

# *Map* MODERNIZATION

Federal Emergency Management Agency



**FEMA's Flood Hazard Mapping Program**

## **Guidelines and Specifications *for* Flood Hazard Mapping Partners**

*Executive Summary*



**FEDERAL EMERGENCY MANAGEMENT AGENCY**

[www.fema.gov/mit/tsd/dl\\_cgs.htm](http://www.fema.gov/mit/tsd/dl_cgs.htm)

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## **Executive Summary**

This summary provides background information on the purpose and scope of these *Guidelines and Specifications for Flood Hazard Mapping Partners* (hereinafter referred to as “these Guidelines”). These Guidelines define the technical requirements, coordination and documentation activities, and product specifications for Flood Hazard Maps and related products. The guidelines and specifications documented herein are to be followed by Federal Emergency Management Agency (FEMA) Regional and Headquarters Office staff and the staff of other Flood Hazard Mapping Partners involved in producing and maintaining Flood Hazard Maps and related products under the National Flood Insurance Program (NFIP).

For decades, the national response to flood disasters was generally limited to constructing flood-control works, such as dams, levees, and seawalls, and to providing disaster relief to flood victims. This approach did not reduce all monetary flood losses, nor did it discourage unwise floodplain development. To compound the problem, the public could not buy flood coverage from insurance companies, and building techniques to reduce flood damage were often overlooked.

In the face of mounting flood losses and escalating costs to the general taxpayer for disaster relief, the U.S. Congress created the NFIP with the passage of the National Flood Insurance Act of 1968. The U.S. Congress broadened and modified the NFIP with the passage of the Flood Disaster Protection Act of 1973, the National Flood Insurance Reform Act of 1994, and other legislative measures. In enacting each piece of legislation, the U.S. Congress focused on reducing future flood damage and providing an insurance mechanism that allows a premium to be paid for protection by those most in need of the protection.

To meet the community participation and flood hazard assessment objectives of the NFIP, the U.S. Congress initially assigned the following responsibilities to the Secretary of the U.S. Department of Housing and Urban Development:

- (1) identify and publish information with respect to all flood plain areas, including coastal areas located in the United States, which have special flood hazards, within five years following the date of the enactment of this Act, and (2)
- establish flood-risk zones in all such areas, and make estimates with respect to the rates of probable flood-caused loss for the various flood-risk zones for each of these areas, within fifteen years following each date.

Those responsibilities are now assigned to the Director of FEMA.

For more than two decades as the agency responsible for administration of the NFIP, FEMA has been engaged in a massive and unprecedented effort to identify and assess flood hazards and present flood hazard information on community-based mapping. To date, FEMA has produced over 100,000 Flood Hazard Map panels for approximately 19,000 communities representing approximately 150,000 square miles of floodplain. The net effect of this work is that it has protected citizens' lives, properties, and personal finances by providing an insurance mechanism

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for those at risk and flood hazard data to minimize the flood risk for new and existing development.

In the enabling legislation that created and amended the NFIP, FEMA has been authorized to consult with, receive information from, and enter into agreements or other arrangements with the head of any State, regional, or local agency in order to identify floodplain areas. Therefore, FEMA has encouraged strong Federal, State, regional, and local partnerships for the purposes of reducing flood losses and disaster assistance.

Over the years, FEMA has established and implemented initiatives to build on Federal, State, regional, and local partnerships and, where appropriate, formalize the partnerships. Through these initiatives, FEMA and its Federal, State, regional, and local public- and private-sector partners have formalized improved cooperation in the flood hazard identification and mapping processes. Building on these partnerships, FEMA has envisioned implementing a new “optimized” process for producing new and revised Flood Hazard Maps that will take advantage of Flood Hazard Mapping Partners’ contributions.

Recognizing that the contributions of FEMA and the Flood Hazard Mapping Partners may evolve as the optimized process is implemented, these Guidelines do not emphasize the traditional roles of the various Flood Hazard Mapping Partners. Instead, these Guidelines specify the requirements that the Flood Hazard Mapping Partner that agrees to complete a specific mapping-related task must meet to ensure consistent and accurate flood hazard information is provided to U.S. citizens nationwide.

To provide a sound basis for floodplain management and insurance rating, the Flood Hazard Maps must present flood hazard information that is accurate and up to date. However, current funding levels for flood hazard mapping are not sufficient for FEMA to update the entire inventory of Flood Hazard Maps.

As a result, over 60 percent of the 100,000-map panel inventory is over 10 years old. FEMA estimates that an additional \$750 million above current funding levels would be required to update the nation’s Flood Hazard Maps in 7 years. Therefore, today, perhaps more than ever before, FEMA relies on the combined contributions of FEMA staff and the following Flood Hazard Mapping Partners to obtain and maintain accurate, up-to-date flood hazard information:

- Community officials;
- Regional agency officials;
- State agency officials;
- Communities, regional agencies, and State agencies participating in the FEMA Cooperating Technical Partners initiative;
- Other Federal agencies;
- FEMA Contractors;

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- Contractors for communities, regional agencies, and State agencies;
- Community residents and property owners; and
- Other program constituents, including U.S. Congress, insurance, lending, real estate, and land development industries; and
- Federal, State, and local disaster and emergency response officials.

These *Guidelines* combine FEMA technical, programmatic, and administrative procedure publications, guidance documents (listed below), and memorandums regarding Flood Hazard Mapping. These *Guidelines* also reflect recent changes to processes and products associated with the implementation of the FEMA [Map Modernization Program](#), including the [Cooperating Technical Partners](#) initiative and the new [Flood Map Project Scoping](#) procedures.

Unless specifically indicated otherwise by FEMA for a particular contract/agreement, these Guidelines supersede previous FEMA guidelines and specifications documents regarding the preparation of Flood Hazard Maps, including, but not limited to, the following:

- [Flood Insurance Study Guidelines and Specifications for Study Contractors](#) (FEMA 37, January 1995) and any previous versions thereof;
- “[Airborne Light Detection and Ranging Systems](#)” (Appendix 4B to FEMA 37, May 2000);
- [Guidelines and Specifications for Flood Map Production Coordination Contractors](#) (Final Draft, February 17, 1999);
- [Guide for Preparing Technical Support Data Notebook](#) (January 1990);
- [Guidelines for Determining Flood Hazards on Alluvial Fans](#) (February 23, 2000);
- [Guidance for Scoping Flood Mapping Projects](#) (January 12, 2001);
- [Guidelines and Specifications for Wave Elevation Determination and V Zone Mapping](#) (March 1995);
- *Guidelines and Specifications for Wave Elevation Determination and V Zone Mapping – Great Lakes* (October 1994);
- “Procedures for Collecting Depositing, and Reporting Fees Under Part 72 of the NFIP Procedures” (undated);
- “Procedures for the Administration of FEMA’s Fee-Charge System” (undated);
- “[DFIRM Graphic Specifications](#)” (November 2000);

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- [“DFIRM Base Map Standards”](#) (November 1998); and
- [“Standard DFIRM Database Guidelines and Specifications”](#) (May 2001).

These Guidelines are organized into three volumes and 13 appendices as described below.

**Volume 1** explains the activities involved in the completion of Flood Map Projects and provides guidelines for performing those activities in the following phases:

- Mapping Needs Assessment;
- Project Scoping;
- Topographic and Flood Hazard Data Development;
- Map and Report Production; and
- Preliminary/Post-Preliminary Processing.

Additional information on the types of Flood Map Projects undertaken by FEMA and Flood Hazard Mapping Partners nationwide, the products generated as a result of the Flood Map Projects, and the processes that must be followed to generate those products is provided in the Introduction to these Guidelines, in Subsections INT.6 and INT.7.

**Volume 2** provides guidelines for the processing of revisions and amendments to Flood Hazard Maps initiated by communities and other Flood Hazard Mapping Partners, including the following:

- Letters of Map Amendment;
- Letters of Map Revision Based on Fill;
- Letters of Map Revision; and
- Physical Map Revisions.

Additional information on the products generated as a result of these revisions and amendments and the processes that must be followed to generate those products is provided in the Introduction to these Guidelines, in Subsections INT.6 and INT.7.

**Volume 3** provides guidelines and specifications for support activities performed for FEMA by various Mapping Partners in the following general categories: program coordination, special technical and program support, public outreach activities, special correspondence support, and other program support.

**Appendices A through M** provide additional guidelines and specifications for the processes and products covered in Volumes 1, 2, and 3. These appendices cover the following topics:

- Aerial mapping and surveying, including airborne Light Detection and Ranging Systems;
- Datum conversions;
- Hazard analyses and mapping of coastal, shallow, ice-jam, and alluvial fan flooding (four separate appendices);
- Evaluation and mapping of flood protection systems;
- Scoping for Flood Map Projects;
- Flood Insurance Study report format guidelines and specifications;
- Flood Hazard Map format guidelines and specifications;
- Digital Flood Hazard Map database guidelines and specifications; and
- Technical and administrative support data preparation and processing requirements.

For the convenience of all Mapping Partners, a **List of Frequently Encountered Acronyms and Abbreviations** and a **Glossary of Frequently Encountered Terms** also have been included in these Guidelines.

These Guidelines are a “living” document that will be updated whenever FEMA determines that changes to the product and processing requirements documented herein are appropriate. A new version of these Guidelines will be posted each October as a collection of PDF files that mirror the structure of the three volumes and 13 appendices. Additional information on the update process is provided below.

FEMA Regional and Headquarters Office staff will notify Mapping Partners when changes are made. Such changes may be frequent as FEMA proceeds with implementation of the Map Modernization Program. Therefore, FEMA encourages all Mapping Partners to remain familiar with, and cognizant of, FEMA’s progress in implementing the Map Modernization Program. Details on FEMA’s implementation activities may be found on the FEMA Flood Hazard Mapping website at [http://www.fema.gov/mit/tsd/MM\\_main.htm](http://www.fema.gov/mit/tsd/MM_main.htm).

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To ensure Mapping Partners are provided with a controlled and current version of these Guidelines for Flood Hazard Mapping activities, the following document control procedures have been implemented:

- A header on each page identifies the document source.
- A footer on each page provides the page number, major section number (e.g., 1.1, 1.2), and version date (e.g., February 2002).
- A date (month and year) reflecting the last time the section or subsection was revised appears at the end of each numbered section and subsection.

Mapping Partners will also be able to keep up to date on changes to these Guidelines through a website with the following features (currently under development):

- An “Overview Paragraph,” which explains the functionality of the site and which provides the yearly update schedule;
- An “Update Queue,” which contains new specifications and/or guidance issued by FEMA that supersede specifications and/or guidance presented in specific portions of these Guidelines;
- A “Summary of Changes,” which describes all changes made to these Guidelines since they were last revised; and
- An “Archive,” which contains previous versions of these Guidelines.

Because these Guidelines are a living document, new technologies and methodologies deemed applicable to Flood Map Projects in the preparation of Flood Hazard Studies for FEMA can be included in future updates. Therefore, FEMA encourages Mapping Partners to submit ideas for improving these Guidelines. Written comments may be submitted electronically by sending an e-mail message to [FEMACG&S@floodmaps.net](mailto:FEMACG&S@floodmaps.net). Alternatively, they may be sent to the following address or transmitted by facsimile to the number provided:

Federal Emergency Management Agency

Federal Insurance and Mitigation Administration

Hazard Mapping Division

500 C Street, SW

Washington, DC 20472

Facsimile: 202-646-4596

Attention: Allyson Lichtenfels, FEMA G&S Coordinator

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FEMA welcomes the contributions of its many and varied Flood Hazard Mapping Partners and looks forward to the mutually beneficial efforts that will further promote FEMA's mission—to reduce loss of life and property and protect our Nation's critical infrastructure from all types of hazards through a comprehensive, risk-based, emergency management program of mitigation, preparedness, response, and recovery.