



THE NFIP AND FLOOD HAZARD MAPPING

NATIONAL FLOOD INSURANCE PROGRAM

In 1968, Congress created the NFIP to help provide a means for property owners to financially protect themselves. The Flood Insurance and Mitigation Administration (FIMA), a component of FEMA, manages the NFIP. The NFIP includes three primary components: 1) flood insurance; 2) floodplain management; and 3) flood hazard mapping.

Nearly 20,000 communities across the United States and its territories participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes federally-backed flood insurance available to homeowners, renters, and business owners in these communities. Of noteworthy importance, community participation in the NFIP is voluntary.

Flood insurance is designed to provide an alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods. Flood damage is reduced by nearly \$1 billion a year through communities implementing sound floodplain management requirements and property owners purchasing of flood insurance. Additionally, buildings constructed in compliance with NFIP building standards suffer approximately 80% less damage annually than those not built in compliance.

Joining the NFIP is a large benefit to local residents due to low-cost flood insurance, but it is also a large responsibility for municipalities. To participate in the NFIP, local governments agree to complete the following:

- Adopt and enforce a flood damage prevention ordinance;
- Require permits for all types of development in the floodplain;
- Assure building sites are reasonably safe from flooding;
- Estimate flood elevations that were not determined by FEMA;
- Require new or improved homes to be elevated above Base Flood Elevation (BFE);
- Require other buildings to be elevated or flood-proofed;
- Conduct field inspections and city violations;
- Require Elevation Certificates to document compliance;
- Carefully consider variances;
- Resolve non-compliance and violations; and
- Advise FEMA when updates to flood maps are needed



FLOOD HAZARD MAPPING

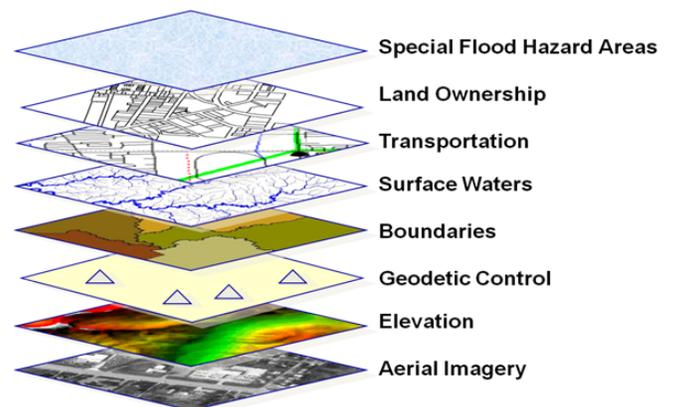
In addition to providing flood insurance and reducing flood damages through floodplain management regulations, the NFIP identifies and maps the nation's floodplains. Mapping flood hazards creates broad-based awareness of the flood hazards and provides the data needed for floodplain management programs and to actuarially rate new construction for flood insurance. These maps are Flood Insurance Rate Maps, commonly referred to as FIRMs. Each NFIP community should have or be in the process of having FIRMs for their community.

Communities regulate the floodplain for a variety of reasons, but some of the most important reasons include: 1) protect people and property; 2) ensure federal flood insurance and disaster assistance is available; 3) save tax dollars; 4) avoid liability and litigation; and 5) reduce future flood losses. Participation in the NFIP is based on an agreement between a local government and the federal government. If a community adopts and enforces a floodplain management ordinance that meets program standards, the federal government will make flood insurance available within the community at a low cost.

Digital Flood Insurance Rate Maps and Geographic Information Systems

The NFIP is adopting new digital products, including Geographic Information System (GIS)-based products. This plan will allow the continued use of paper maps. However, for NFIP stakeholders interested in adopting the new digital processes, this initiative will enable them to take full advantage of the new digital maps FEMA is producing through the (legacy) Map Mod and Risk MAP programs. FEMA's goal is to transition to digital processes for distributing and reading the flood maps. These new digital capabilities of the flood maps will:

- Enable significant advantages in capability, precision, and cost;
- Reduce costs associated with paper map production, handling and storage;
- Encourage the use of quality local data to make administration of the NFIP more efficient and effective.



The Standard Digital Flood Insurance Rate Map (DFIRM) Database is a digital version of the FEMA flood insurance rate map that is designed for use with digital mapping and analysis software. DFIRM Databases have been completed for a number of communities and counties throughout the nation. FEMA designed the DFIRM Database product to be used with (GIS) software.



GIS software allows users to access, view, and analyze mapping information using specialized data. The Standard DFIRM Database is designed to provide the user with the ability to determine the flood zone, base flood elevation and the floodway status for a particular location. It also has NFIP community information, map panel information, cross section and hydraulic structure information, Coastal Barrier Resource System information (if applicable), and base map information like road, stream, and public land survey data.

Coordinated Needs Management Strategy (CNMS)

The CNMS is a FEMA initiative to update the way FEMA organizes, stores, and analyzes flood hazard mapping needs information for communities. It defines an approach and structure for the identification and management of flood hazard mapping needs that will provide support to data driven planning and the flood map update investment process in a geospatial environment. CNMS tracks the lifecycle of needs, specifying opportunities to capture needs and proposing methods for their evaluation to inform the planning process.

From a technical perspective, the CNMS establishes a geospatially enabled effective means for users to enter, monitor, and update their inventory of needs. The basic structure of the database is two containers: one to store information about why and where effective studies are “broken”, and the other to record community concerns and requests. All information can be displayed simultaneously because they are geo-referenced.

The goal of the CNMS is to define the validity of the engineering study data, at the stream level, within the communities mapped. Participating communities coordinate with the FEMA Regional Office to have all flooding source centerlines included in CNMS and to have every segment contained in the CNMS stream network defined as valid, invalid, or in progress. The intent of having this information is to define the mapping need of each engineering study, determine the validity of the engineering study, and time-stamp the engineering study. Overall, FEMA wants to establish a national baseline record of New, Validated or Updated Engineering (NVUE) reporting geospatially that will influence future program production planning activities.

Through the CNMS, FEMA is evaluating its inventory of stream and coastal miles nationwide and establishing which miles meet NVUE. FEMA has committed to the US Congress that 80% percent of the miles in its inventory will meet this standard. Currently, based on a countywide evaluation of NVUE data, FEMA estimates that 51% of its inventory is compliant with NVUE nationwide. To reach 80%, FEMA will restudy 183,000 miles of stream or coastline nationwide during Risk MAP. CNMS is in its infancy, and the data will be updated over the next year, based on a on a stream reach-by-stream-reach and coastal-reach-by-coastal-reach evaluation of its inventory. This will cause the current estimate of NVUE-compliant miles to change.



In order to be compliant with NVUE quality standards, a stream must be digital (modernized) and be characterized by one of the following:

- A new detailed study, or
- A new approximate study based on topography, or
- An old detailed study that has been updated, or
- An old approximate study that has been updated.

The initial CNMS database is being created at a national level by FEMA headquarters and its contractors. Since CNMS is going to play such an important role in prioritization, it is essential that this database is built properly. It must be maintained and updated frequently to assure accuracy and to demonstrate the appropriate levels of need.

As noted in the section on the *Alaska Prioritization and Future Studies Sequencing Decision Support System* (page 72) the CNMS data for Alaska currently shows that all stream miles are Non-NVUE compliant, thus all watersheds have been given the same rank for this indicator in the decision support system. Additionally, FEMA's contractor STARR indicated that the only streams currently included in CNMS for the State of Alaska are those currently in DFIRM format. This excludes a large number of streams and makes this dataset incomplete. When the CNMS data is updated and some distinctions between the watersheds can be made, this indicator can be introduced to the algorithm at that time. Ultimately, CNMS should contribute heavily to the Needs factor in DCRA's decision support system (see page 77).

Figure 5: City of Nenana, 2008 Flood

