

9.0 NATURAL AND TECHNOLOGICAL HAZARDS: BUILDING ON THE NATIONAL FLOOD LAYER

FEMA is responsible for responding in crisis situations to natural and technological disasters and for conducting mitigation activities. In addition to floods, FEMA responds to disasters caused by severe storms, hurricanes, tornadoes, snow/ice, severe ice storms, coastal storms, earthquakes, and other manmade hazards. Assessing two or more natural or manmade hazards is known as multi-hazard management. Figure 9-1 displays the multitude, frequency, and variety of multi-hazard disasters nationwide since January 1965. As shown in the pie chart, floods are the dominant and most pervasive hazard.

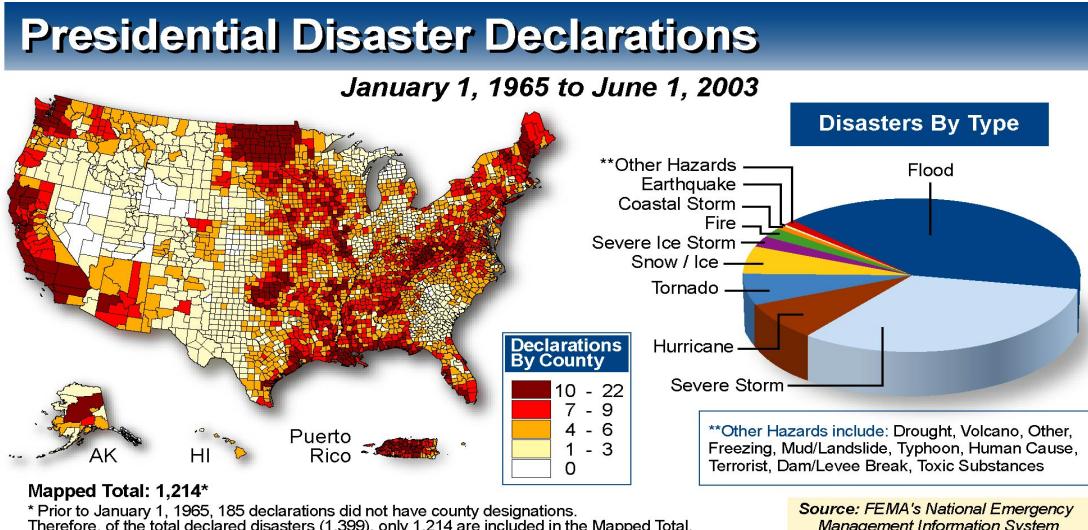


Figure 9-1. Types and Numbers of Disasters (with Presidential Disaster Declarations)

As shown in figure 9-1, FEMA deals with more than 18 different types of hazards that have resulted in Presidential disaster declarations. FEMA must be able to manage and handle data for hazards in an efficient manner while enabling end users to plan for them. This section of the MHIP discusses:

- Sharing the flood hazard infrastructure for multi-hazard data management
- Establishing a multi-hazard catalog
- Establishing multi-hazard data content standards
- Coordinating multi-hazard data creation and partnerships

9.1 Sharing the Flood Infrastructure for Multi-Hazard Data Management

FEMA is responsible for developing the Nation's flood maps, which are used for flood insurance and floodplain management purposes. As part of the Map Modernization effort, FEMA is

developing the Multihazard Information Platform (MIP), a state-of-the-art flood hazard data delivery and management system. The MIP allows for:

- Management of data collection
- Project coordination
- Project collaboration
- Product development and maintenance
- Distribution of maps and data
- Data standards
- Security and interoperability considerations

The MIP infrastructure provides for the development and distribution of geospatial data and maps of all natural and man-made hazards. FEMA intends for the MIP to be a multi-hazard mapping resource that provides data for the Geospatial One-Stop in order to provide hazard risk information to the Nation. A consolidated all-hazards mapping infrastructure would help the public, local governments, states, and FEMA to identify all hazards, perform vulnerability assessments, and apply risk management practices that are essential to protecting our Nation against all threats.

Other Federal agencies are responsible for much of the data related to hazards not directly associated with floods. FEMA encourages these stewards of other hazard risk data to allow their data to be shared easily across various systems using open standards or, if an agency prefers, to permit hazard data to be hosted on FEMA infrastructure. Beginning in FY05, FEMA will establish interagency panels and workgroups to plan coordination of all-hazards data.

9.2 Establishing a Multi-Hazard Data Catalog

Multi-hazard data and processes described in this plan could be used to support evaluation of risk, scheduling of new data production, and long-term maintenance of data.

By establishing a multi-hazard data catalog as a component of the MIP, FEMA will increase its ability to mitigate and respond to disasters. FEMA and partners could use the multi-hazard data catalog during prescoping and scoping activities to assess additional natural and technological hazards of the particular study area under assessment, and its development could be coordinated with the data provider on the basis of the availability and suitability of the data. New or revised multi-hazard data could be provided in a collaborative partnership

between FEMA and the authority responsible for maintenance of the data, and the local community would provide funding for this activity. Ultimately, multi-hazard data and processes described in this plan could be used to support evaluation of risk, subsequent scheduling of new data production, and long-term maintenance of data. FEMA will examine the feasibility of this task in FY05.

9.3 Establishing Standards for Multi-Hazard Data Content

Standards for multi-hazard data content will help to improve FEMA's risk management mission by providing a consistent data schema for subsequent data collection and map production.

Inconsistencies in multi-hazard data from various sources limit the ability of local, state, and Federal emergency management organizations to assess risk, determine vulnerability, and appropriately mitigate disasters. A principal benefit of the MIP is the value added by the ability to identify, access, analyze, and share information. To improve the quality and reliability of and confidence in hazard data, FEMA will apply the ANSI-compliant Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE) in the development of multi-hazard data content standards. Figure 9-2 depicts the SDSFIE data content model and schema for a hazard data layer. FEMA will develop these standards in FY05.

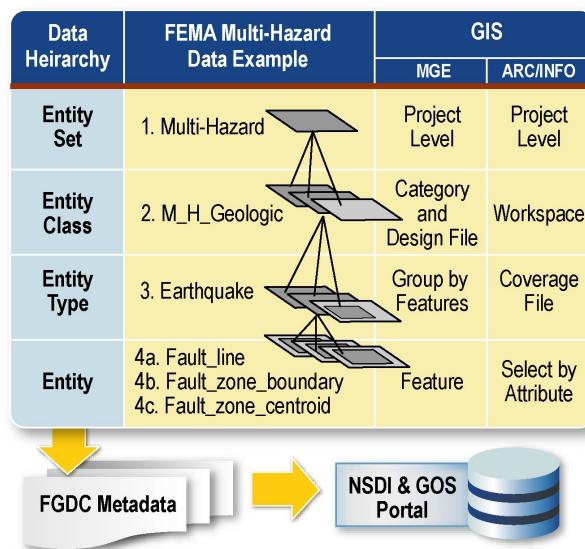


Figure 9-2. SDSFIE/ANSI Data Content Model and Schema

9.4 Coordinating Data Creation and Partnerships

The President's National Strategy for Homeland Security identifies five major initiatives in the area of information sharing and systems, two of which require coordination:

- Integrate information sharing across the Federal government
- Integrate information sharing across local and state governments, private industry, and citizens

Coordinating base data creation among agencies is the first step toward sharing hazard data. The primary focus of FEMA for FY05 will be to take advantage of data-sharing opportunities with other partners.

9.4.1 Federal Coordination

FEMA will focus on coordination with other Federal geospatial data collection programs in FY05. At least nine Federal geospatial data collection programs, surveys, and/or inventories are underway or were recently completed, including FEMA's Biennial Report. In FY05, FEMA will coordinate and partner with these and future activities. Table 9-1 lists the Federal agencies that FEMA will coordinate with to identify benefits of working together on the listed programs.

Table 9-1. Other Federal Agencies' Geospatial Programs

Agency	Data Program	FY03 Funding
USGS	The National Map	\$ 81 million
National Oceanographic and Atmospheric Administration	"LIDAR-Anywhere"	\$1-2 million
National Imagery and Mapping Agency	HSIP 133 Cities	Incremental
Bureau of Land Management	Land Parcel	Incremental

In addition, the Federal Geographic Data Committee (FGDC), of which FEMA is a member, developed the *Manual of Federal Geographic Data Products* in 1994 to identify data production overlaps and to foster data coordination.

FEMA expects to coordinate data sets with these agencies, including data sets for hydrologic, topographic, and remotely sensed data.

9.4.2 State Coordination

The National States Geographic Information Council (NSGIC), of which FEMA is a member, estimated in its September 2002 document entitled *Funding Allocation for State Data Production* that the potential cost of obtaining high-resolution LIDAR and orthophotography for the Nation may exceed \$1.7 billion and \$880 million, respectively. One of the most expensive aspects of map production is the collection of base map and topographic data; therefore, FEMA is coordinating with NSGIC and affiliated state organizations to leverage these potential data production opportunities by improving availability of data to FEMA, reducing duplication of data collection, and decreasing overall production costs and schedules.

9.4.3 Stakeholder Coordination

The FGDC, GeoData Alliance, and the National Academy of Science's Mapping Science Committee identified key practices to successful geospatial data collaborations. Several of these keys to success rely on outreach to organizations with broad community support. Accordingly, FEMA, in an effort that continues into FY05, is partnering with Public Interest Groups that are involved with and have established national geospatial activities. These groups are listed in figure 9-3.

Natural and Technological Hazards

Public Interest Groups

- International City/County Management Association (ICMA)
- Intertribal GIS Council
- National Association of Counties (NACo)
- National League of Cities (NLC)
- National Association of State Chief Information Officers (NASCIO)
- National Emergency Management Association (NEMA)

Figure 9-3. Public Interest Groups with Geospatial Activities

9.4.4 FEMA Program Coordination

In addition to multi-hazard programs, FEMA continues to coordinate many of the internal programs that involve geospatial data. FEMA will continue to work within these programs to prevent the creation of duplicate data and to search for cases in which cost savings can be realized. Figure 9-4 lists other FEMA multi-hazard programs.

FEMA Multi-Hazard Programs

- Hazard Mitigation Grant Program
- Flood Mitigation Assistance Program
- Pre-Disaster Mitigation Planning
- National Dam Safety Program
- National Earthquake Hazards Reduction Program
- National Hurricane Program
- Building Performance Assessment Team Program
- Community Rating System
- U.S. Fire Administration
- HAZUS

Figure 9-4. FEMA Multi-Hazard Programs

