Federal Emergency Management Agency

Work In Progress

July/August 1999

Modernizing FEMA's Flood Hazard Mapping Program

A Message From Matt Miller…

Since its inception and conceptualization in the summer of 1997, FEMA and its flood mapping partners have made significant strides in building a solid foundation for modernizing the flood mapping program. As we have noted in each issue of ***Work In Progress***, numerous organizations and constituency groups have jumped "On the Bandwagon" in support of the plan. There is a general consensus in the public regarding the need to modernize flood maps; now we just have to find a fair and equitable way of paying for it.

In Fiscal Year 1999, FEMA has made major strides in developing new and improved products, processes and business practices. These include:

- Developing new Digital Flood Insurance Rate Map (DFIRM) base map standards.
- Conceptualizing and designing the new DFIRM product, which will be implemented in FY 2000.
- Designing the Cooperating Technical Communities initiative. Pilot testing will be conducted in FYs 1999 and 2000.
- Making major customer service enhancements through the implementation of the FEMA Flood Hazard Mapping website (www.fema.gov/mit/tsd/) and the toll-free Map Assistance Center (877 FEMA MAP).

*See "**Matt Miller's Message**," on page 9*

FEMA

Cathy Reynolds, UDFCD Board Chairman and Denver Councilwoman, receives certificate of appreciation from Mike Armstrong, FEMA's Associate Director for Mitigation.

Agencies Sign Cooperating Technical Communities Agreement

The Urban Drainage and Flood Control District (UDFCD) of Denver, Colorado, has recently signed a Cooperating Technical Community (CTC) agreement with FEMA as part of its commitment to protect metropolitan Denver through flood hazard identification, flood insurance and floodplain management.

As part of the agreement, signed on May 17, the UDFCD and FEMA will work together to identify and create agreements to perform specific flood mapping tasks. The UDFCD is one of the first groups to enter into a CTC agreement with FEMA. In addition to the UDFCD agreement, FEMA recently signed a CTC agreement with the Lower Colorado River Authority in Harris County, Texas.

The UDFCD serves all or parts of 32 counties, cities and towns in the Denver area that participate in the National Flood Insurance Program. FEMA officials said the UDFCD's floodplain mapping and management program is one of the most progressive in the country, especially in its approach to mapping flood hazard areas — the UDFCD's use of digital technology to produce maps will facilitate FEMA's formal technical evaluation and approval process.

*See "**Agencies Sign Cooperating Technical Communities Agreement,**" on page 13*

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Modernizing FEMA's Flood Hazard Mapping Program

Inside This Issue:

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DFIRMs — Specifications and Procedures

In accordance with the Map Modernization Objectives, FEMA has developed base map specifications for its new Digital Flood Insurance Rate Map (DFIRM) product. The new DFIRM product will exploit computer technology to allow for more efficient map updates, production and distribution. In this way, the DFIRM is a vast improvement over traditional Flood Insurance Rate Maps, which are produced using manual cartographic methods and are distributed only through paper copies. The new digital computer technology used for DFIRMs will allow for cost-efficient, rapid conversion of the entire mapping inventory to a digital format. The new DFIRM product may be prepared for communities for which new engineering analyses are required, as well as those communities with adequate existing flood data that only need their maps to be converted to digital format.

Base Map Choice Priorities

Base map data supplied by communities or other non-Federal sources (e.g., State or regional agencies) that meet FEMA's criteria will be the first choice for new DFIRM production. Digital Orthophoto Quarter Quadrangles (DOQs) produced by the U.S. Geological Survey (USGS) will be the default base map if suitable community data are not available. If neither suitable community base map data nor USGS DOQs are available for a county scheduled for new DFIRM production, FEMA will provide the community with information on base map sources, including information on partnering with the USGS to initiate DOQ production for that county. DOQ production typically takes 12 to 14 months, so coordination with the USGS needs to be initiated with that timeframe and the new DFIRM production schedule in mind.

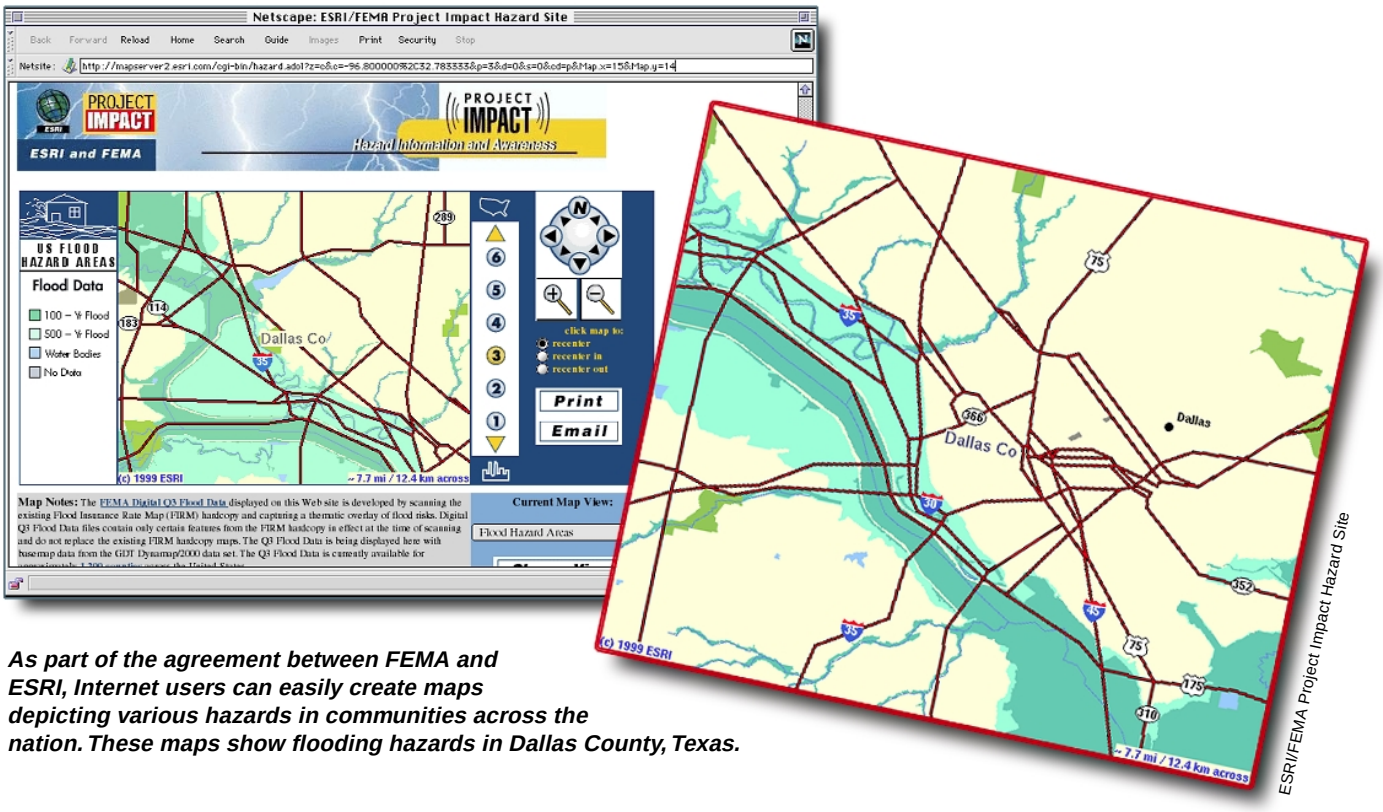
Road names that will be shown on the new DFIRMs will be derived from community-supplied files or hardcopy sources, current FIRM panels and/or U.S. Bureau of the Census Topologically Integrated Geographic Encoding and Reference System (TIGER) files. Road name sources will be needed no matter what base map source is chosen for DFIRM production.

Community Coordination

FEMA will coordinate with all incorporated communities within a county scheduled for new DFIRM creation at the beginning of the production process. Each community will receive a letter that describes the DFIRM product, requests pertinent information, describes the minimum requirements for the submittal of data to be included in the new DFIRM product, and identifies the default base map source if community data are not available or suitable. Pertinent information that will be requested include base map data, a current corporate limits map, electronic or hardcopy elevation data and any engineering information that needs to be added to the FIRM. Communities will be encouraged to coordinate with other communities within the same county to provide FEMA with an integrated base map for the entire county.

*See "**DFIRMs—Specifications and Procedures**," continued on page 12*

Informational Flood Hazard Maps Now Available on the Web



As part of the agreement between FEMA and ESRI, Internet users can easily create maps depicting various hazards in communities across the nation. These maps show flooding hazards in Dallas County, Texas.

Multi-hazards maps, including maps depicting flood hazards for 75 percent of housing units across the nation, are now available on the Internet as part of a recent agreement designed to provide more information about hazards and to help educate and protect the public.

The Project Impact National Partnership agreement — signed by FEMA and the Environmental Systems Research Institute (ESRI), a leading GIS software development company, on June 9 — aims to provide maps and information to individuals, business owners, schools, community groups and local governments via the Internet. The ESRI/FEMA Project Impact Hazard Site (www.esri.com/hazards) is also accessible through FEMA's Internet site (www.fema.gov).

FEMA's Mark Whitney, who helped coordinate implementation of the effort, said that he "very much appreciated the energetic support of Mr. Jack Dangermond, ESRI's President, and the hard work of Mr. Todd Rogers, and Mr. Deane Kensok, also from ESRI, [who made the site a reality] in less than one month at no cost to the taxpayer. The site represents a truly generous public service."

The site is designed to help users create maps containing information about flood hazard areas, recent and historic earthquakes, historic hailstorms, historic hurricanes, historic tornadoes or historic windstorms. Users are prompted to enter a zip code, city and state, or congressional district and choose a specific hazard type to produce the maps for their chosen location. In the case of flood hazard information, users may obtain maps of communities for which Q3 flood data are available. The Q3 Flood Data Product is a digital representation of certain features of FEMA's Flood Insurance Rate Maps (FIRMs) and is intended for use with desktop mapping and GIS software. While this information cannot be used in place of a FIRM, it can provide users with significant information about flood hazards in a particular community. Q3 Flood Data are available for approximately 1,300 counties across the United States.

*See "**Flood Hazard Maps Now Available On the Web**," continued on page 13*

Image Courtesy of Nasa (www.jpl.nasa.gov/radar/sircxsar/death.htm)

Death Valley, CA. This image shows the Furnace Creek alluvial fan.

New Guidelines for Mapping Alluvial Fans Available on the Web

Taking into account the multiple variables that can affect alluvial fans and flooding on alluvial fans, such as climate, fan history, vegetation and land use, FEMA has developed an approach to identify and map flood hazards on alluvial fans that takes into account site-specific conditions. This approach is detailed in FEMA's *Guidelines for Determining Flood Hazards on Alluvial Fans*. The approach addresses recommendations in a report by the National Research Council's Committee on Alluvial Fan Flooding and provides guidance for the identification and mapping of flood hazards on alluvial fans.

You may obtain more information, or download a copy of the *Guidelines*, at http://www.fema.gov/mit/tsd/en_alfan.htm. Comments or suggestions regarding the Guidelines may be sent via email to Mike Grimm, at *michael.grimm@fema.gov*.

Mike Grimm (michael.grimm@fema.gov) *is a Hydraulic Engineer in the Hazards Study Branch of the Technical Services Division.*

FEMA Announces New Map Modernization Plan Objectives

Two new objectives have been added to the Map Modernization Plan. These new objectives both relate to the flood hazard analyses and are discussed below.

Two new objectives relating to flood hazard analyses added to the Map Modernization Plan

A June 22 meeting kicked off the new Automated H&H (hydrologic & hydraulic engineering) objective. This exciting new objective is being led by Sally Magee, a Civil Engineer at FEMA Headquarters, and will be related closely to other Map Modernization objectives, such as the DFIRM database, Cooperating Technical Communities (CTCs) and the revision of approximate Zone A floodplains. The automated H&H objective entails the assessment and application of available technologies used to automate floodplain analysis using a Geographic Information System, automated software applications and database structures. The basic goals of the group are to provide guidance in the automation of the different aspects of floodplain analysis, including hydrology, hydraulics and mapping.

*See "**New Objectives,**" continued on page 5*

*"**New Objectives,**" continued from page 4*

The workgroup also plans to provide education and training materials to FEMA's staff, contractors, and communities. The multiple benefits of Automated H&H include automating repetitive engineering tasks and improved visualization of the data, which will facilitate the production of digital, georeferenced mapping products. This objective will enable efficient and cost-effective DFIRM production and rapid map updating.

Sound, prudent development in flood-prone areas requires the availability of accurate, detailed flood hazard data. However, many delineations of flood-prone areas throughout the United States are based on approximate methods of analysis rather than on detailed engineering analyses. It is estimated that approximately one-half to two-thirds of the floodplains identified on FEMA's Flood Insurance Rate Maps (FIRMs) were delineated using approximate methods of analyses. The inherent uncertainties of the approximate floodplains (designated Zone A on the FIRMs) lead to an increasing burden on both property owners and FEMA's map amendment and revision process.

Mike Goetz, of FEMA's Region I, will be leading a Map Modernization Objective to evaluate various programmatic and technical options for addressing the issues associated with the large number of Zone A areas. The kickoff meeting for the objective was July 2. A few of the ideas currently being considered under this objective include establishing procedures for evaluating Zone A areas during the scoping of detailed studies, evaluating Automated H&H methods for evaluating Zone A areas, finalizing CTC agreements for the evaluation of Zone A areas, developing guidance for analyzing Zone A areas and providing technical support to communities and property owners on establishing base (1-percent-annual-chance) elevations.

Mike Goetz (michael.goetz@fema.gov) *is a Team Leader in the Hazards Identification and Risk Assessment Branch of FEMA's Region I Office.*

Sally Magee (sally.magee@fema.gov) *is a Civil Engineer in the Hazards Study Branch of the Technical Services Division.*

On the Bandwagon

The following organizations have formally expressed their support of FEMA's Flood Map Modernization Plan:

- ☑ American Congress of Surveying and Mapping
- ☑ American Society of Civil Engineers
- ☑ Association of State Floodplain Managers
- ☑ Illinois Department of Natural Resources
- ☑ Illinois General Assembly
- ☑ National Association of Flood and Stormwater Management Agencies
- ☑ National Emergency Management Association
- ☑ National League of Cities
- ☑ National Flood Determination Association
- ☑ National Lenders' Insurance Council
- ☑ Ohio River Basin Water Management Council
- ☑ State of Oregon
- ☑ Technical Mapping Advisory Council
- ☑ United States Geological Survey
- ☑ Western Governors' Association

"...therefore, be it resolved by the Senate of the Ninety-first General Assembly of the Senate of Illinois, the House of Representatives concurring herein, that we urge the Congress of the United States to appropriate such funds as are necessary to complete this vital program to insure that maps are accurate so that homeowners are not charged exorbitant rates based on outdated information..."

— Illinois Senate Joint Resolution

Map Modernization Objectives

FEMA is embarking on a number of Map Modernization objectives for improving the NFIP and its map products. Following is a list of the objectives:

1. ☑ Develop and implement an outreach program to include:
   - Exhibit for conferences
   - Outreach to key constituencies
   - Updated briefing packet
   - Congressional outreach
   - ***Work in Progress*** Bulletin

   (Anne Flowers, anne.flowers@fema.gov)

2. ☑ Develop revised, minimum base map standards for hazard mapping and implement for all new hazard maps as soon as practicable, and not later than FY 1999. (John Gambel, john.gambel@fema.gov)

2.5 ☑ Complete assessment of advanced technologies for preparing topographic mapping and work maps required for the production of Flood Insurance Studies and Flood Insurance Rate Maps. Implement the technologies for study starts in FY 1999 by developing appropriate appendices to "FEMA 37, Guidelines and Specifications for Study Contractors," developing training module, and presenting to FEMA Regional and National office staff. (Karl Mohr, karl.mohr@fema.gov)

3. Develop flexible, prioritized spending plan for map modernization that maximizes alternative sources of funding. (Michael Buckley, mike.buckley@ fema.gov)

4. Develop product specifications for Digital Flood Insurance Rate Map 2.0 and 2.1 (for converting existing manual inventory of Flood Insurance Rate Maps to digital format, and for our new flagship digital multi-hazard map product, respectively) and implement no later than FY 1999. (Mary Jean Pajak, mary. jean.pajak @fema.gov; and Mike Grimm, michael.grimm @fema.gov)

5. Develop Cooperating Technical Communities program to support Project Impact. (Bel Marquez, bel.marquez @fema.gov)

6. ☑ Initiate pilot Cooperating Technical Communities Program. (Project Impact staff and regional staff)

7. Bring ongoing cooperative initiatives to a successful completion, including: Maryland (Anne Flowers and John Benn, john.benn@fema.gov); New York (Phil Myers, phil.myers@fema.gov; and Paul Weberg, paul.weberg@fema.gov); Georgia (Mary Jean Pajak and Bel Marquez); Midland, Texas (Alan Johnson, alan.johnson@fema.gov; and Region VI staff); and Boone County, Nebraska (Alan Johnson and Region VII staff).

8. ☑ Develop standards and procedures for mapping future condition hydrology. (Mike Grimm)

9. ☑ Develop architecture for the Technical Services Division's Web site. Design to address product distribution, dissemination of information regarding map status, receipt and response to appeals, archives, and other functions. Formulate management structure, cost, and personnel requirements for implementation. (John Magnotti, john.magnotti@fema.gov)

10. Establish partnership with the National Geodetic Survey (NGS) for assistance in establishing and disseminating geodetic data, such as linking elevation reference mark information on Flood Insurance Rate Maps to the NGS's Web page for geodetic data. (John Gambel)

11. Establish partnership with the U.S. Geological Survey for assistance in developing and maintaining suitable base maps and topographic data compatible with NFIP needs. This includes making Digital Ortho Quads as readily accessible and usable as base maps. (John Gambel)

12. ☑ Establish partnership and provide technical assistance to Fish and Wildlife Service resulting in the Service's improved mapping of Coastal Barrier Resources System (CBRS) areas. Specifically, encourage and assist the Service in producing digital, vector mapping suitable for direct incorporation as a thematic layer in Digital Flood Insurance Rate Maps as well as posting on the World Wide Web. Improve and extend mapping of CBRS-protected areas. (Frank Tsai, frank.tsai @fema.gov)

13. Establish standard operating procedures for making hazard verification part of recovery cycle after Presidentially declared disasters. (Doug Bellomo, doug.bellomo @fema.gov)

14. ☑ Bring the toll-free FEMA Map Assistance Center on line. (John Magnotti)

15. Complete work on the automatic Letter of Map Amendment tracking and letter-generation software, also known as LOMA 2000. (Mark Crowell, mark. crowell@fema.gov)

16. Lay the groundwork for delegation of authority for issuance of Letters of Map Amendment and Letters of Map Revision Based on Fill to community officials and the private sector. Meet with ASCE, ASFPM, ACSM, FMDA, and NAFSMA. (John Gambel)

17. ☑ Develop new study processes, i.e., redefine the Technical Evaluation Contractor/Study Contractor relationship and begin limited implementation in FY 1998, with at least one pilot in each territory. (Marty Frengs, martin.frengs@fema.gov)

18. ☑ Fully implement multi-year contracts and task ordered contracts for procuring Flood Insurance Studies. Transfer the procurement process to the three territories. (Larry Basich, lawrence. basich@fema.gov)

19. ☑ Continue implementation of Five-Year Mapping Needs Assessment Process and make it an integral part of the Flood Insurance Study procurement process. Ensure close regional and State involvement. (Cindy Croxdale, cindy.croxdale@fema.gov)

20. Develop improved systems for monitoring contracted Flood Insurance Studies. Implement Monitoring Insurance Contracted Studies (MICS) software. (Eric Berman, eric.berman@fema.gov)

21. Revise FEMA 37, "Guidelines and Specifications for Study Contractors" and implement for Flood Insurance Studies starting in FY 2000, or partially implement in FY 1999. (Phil Myers, phil.myers @fema.gov)

22. ☑ Revise "Guidelines and Specifications for Technical Evaluation Contractors" and develop statement of work and request for proposal for re-procuring Technical Evaluation Contracts to begin in FY 2000. (Alan Johnson)

23. Oversee all aspects of awarding new Technical Evaluation Contracts to begin in FY 2000. (Cindy Croxdale)

24. ☑ Oversee all aspects of award and implementation of new Map Service Center contract to begin in FY 1999. (Kathy Miller, kathy.miller @fema.gov)

25. ☑ Revise *Technical Guidelines for Mapping Alluvial Fans*. (Mike Grimm)

26. Initiate regulatory reform at 44CFR, Part 65.5. (Alan Johnson)

27. ☑ Complete riverine erosion study required by National Flood Insurance Reform Act of 1994. (Mike Grimm)

28. Complete coastal erosion studies required by National Flood Insurance Reform Act of 1994. (Mark Crowell)

*"**Objectives,**" Continued on Page 8*

SCORECARD

Last Updated July 1999

OBJECTIVE	COMPLETED ITEMS
1. Develop and implement marketing plan.	☑ Work In Progress bimonthly map modernization bulletin-inaugural issue published September 9, 1998. ☑ Work In Progress on the web January 1999. (www.fema.gov/mit/tsd/mm_main.htm) ☑ Storyboards depicting Chronology of Flood Mapping Products from 1968 to the Future displayed at FEMA Headquarters. ☑ Display highlighting major components/benefits of map modernization developed for travel to conferences and Project Impact events.
2. Develop and implement revised, minimum base map standards for hazard mapping.	☑ Final draft for DFIRM 2.0 and 2.1 Base Map Specifications completed November 1998.
2.5. Complete assessment of advanced technologies for preparing topographic mapping and develop appendices to "Guidelines and Specifications for Study Contractors."	☑ Draft on LIDAR specifications completed and reviewed January 1999. ☑ Appendix 4B completed April 1999. ☑ Appendix 4B posted on the web May 1999. www.fema.gov/mit/tsd/mm_lidar.htm)
6. Initiate pilot Cooperating Technical Communities Program.	☑ Ongoing discussions with CTCs. ☑ Agreement signed with Lower Colorado River Authority in Harris County, Texas May 1999. ☑ Agreement with Denver UDFCD signed May 1999. ☑ CTC Guidance for local, regional and state agencies released July 1999.
8. Develop standards and procedures for mapping future conditions hydrology.	☑ First draft of Future Conditions Hydrology report completed December 1998. ☑ Key constituencies identified, group recommendations developed March 1999. ☑ Revised draft report distributed for review May 1999.
9. Develop Technical Services Division's Web site.	☑ Web Architecture completed. ☑ Site launched February 1999. (www.fema.gov/mit/tsd)
12. Establish partnership with Fish and Wildlife Service to improve mapping of Coastal Barrier Resource System (CBRS) areas.	☑ CBRS Community database on FIA/NFIP Web site. ☑ Dare County, North Carolina, pilot mapping project completed and a finished map set provided to the NC Congressional delegation. ☑ Monthly cooperation meetings between FEMA and U.S. Fish and Wildlife Service held.
14. Bring the toll-free FEMA Map Map Assistance Center on line.	☑ Nationwide launch completed December 1998.
15. Complete work on LOMA 2000.	☑ Product first used for LOMA determinations on March 1, 1999. ☑ Product first used for LOMR-F determinations

*"**Scorecard**," Continued from Page 7*

SCORECARD

OBJECTIVE	COMPLETED ITEMS
17. Develop new study processes and begin limited implementation in FY98, with at least one pilot in each territory.	☑ Presented draft recommendations at Regional Engineers' Conference in Emmitsburg, Md., October 1998. ☑ Delivered final draft report with recommendations to Mike Buckley, December 31, 1998. ☑ Held Q-&-A session on final report at Headquarters April 1, 1999. ☑ Delivered final report and recommendations to Mike Buckley, May 1999. ☑ Presented final recommendations at Association of State Floodplain Managers' Conference in Portland, Ore., May 1999. ☑ Distributed final report and recommendations at Regional Engineers' Conference in Fairfax, Va., June 1999.
18. Fully implement multi-year contracts and task ordered contracts for procuring Flood Insurance Studies. Transfer the procurement process to the three territories.	☑ Report with recommendations completed November 1998.
19. Continue implementation of Five-Year Mapping Needs Assessment Process.	☑ Contacted 100 percent of mapped communities participating in the NFIP. ☑ Sent thank-you letters to all responding communities. ☑ Entered data in MNUSS for all responses received.
22. Revise *Guidelines and Specifications for Flood Map Production Coordination Contractors* and develop Statement of Work and request for proposal for re-procuring Flood Map Production Coordination Contractor services to begin in FY2000.	☑ Guidelines revised and on the web February 1999. (www.fema.gov/mit/tsd/frmguide.htm)
24. Oversee all aspects of award and implementation of new Map Service Center contract to begin in FY99.	☑ Contract awarded October 30, 1998. (www.fema.gov/msc)
25. Revise *Technical Guidelines For Mapping Alluvial Fans.*	☑ First draft distributed for review April 1999. ☑ Comments received and final draft anticipated by July 1999.
27. Complete riverine erosion study required by NFIRA.	☑ A first draft of Chapters 1-4 of Riverine Erosion Hazard Area report completed and mailed to Project Working Group (PWG) for review and comment. ☑ Comments received and discussed in PWG teleconference December 1998. ☑ Currently completing draft of entire report.
32. Enter into Memorandum of Understanding with U.S. Department of Defense to allow FEMA to use the PPS code in Global Positioning System.	☑ Signed and approved Memorandum of Agreement November 1998.
37. Identify and compile FEMA's regulations and laws and recommend changes to remove or minimize impediments to FEMA's Map Modernization Plan.	☑ Currently collecting new or revised data on Objective 17, a key linkage to Objective 37. ☑ Ongoing coordination with regional staff.

*"**Objectives,**" Continued from Page 7*

29. Continue maintenance level research on coastal erosion rate analysis and shoreline location forecasting. (Mark Crowell)

30. Participate as a member of the Community Rating System task force. (Alan Johnson)

31. Finalize "Guidelines and Specifications for Wave Height Studies," Volumes 1 and 2. (Doug Bellomo)

32. ☑ Participate as a National Coordinator in the Federal Civilian Agency Precise Positioning Service (PPS) Committee; enter into a Memorandum of Understanding with the Department of Defense to allow FEMA to use the PPS code in Global Positioning System units to enable more efficient spatial data collection; and organize the internal infrastructure necessary within FEMA to allow the regions to fully utilize this technology in program activities. (Erik Rourke, erik.rourke@fema.gov)

33. Revise and republish "Appeals, Revisions, and Amendments to NFIP Maps: A Guide for Community Officials," FIA 12. Include linkages to Cooperating Technical Communities program. (Eugene Zeizel, eugene.zeizel@fema.gov)

34. Represent FEMA at preparation meetings shaping the worldwide "Year of the Ocean" initiative being endorsed by the United Nations to promote and provide information and education regarding the impact of the ocean, seas, and coastal waters on everyday life. (Doug Bellomo)

35. Improve the Letter of Map Revision process by developing technical and administrative enclosures which succinctly describe map changes and community responsibilities as a result of Letters of Map Revision. (Doug Bellomo)

36. (removed)

37. ☑ Identify and compile FEMA's regulations and laws and recommend changes to remove or minimize impediments to FEMA's Map Modernization Plan. (Cecelia Lynch, cecelia.lynch@fema.gov)

"***A Message From Matt Miller***"
continued from page 1

The modernization plan also includes updating the 100,000 map panel inventory by:

In Fiscal Year 1999, FEMA has made major strides in developing new and improved products, processes and business practices.

- Conducting flood data updates for 18,500 panels in 3,500 communities.
- Performing map maintenance for 18,300 panels with adequate flood data, but outdated non-engineering reference features such as roads, political boundaries, etc.
- Converting 92,000 panels to digital format.

This seven-year period of concentrated effort to upgrade the outdated inventory of flood maps cannot be achieved within current funding levels. If enhanced funding is not obtained, the extent of the effect of the new products and processes designed as part of the Map Modernization Plan will be relatively limited in the context of the entire flood map inventory. Without additional resources, the existing backlog of outdated maps cannot be eliminated and, in fact, will likely continue to grow. It is estimated that the flood data for 4,000 panels becomes outdated each year; at current funding levels, FEMA is able to update only 2,000 to 3,000 panels a year. At this time, FEMA is continuing to work with the U.S. Congress and the President's Office of Management and Budget to identify and evaluate viable funding alternatives.

— Matt Miller

Matt Miller (matt.miller@fema.gov) *is Chief of the Hazards Study Branch in the Technical Services Division*

Editor's note: Mike Buckley's column will return in the next issue of ***Work In Progress***.

Five-Year Mapping Needs Assessment Process: A Status Update

Currently, FEMA is evaluating the results of the first five-year cycle of the Mapping Needs Assessment and brainstorming strategies for the future. Two ongoing initiatives supporting the goals of the Mapping Needs Assessment process are the development of an updated database system and Cooperating Technical Community (CTC) task agreements to conduct flood hazard mapping needs assessments.

FEMA is developing an enhanced version of the Mapping Needs Update Support System (MNUSS), which stores mapping needs, computes the associated costs for each need and prioritizes communities based on their mapping update needs. Proposed expansion of the MNUSS to allow for an enhanced ranking process will overcome certain current limitations. MNUSS was originally designed prior to the Map Modernization Plan as a data inventory. As it is now configured, MNUSS computes the costs of addressing each identified need in a community and ranks each need separately. However, the proposed ranking process will compare the benefits/costs of addressing all mapping needs within a community (i.e., several disparate mapping needs within a single community are consolidated into a single need for purposes of the benefit/cost evaluation and prioritization). In addition, the proposed expansion will account for the benefit of conversion of all maps to digital format on a community or countywide basis, as called for by the Map Modernization Plan.

The Mapping Needs Assessment process is also being integrated into FEMA's new CTC initiative. FEMA has identified a task for state and/or regional agencies within the CTC initiative: detailed assessments of flood hazard mapping needs for communities within the CTC partner's jurisdiction. To support this effort, FEMA has developed a draft document, "Analysis and Evaluation of Community Mapping Needs," that provides partners with guidance on conducting objective, detailed assessments of community flood hazard mapping needs. Such needs identified through the CTC initiative will be recorded in the MNUSS database and considered in the scoping of future map updates.

FEMA is developing an enhanced version of the Mapping Needs Update Support System (MNUSS)

Cindy Croxdale (cindy.croxdale@fema.gov) *is a Hydraulic Engineer in the Mapping Support Branch of the Technical Services Division.*

Modernized Map Production Process:

An Overview of FEMA's Proposal to Modernize the NFIP

Overview

FEMA's proposed plan to modernize the National Flood Insurance Program includes:

- Conducting flood data updates.
- Resolving map maintenance needs.
- Completing conversion of the 100,000-map panel inventory to a digital format.

The major components of this proposed process are:

- Mapping Needs Assessment
- Scoping
- Production

Mapping Needs Assessment

FEMA will use the Mapping Needs Update Support System (MNUSS) to document all map update needs nationally and develop cost estimates. MNUSS will be used to rank and prioritize map update needs. This ranking and prioritization list will then be used to determine which map updates to initiate in that fiscal year. Enhancements to MNUSS are planned. Ongoing and planned activities for the second five-year cycle include:

- A MNUSS upgrade to capture additional data fields and to add the capability to consolidate and rank all mapping needs.
- As part of the Cooperating Technical Communities (CTCs) initiative, FEMA will be assessing mapping needs in partnership with state and regional agencies; the resulting data will be used to populate the enhanced MNUSS. To assist FEMA's partners in completing such assessments, guidance on how to conduct objective assessments of communities' flood mapping needs is under development.
- Community questionnaires will continue to be an integral component of the assessment of flood mapping needs. An improved questionnaire is under development for use during the second five-year cycle. Additionally, more efficient methods for communities to provide data to FEMA are being considered.

Scoping Process

The scoping process will include coordination and outreach to communities. For communities that are included on a countywide Flood Insurance Rate Map and that have flood data update needs, the community coordination will typically be through face-to-face meetings conducted by the Regional study manager.

For communities for which the map update will be a digital conversion and/or map maintenance with no flood data updates, the community coordination may be accomplished via teleconferences with the community, state and/or regional agencies and the Mapping Coordination Contractor (MCC).

The purpose of the coordination meetings (or teleconferences) will be to:

- Validate map update needs previously identified.
- Determine study reaches and methods for engineering analysis and floodplain mapping.
- Identify topographic data sources.
- Determine Digital Flood Insurance Rate Map (DFIRM) options to be included, and
- Select the appropriate base map.

The coordination meeting (or teleconference) will also allow the Regional study manager to achieve a "best value" for FEMA by determining how to distribute the work required to complete the mapping project based on the strengths and technical capabilities of the available resources. The resources available to the study manager may include:

- Study Contractor (SC)
- MCC
- CTC (local community, state or regional agency)
- Other Federal agencies

After the coordination meeting (or teleconference), the Regional study manager will assign responsibilities for the mapping project to the available resources. The modernized pro-

*See "**An Overview of FEMA's Proposal to Modernize the NFIP**," continued on page 11*

*"**An Overview of FEMA's Proposal to Modernize the NFIP**," continued from page 10*

cess will allow for greater flexibility in roles based on the strengths of the resources available to complete a given project.

After assigning the responsibilities to the available resources, Time and Cost estimates are prepared and submitted to the Regional study manager. The study manager then determines if the total costs are within the target study budget established through the Five-Year Mapping Needs Assessment and budget allocation processes. If they are, the resources are issued task orders and notified to proceed. If not, an iterative process would be followed to modify the scope of the project or the estimates or reassign the work among the available resources until the projected budget falls within the target budget range.

The Monitoring Information for Contracted Studies (MICS) software will support the scoping process. Version 2 of the software will allow the FEMA Regional study manager to develop a tailored scope of work and issue task orders for each available resource.

Production

Production will begin upon issuance of the task orders to the mapping resources by the FEMA Regional study manager. The resources involved in the mapping process will complete work in parallel.

Communication through MICS, teleconferences and/or interim meetings will be essential to ensure that schedules are met and technical aspects of the mapping projects are coordinated. MICS will allow for efficient management through sharing information on budgets and schedules. The software will also automate such management functions as developing and submitting Special Problem Reports and invoicing.

Additionally, hydrologic and hydraulic (H&H) and floodplain mapping for flood data updates will be subject to interim independent QA/QC reviews. The schedule and responsibility for performing these reviews will be established during the scoping process by the FEMA regional study manager.

Another option available to FEMA Regional study managers to provide the necessary independent QA/QC review would be for a CTC to evaluate work completed by the CTC's subcontractor and certify compliance with applicable FEMA standards and criteria. As an alternative, an SC could review CTC efforts.

Upon completion of the H&H analyses and floodplain mapping, the effective and revised floodplain information will be merged by the entity specified in the initial scope of work to prepare the final DFIRM. While the final DFIRM production is underway, the revised floodplain information will be provided to the community and the statutory 90-day appeal period will be initiated. Because of increased coordination with and involvement by the community, the number of appeals and protests to preliminary flood maps should decrease.

Upon completion of the DFIRM and resolution of any appeals or protests, the final DFIRM will be distributed by the Map Service Center and through FEMA's Flood Hazard Mapping website.

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Important FEMA Telephone Numbers

For technical support for LOMAs, LOMR-Fs and LODRs	**1-877-336-2627 (FEMA MAP)**
For information about the NFIP's Preferred Risk Policy	**1-800-427-9662**
To order current FEMA publications	**1-800-480-2520**
Flood Insurance Information Hotline	**1-800-427-4661**
To order current FEMA floodplain maps	**1-800-358-9616**
FEMA's 24-hour FAX-on-demand system	**1-800-646-FEMA TDD:1-800-427-5593**

Members of the general public, as well as engineers, surveyors and representatives of local, state and Federal agencies may dial these numbers to obtain information about various subjects, such as flood insurance and map revisions/amendments. Callers may also use these numbers to obtain information packets and order FEMA publications and map products.

*"**DFIRMs —Specifications and Procedures**," continued from page 2*

Minimum Standards for Community Supplied Data

For FEMA to use community-supplied base map data instead of the USGS DOQs for new DFIRM production, the following minimum standards **must** be met:

- **Resolution –** The minimum resolution requirement for raster data files is 1-meter ground distance. Higher resolution data are also acceptable.
- **Horizontal Accuracy –** The base map data used by FEMA to produce a new DFIRM will employ the National Standard for Spatial Data Accuracy (NSSDA) to report horizontal accuracy. The minimum horizontal positional accuracy for new DFIRM base map data will be that of the default base map – the USGS DOQs, whose NSSDA accuracy is 38 feet. Data that meet higher accuracy standards are also acceptable.
- **Vertical Accuracy –** Vertical accuracy requirements for new DFIRM products will be defined under Map Modernization Objective 2.5 (Work Maps).
- **Horizontal Reference System –** The files must be georeferenced to a known projection and datum and be accompanied by information that describes those parameters.
- **Data Sources –** Community-supplied data may be in the form of digital orthophotos or vector data files. Locally produced digital orthophotos may be at larger scales and higher resolution than USGS DOQs, but, at a minimum, must meet USGS DOQ standards. Aerial images that are not ortho-rectified are not acceptable. Vector files may be photogrammetrically compiled or digitized from orthophotos. Unacceptable vector file sources include TIGER files or other files compiled at scales smaller than 1:20,000.
- **Currency –** The data must have been created or reviewed for update needs within the last 7 years.
- **Coverage –** FEMA desires to receive complete and integrated data for an entire county.
- **Availability –** The data must be available at the time of the initial coordination contact and must be sent within 30 days of receipt of FEMA's request.
- **Restrictions on Use –** FEMA must be able to print and distribute an unlimited number of hardcopy maps using the data. FEMA must also be able to freely distribute to the public the base map data in raster format along with the floodplain information.
- **Contents –** The files must contain all transportation features (roads, railroads and airports) for the community. If digital orthophotos are supplied, these features must be clearly visible. In vector format, roads may be portrayed as road centerlines, edge of pavement or right-of-ways.

FEMA also desires to augment the USGS DOQs or community-supplied transportation features with hydrographic features, current political boundaries, parks or forest lands if applicable, range, township, and section lines, if applicable, and feature names for all of the above features that have names.

- **Optional Contents –** FEMA also desires bridges; unimproved roads or trails; flood control structures, including levees, dams, weirs, floodwalls, jetties, etc.; elevation data; building footprints; and parcel outlines or parcel centroids, if available.
- **Thematic Separation of Data –** Thematic data must be separated by level, layer, attribute or file.
- **Metadata –** The files must be accompanied by metadata that complies with the Federal Geographic Data Committee metadata standards or a FEMA Digital Base Map Information Checklist that describes the files and their contents.

Combining Data from Multiple Sources

FEMA desires to receive complete and integrated data for an entire county. If only portions of a county are available, FEMA may choose to use the default base map source (USGS DOQs) for the county. FEMA may also choose to combine data from multiple base map sources to prepare the new DFIRM product. This may entail piecing together data provided by adjoining communities or adjoining DOQs.

To facilitate fitting data together from multiple sources, FEMA may clip files at the edges. However, once a base map data source has been accepted, FEMA will use the location of a feature in the base map data files "as is" and will not modify the feature alignment that is provided. In some instances this may mean that there will be slight mismatches between communities as roads or other features cross community boundaries.

Acknowledgment of Data Sources

FEMA will prepare an acknowledgment note that defines the source or sources of the digital base map data and provides information on how to resolve any problems that may arise when making determinations where two sources adjoin.

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*"**Flood Hazard Maps Now Available On the Web**,"*
continued from page 3

FEMA and ESRI officials advise that the maps available on this site should be considered an advisory tool for general hazard awareness and education, and that the information should not be used for analyses or legal determinations. More accurate and complete hazard information may be obtained through local and state organizations such as emergency and floodplain management offices, State and local GIS offices, the U.S. Geological Survey and universities and colleges. FEMA recommends that users contact these organizations for additional information about hazards in their area.

For more information about the Q3 Flood Data Product, please visit the Q3 Flood Data Questions page on FEMA's Flood Hazard Mapping site's Frequently Asked Questions section (http://www.fema.gov./mit/tsd/FQ_mapFP.htm).

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Work in Progress was produced with the valuable assistance of many individuals in the Mitigation Directorate and across FEMA who contribute to the success of the Map Modernization Plan.

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*"**Agencies Sign Cooperating Technical Communities Agreement**"*
continued from page 1

Cooperating Technical Communities are communities or regional or state agencies with the interest and capability to become active partners in FEMA's flood hazard mapping program. The objectives of the CTC initiative are to recognize the contributions made by FEMA's state, regional and community partners to assist FEMA in providing timely and accurate flood hazard information. The initiative also aims to maximize the use of partner contributions so that limited Federal funding can be leveraged to the fullest extent while maintaining consistent national standards. Other goals of this initiative include providing training and technical assistance and facilitating mentoring for potential partners willing to develop the capability to properly maintain flood hazard information.

Benefits of CTC partnerships include:

- More accurate flood hazard maps as a result of the incorporation of local knowledge and expertise into the mapping process. This also contributes to faster map updates.
- Enhancement of local capabilities through FEMA's technical assistance, experience, standards and funding.
- The data, methods and mapping used for local floodplain management programs will also be used for NFIP mapping whenever possible.

For more information about the CTC initiative, please visit the Cooperating Technical Communities site on FEMA's Flood Hazard Mapping site.

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