receiving Mapping Partner also shall verify that the materials included are legible; easily identified by Flood Map Project, community, and flooding source; and of original, reproducible quality.

M.3.2 Community-Initiated Map Revisions [February 2002]

As an integral part of the overall process for supporting map revisions initiated by community officials under Part 65 of the NFIP regulations, the receiving Mapping Partner reviews technical, scientific, and other administrative support data prepared and submitted by a revision requester. The review typically consists of, but is not limited to, ensuring that all support data received are complete, technically adequate, in compliance with FEMA-specified guidelines and specifications and NFIP regulations, and sufficient to support a given map revision request. Most technical support data generated by the revision requester are subject to the same engineering and mapping standards outlined for FEMA-contracted Flood Map Projects discussed in Section M.2.

When processing map revision cases, the receiving Mapping Partner generally develops support data during the review and evaluation of the revision request—including internal review information and correspondence with the requester, State agencies, FEMA, community officials, or other agencies—that must be archived and maintained. The remaining information generated by the receiving Mapping Partner pertains to the appeal period and/or related statutory requirements for the establishment or modification of Base Flood Elevations, as applicable.

For purposes of this Appendix, two separate phases of processing, wherein uniform guidelines and specifications are necessary for map revisions, have been identified:

- The **Review Processing Phase** includes activities of the receiving Mapping Partner associated with the initial identification, coordination, and technical review of a map revision case up to the resolution of that case.

- The **Post-Review Processing Phase** relates to those activities performed by the receiving Mapping Partner, after the case has been resolved, to close out the file and prepare the supporting information for active storage and eventual processing by the Engineering Study Data Package Facility (ESDPF) staff.

The Review Processing and Post-Review Processing Phases are discussed in more detail in Subsections M.3.2.1 and M.3.2.2, respectively.

M.3.2.1 Review Processing Phase [February 2002]

The receiving Mapping Partner shall, to the extent possible, provide initial guidance to the submitting Mapping Partner regarding the preparation and submittal of technical support data for a map revision request. If the receiving Mapping Partner and submitting Mapping Partner discuss a request before data are submitted, the receiving Mapping Partner shall provide overall guidance concerning the submittal quality of the support data to facilitate eventual digital conversion of the data for permanent retention. The submitting Mapping Partner is required to submit only the essential or relevant data that fully support the FEMA requirements for proper evaluation of the map revision request. Once support data are received, the receiving Mapping Partner reviews the revision request and develops revision case files under the procedures outlined below.

Generally, the support data submitted by the submitting Mapping Partner and the data generated by the receiving Mapping Partner shall contain "essential data" and "nonessential data." These terms are defined below.

- **Essential data** are the support data that are critical to understanding or recreating conditions that resulted in a map revision or other resolution of the map revision request, which therefore must be maintained by FEMA.

- **Nonessential data** are data generated as part of the internal production process or for general, informational purposes only. Nonessential data are usually needed for temporary storage only (i.e., throughout the review and production process) and can be discarded once the case has been resolved or during the Post-Review Processing Phase.

The receiving Mapping Partner shall use judgment in determining what data are considered essential or nonessential. Because of the nature of map revision cases, specific guidance concerning the essential versus nonessential character of individual pieces of supporting information is not possible.

The guidance given in the following paragraphs are for "typical" map revision cases and shall not be construed as inflexible. However, the receiving Mapping Partner also shall refrain from retaining materials that are clearly not critical to understanding or recreating conditions that pertain to the resolution of a map revision case. Essential revision support materials include:

- All official correspondence, including resolution letters (e.g., Letters of Map Revision, denial letters) and enclosures transmitted with those letters;
- All materials stored in the Flood Elevation Determination Docket (FEDD);
- H&H models, calculations or computer printouts;
- Data tables;
- Technical reports; and
- Topographic maps, work maps, tax maps, survey plats, and aerial photographs (all sizes and formats).

For the revision case files, except for the FEDD file information, the receiving Mapping Partner shall do the following:

- Ensure revision case file materials have a maximum size of 11 inches by 17 inches.
- Separate materials that are larger than 11 inches by 17 inches and physically maintain those materials outside the revision case file.
- File essential data that are 11 inches by 17 inches or smaller as part of the revision case file, unless the data in question are in the form of a voluminous report.
- Prepare a cross-referenced listing of the essential data not included in the revision case file so that these data can be readily identified as part of the revision package. and maintain the listing within the revision case file.
- Ensure the contents of the revision case file are legible (printed, typed, or handwritten in dark ink or pencil) and of original copy quality for future digital conversion.
- Ensure the revision case file properly identifies the community name, requester name, and the date when data were prepared.
- Ensure the revision case file is in good whole condition without tears or missing segments.

The nonessential materials generally consist of the following:

- Large blueline prints of mapping information (Preliminary or Revised Preliminary copies of maps);
- Duplicate data;
- Extraneous reports or unrelated support data;
- Void or superseded data;
- Internal memorandums, transmittals, and other internal processing information.

Although these types of data must be maintained throughout the Review Processing Phase of a revision, they are not critical in recreating the results for the final revision determination and, therefore, would not be considered for digital conversion by FEMA at a future date.

Standard-Size Revision Case File Items

For purposes of these Guidelines, the term "standard-size revision case file" refers to any file that consists of a legal- or letter-sized manila folder containing original general correspondence, mapping information, technical information, or data (excluding computer printouts for hydrologic and hydraulic models, and information stored as part of the FEDD file) that are no larger than 11 inches by 17 inches. The receiving Mapping Partner shall file all documents, reports, mapping information, or other support data (including hydrologic and hydraulic computer printouts) larger than 11 inches by 17 inches separately, and shall include a listing of

those oversized in the standard-size case file. The receiving Mapping Partner shall maintain the FEDD file, as applicable, as a separate entity. Like the case file, the materials in the FEDD file must be complete, concise (to the extent possible), and in reverse chronological order.

Essential Revision Case File Items

Essential items shall constitute the scannable portion of the case file and shall be organized in reverse chronological order. Data pertaining to specific technical areas shall, if practical, be grouped together in the case file, in reverse chronological order whenever possible. The receiving Mapping Partner shall file the case file items deemed essential for future scanning on the right-hand side of the revision case file folder (i.e., the side with the filing label), using a two-pronged, Acco-style binder and retainer (or equivalent) at the top.

To facilitate proper identification of the data, the receiving Mapping Partner shall include the following information on the front or the inside cover of the revision case file:

- Community identification number;
- Community name, type (e.g., CTY, V, TWP, CO), and State;
- Requester's first initial and last name;
- Flooding sources;
- Affected map type and map panel number;
- Case resolution date (MM/DD/YY); and
- Identification number of receiving Mapping Partner.

In addition to the labeling on the file noted above, the receiving Mapping Partner shall place a summary listing of the essential materials pertinent to the revision case not physically included within the revision case file. The information on this listing shall include the title, date, map scale (if applicable), and a description of the contents of each essential item. The receiving Mapping Partner's case identification number shall be included at the top center of that page.

Because of the critical nature of the data contained in computer printouts, a second or separate listing of computer printouts supporting the revision case shall be placed behind the summary of essential materials not physically included in the revision case file. Generally, because of their size, computer printouts are filed separately from the revision case file, but they are a part of the essential items requirement. Again, this listing shall identify the various computer model runs (e.g., study/restudy conditions, existing conditions, proposed conditions), the dates of the runs, and the names of the flooding sources modeled for each run.

Nonessential Revision Case File Items

The receiving Mapping Partner shall maintain nonessential standard-size items in the revision case file. The receiving Mapping Partner shall place nonessential items relevant to the processing of the map revision request, but not pertinent to the technical support data, on the left-hand side of the revision case file folder.

The receiving Mapping Partner shall attach the nonessential items to the top of the file folder using a two-pronged, Acco-style binder and retainer (or equivalent). The receiving Mapping Partner shall label the data as nonessential using a standard 8-1/2″ × 11″ form that reads "INTERNAL PROCESSING FORMS; DO NOT SCAN." The receiving Mapping Partner shall delete nonessential once the map revision request has been resolved.

Oversized Revision Case File Items

The receiving Mapping Partner shall follow similar guidelines for maintaining essential oversized items, including:

- Computer printouts from hydrologic and hydraulic models;
- CD-ROMs or diskettes containing digital versions of hydrologic and hydraulic models, maps, and related data;
- Work, survey, plat, or tax maps;
- Construction drawings,
- Topographic or aerial photographic maps;
- Supplementary (bound) reports; and
- Transect maps.

The receiving Mapping Partner shall file such data in boxes or shelving appropriate for storing oversized documents. To facilitate future retrieval, the receiving Mapping Partner shall clearly label each oversized item with the appropriate community name, state name, requester name, and case number. The receiving Mapping Partner also shall develop a listing of the essential oversized items and shall file this listing in the standard size case file for cross-referencing.

ESDPF staff (except for the hydrologic or hydraulic computer models/printouts) generally will not scan the essential oversized items. Therefore, the receiving Mapping Partner shall maintain the oversized materials in hardcopy format. The receiving Mapping Partner shall archive essential computer models in their original format.

The receiving Mapping Partner shall maintain nonessential oversized items only until such time as the revision case has been resolved. The receiving Mapping Partner shall then discard these items.

M.3.2.2 Post-Review Processing Phase [February 2002]

The receiving Mapping Partner shall store all of the essential revision case files and FEDD files as noted earlier in this Appendix for an indefinite period of time. The ESDPF staff will initiate the digital conversion of the revision case files and FEDD files, as applicable.

The ESDPF staff shall not call in revision case files or FEDD files for digital conversion until approximately 1 year after the resolution date. The delay in the call-in time is to allow the

receiving Mapping Partner to respond to inquiries pertaining to the revision case. The majority of such inquiries are received within 1 year after case resolution. Therefore, the risk of having the receiving Mapping Partner receive an inquiry while the revision case file is being converted to digital format should be minimal.

The receiving Mapping Partner has organized the revision case file, the FEDD file, and the oversized items into the proper standard size format during the Review Processing Phase. Therefore, the effort required for the receiving Mapping Partner at the time of call-in shall involve only retrieving the essential standard size case file and the FEDD file and transmitting them to the ESDPF. The receiving Mapping Partner shall not transmit oversized items (except for the hydrologic and hydraulic computer printouts) to the ESDPF because these materials will not be digitally converted, and the summary listing will be a part of the digital file.

As is done with the digital study and restudy support data files, the ESDPF staff shall return the revision case file to the receiving Mapping Partner on CD-ROM for future use in responding to data requests from all sources. The oversized items retained by the receiving Mapping Partner in permanent hardcopy storage will supplement the CD-ROM record.