

SECTION 20: HAZARD MITIGATION

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Note: While this desk reference focuses on regulations directed toward new construction in the floodplain, most communities are more concerned about existing flood problems. This section tackles the bigger issue — reducing flood losses and making sure other activities don't make things worse.

20.1. MITIGATION MEASURES

While flooding cannot always be stopped — and in many cases, should not be prevented — flood hazards can be reduced. As their definitions attest, the words “hazard mitigation” mean taking measures that minimize or reduce the impacts of flooding on human development.

For the purposes of this desk reference, flood hazard mitigation is defined as “all actions that can be taken to reduce property damage and the threat to life and public health from flooding.”

Each mitigation measure is appropriate in different situations. Structural flood control projects can be the most efficient way to protect an existing critical facility or a concentration of damage-prone buildings. But in developing areas, regulations and acquisition make more sense, as they are inexpensive ways to prevent creation of flood problems.

The CRS categorizes flood hazard measures under six basic strategies. A good mitigation program includes all of them:

- Prevention
- Property protection
- Natural resource protection
- Emergency services
- Structural projects
- Public information

20.1.1. Prevention

Preventive measures are designed to keep the problem from occurring or getting worse. They ensure that future development is protected from flooding and that it does not increase flood damage. Preventive measures are usually administered by building, zoning, planning, and/or code enforcement offices. They include:

- Planning and zoning
- Open space preservation
- Building codes
- Floodplain development regulations
- Subdivision design and regulations
- Stormwater management
- Drainage system maintenance

20.1.2. Property protection

Property protection measures are used to modify buildings subject to flood damage rather than to keep floodwaters away. A community may find these to be inexpensive measures because often they are implemented by or cost-shared with property owners. These measures include:

- Acquisition
- Relocation
- Building elevation
- Floodproofing
- Sewer backup protection
- Insurance

FLOODPLAIN MANAGEMENT SUCCESS STORY

Property Protection Through Acquisition

Acquisition and relocation of frequently flood-damaged buildings have been taking place in the City of Peoria and unincorporated Peoria County for nearly 15 years. Since the beginning of the program in 1982, the City, County, and Park District have acquired, relocated, and demolished dozens of structures and restored an open floodplain along a 25 mile reach of the Illinois River.

All the properties have been cleared to open space and residents have relocated to flood-free locations. The County also participates in the Community Rating System (CRS) and has used the acquisition projects to reduce their CRS rating, which lowers flood insurance premiums for County residents.

Record floods occurred in 1979, 1982, 1985, and 1995. The success of the program is obvious when the damages for the 1985 and 1995 floods are compared. Although the 1995 flood crested 1.4 feet higher than the 1985 flood, very little damage occurred, and *flood insurance claims were reduced by almost 90%*. Taxpayers were saved millions of dollars in relief costs and the residents do not face the disruption and property damage from recurring floods.

Total Project Cost: \$4,700,000

Outside Funding Sources: \$1,500,000 from IDNR
\$2,200,000 FEMA's Sec. 1362 Program (replaced by
the Flood Mitigation Assistance Program in 1994)

20.1.3. Natural resource protection

Water quality and natural habitats may be improved, and flood losses reduced, by preserving or restoring natural areas or the natural functions of floodplain and watershed areas. These activities usually are implemented by environmental or code enforcement agencies. In addition to these measures, zoning, or preserving open space can also protect natural resources:

- Wetland protection
- Erosion and sediment control
- “Best management practices” for stormwater runoff

20.1.4. Emergency services

Emergency services measures protect people during and after a flood. Most counties and many cities have emergency management offices to coordinate warning, response, and recovery during a disaster. Emergency services measures include:

- Flood warning
- Flood response
- Evacuation and sheltering
- Critical facilities protection
- Health and safety maintenance

20.1.5. Structural projects

Structural flood control projects are used to lower flood elevation profiles and to prevent floodwaters from reaching floodprone areas. These measures are “structural” because they involve construction of man-made structures to control water flows. There are six common types of projects:

- Reservoirs/detention basins
- Levees/floodwalls/seawalls
- Channel modifications
- Enlarging culverts or bridge openings
- Diversions
- Storm sewers

A flood control project can also incorporate a combination of the six common types of projects listed above.

The benefits of structural projects can include:

- Providing regional flood damage reduction for localized impacts such as a reservoir.
- Protecting the public infrastructure such as streets and highways.
- Reducing flood flow velocities.
- Keeping environmental hazardous (such as poor water quality) impacts away from residential, public, and commercial areas.
- Providing recreation benefits.

Structural projects can be very expensive. Their other shortcomings include:

- Disturbing the land, disrupting natural water flows, destroying habitats.
- Requiring regular maintenance.
- Being built to a flood protection level that larger floods can exceed.
- Creating a false sense of security, as people protected by a project often believe that no flood will ever reach them.

20.1.6. Public information

Public information activities advise property owners, potential property owners, and visitors about the hazards, ways to protect people and property from the hazards, and the natural and beneficial functions of floodplains. Usually implemented by a public information office, they can include:

- Map information
- Outreach projects
- Real estate disclosure
- Websites
- Libraries
- Technical assistance
- Environmental education

FLOODPLAIN MANAGEMENT SUCCESS STORY

MITIGATION THROUGH SEWER IMPROVEMENTS

In August of 1997, the City of Chicago experienced flooding and sewer back-up damage during a torrential rainstorm.

The flood caused hardship and property loss for over 35,000 City residents. Because of the population density many basements are utilized as garden apartments, and many of the affected residences have experienced damage on a recurring basis. In addition to property loss, four fatalities occurred as a result of the flood disaster.

The City installed valves that attach to the inlets of the combined stormwater and sanitary sewer system to restrict the flow of rainwater into the system at the peak of a storm. Engineering studies determined that the inlet valves were the most cost effective mitigation measure. The inlet control valves are being located throughout the area based on topography and other engineering criteria.

The result is that the combined system will not be overloaded. The sewers function as they are intended, and the inlet valves prevent back up of sewage into the residential basements. During peak periods of full capacity, the excess storm water is temporarily stored in the streets and not contaminated with sewage.

Total Project Cost: \$14.3 million

Funding Sources: \$7,875,000 -- FEMA's Hazard Mitigation Grant
\$6,425,000 -- local match provided by the City of Chicago

20.2. MITIGATION PLANNING

20.2.1. Benefits of planning

Floodplain residents and property owners are not always aware of things that are being done to protect them from flooding, nor are they aware of things they can do to protect themselves, or how they can contribute to community efforts. In addition, different departments in a community may implement activities that are not coordinated or that may even conflict with one another. Developing a flood hazard mitigation plan is one of the best ways to correct these shortcomings.

A well-prepared plan will guide the community's flood, stormwater, and related activities so they are implemented more economically and in ways more attuned to the needs and objectives of the community and its residents. A well-prepared plan will also reduce flood losses and improve protection of the floodplain's natural and beneficial functions, to the benefit of both the community and the NFIP.

The objective of planning is to produce a program of activities that will best tackle the community's flood problem and meet other community needs. A well-prepared plan will:

- Ensure that all possible activities are reviewed and implemented so that the most appropriate solutions are used to address the flood problem.
- Link floodplain management policies to specific activities.
- Ensure that activities are coordinated with each other and with other community goals, objectives, and activities to prevent conflicts, and reduce the costs of implementing individual activities.
- Educate residents about the flood hazard, flood loss reduction measures, and the natural and beneficial functions of floodplains.
- Build public and political support for projects that prevent new flood problems, reduce flood losses and protect the natural and beneficial functions of floodplains.
- Guide development away from hazardous areas.
- Fulfill planning requirements for State or Federal assistance programs.
- Facilitate implementation of floodplain management activities through an action plan that has specific tasks, staff assignments and deadlines.

20.2.2. FEMA requirements

The Disaster Mitigation Act of 2000 (also known as “DMA 2000” or “DMA 2K”) set new planning requirements for FEMA programs:

- Effective November 1, 2003, if a community wants funding from FEMA’s Pre-Disaster Mitigation (PDM) grant program, it must have adopted a FEMA approved multi-hazard mitigation plan. PDM funds are available on a competitive basis each year.
- Effective November 1, 2004, if a community wants funding from FEMA’s Hazard Mitigation Grant Program (HMGP), it has to have adopted a FEMA approved multi-hazard mitigation plan. HMGP funds are provided following a Presidential disaster declaration.
- If a community wants funding from FEMA’s Flood Mitigation Assistance (FMA) program, it must have adopted a FEMA approved flood hazard mitigation plan.



If a community wants to join the Community Rating System and it has 10 or more repetitive loss properties, it must prepare a floodplain management plan for its repetitive loss areas. The community may expand such a plan to include all of its floodprone areas to receive full credit under Activity 510–Floodplain Management Planning. Additional credit is provided if the plan is an all-hazards mitigation plan.

20.2.3. The planning process

The planning process includes getting input from everyone who has relevant information, everyone who is affected by flooding and everyone who will participate in implementing the plan. It works for all types of plans, such as those for land use plans, capital improvement, neighborhood redevelopment, and hazard mitigation.

A hazard mitigation plan can take many forms, using a variety of formats and organizational styles. The format and organization of a plan are not what is important.

Dwight D. Eisenhower said, “Plans are worthless. Planning is essential.” This simple phrase says it all: The paper document is not as important as the *process* of planning. Because each community is different, each floodplain management plan will be different. However, the process they follow should be similar.

FEMA regulations pursuant to DMA 2K recommend a four part planning process:

- Establish the process
- Assess the risk
- Review mitigation alternatives
- Implement

The CRS recommends a 10-step planning process that expands on the DMA 2K guidelines (see Figure 20-1). In both cases, the process provides a framework for local officials, residents, engineers, technical experts, and others to work out the details and reach agreement on what should be done to mitigate the flood hazard.

DMA 2K (44 CFR 201.6)	CRS Steps	How-To Guides *
Planning process 201.6(c)(1) 201.6(b)(1) 201.6(b)(2) & (3)	1. Organize 2. Involve the public 3. Coordinate	<i>Getting Organized</i>
Risk assessment 201.6(c)(2)(i) 201.6(c)(2)(ii) & (iii)	4. Assess the hazard 5. Assess the problem	<i>Understanding Your Risks</i>
Mitigation strategy 201.6(c)(3)(i) 201.6(c)(3)(ii) 201.6(c)(3)(iii)	6. Set goals 7. Review possible activities 8. Draft an action plan	<i>Developing a Mitigation Plan</i>
Plan maintenance 201.6(c)(5) 201.6(c)(4)	9. Adopt the plan 10. Implement, evaluate, revise	<i>Bringing the Plan to Life</i>

Figure 20-1: FEMA planning guidance

* The ‘How-To Guides’ are a series of mitigation planning notebooks published as *State and Local Mitigation Planning how-to guides*, FEMA 386-1, -2, etc. These publications and other guidance are available at <http://www.state.il.us/iema/planning/planning.htm> or <http://www.fema.gov/fima/planning.shtm>.

Flood Mitigation Planning – The First Steps, Association of State Floodplain Managers, 2001. This floodplain management planning kit consists of reference materials, masters for handouts, and a two-part video that explains the 10-step process to the general public. It is designed to be shown at the first meeting of a planning committee. Order through ASFPM website (www.floods.org) or call 608-274-0123.

20.3. MITIGATION ASSISTANCE PROGRAMS

A variety of Federal, State, local, and private sources offer assistance in mitigation activities. Help is limited only by a community’s imagination and initiative. This section reviews the more common programs.

20.3.1. Technical assistance

Help with mitigation planning may be available from a local, regional, or State planning agency or a private organization. For example, the National Park Service's Rivers, Trails and Conservation Assistance Program provides staff support for local planning under certain conditions. If they can't help with the whole thing, they may be able to help with some tricky parts, like providing a facilitator for an all-day community input workshop.

Another source of assistance is a private consultant. Planning and engineering firms usually have personnel skilled in the various flood loss reduction measures and the planning process. These flood-related agencies and organizations may help in providing technical assistance or in implementing mitigation activities that benefit a community:

- The soil and water conservation district
- Agencies of the U.S. Department of Agriculture that work with watershed property owners, such as the Natural Resources Conservation and Cooperative Extension services.
- County stormwater management commissions
- Regional or metropolitan water, sewer or sanitary districts
- County emergency management agency (ESDA)
- Illinois Emergency Management Agency
- Illinois Department of Natural Resources/Office of Water Resources
- FEMA Regional Office
- The district office of the U.S. Army Corps of Engineers
- Illinois Association for Floodplain and Stormwater Management

More references and contacts in floodplain management agencies and programs can be obtained through IDNR/OWR, the Association of State Floodplain Managers, and the Floodplain Management Resource Center. See also *Federal Programs Offering Non-Structural Flood Recovery and Floodplain Management Alternatives*, Executive Office of the President, 1998. It's on FEMA's website.

Another excellent source of information is the *M.O.M. Resource Directory* prepared jointly by FEMA and the National Park Service. A computer program that lists more than 300 government and private programs, the Windows-based software is easy to install and use. It is available free from:

Rivers, Trails and Conservation Assistance -National Park Service
P.O. Box 25287 IMFA-RM-S
Denver, CO 80225-0287
Phone: (303) 969-2781
Fax: 303-987-6676

Assistance on wetlands issues can be obtained by calling the USEPA Wetlands Information Hotline at (800) 832-7828.

20.3.2. Property owners

Many times, a community does not have to look beyond the beneficiaries of hazard mitigation to find help for a mitigation activity.

For an activity that directly affects a property, such as a retrofitting project, the owner should be asked to chip in. One example is using the owner's insurance claim to help pay for a project related to repairing a damaged building. The new Increased Cost of Compliance coverage in the flood insurance policy was specifically created for mitigation purposes. It is discussed in more detail in Section 16 on Substantial Damage.

Owners who recognize that they have a real flood problem are willing to pay a large part of the cost. In one project in Denham Springs, Louisiana, homeowners paid up to \$40,000 as the 50/50 match to elevate their homes above flood levels.

For more information on these and other local funding sources, see the Corps of Engineers' *Local Flood Proofing Programs*.

FLOODPLAIN MANAGEMENT SUCCESS STORY

Mitigation Cost Sharing

The Village of South Holland, Illinois, found that residents are ready and willing to pay for mitigation measures to protect their homes. The Village uses a 25% rebate program as a catalyst to get property owners interested. The owners pay 75% of the cost and get the rebate after the project passes inspection.

Over a five year period, the program funded over 350 projects, such as basement waterproofing, sump pump backup systems, overhead sewers, and drainage improvements. These are relatively low cost measures to protect against the local drainage and sewer backup problems residents face.

These projects have a total cost of \$728,000. However, the community's share has been only \$182,000.

20.3.3. Pre-Disaster Mitigation program

The Pre-Disaster Mitigation (PDM) program "provides technical and financial assistance to local governments for cost-effective pre-disaster hazard mitigation activities that complement a comprehensive mitigation program, and reduce injuries, loss of life, and damage and destruction of property."

In 2003, funds were available for planning grants and project grants on a 75/25 Federal/non-Federal cost share. There was no list of eligible activities, but they are assumed to be similar to

those for FMA grants. Ineligible activities included major flood control projects, flood warning systems, drainage studies, communication equipment, and floodplain mapping.

A FEMA approved natural hazards mitigation plan is a prerequisite for a PDM project grant. All applicants must be in good standing in the National Flood Insurance Program.

20.3.4. Disaster assistance

If a community is hit by a disaster and the area subsequently receives a presidential disaster declaration, a variety of programs can provide mitigation assistance. Most of them are authorized by the Robert T. Stafford Disaster Relief and Emergency Act, known as the Stafford Act.

First, a disaster field office will be established under the guidance of a State coordinating officer and a Federal coordinating officer. They will be supported by mitigation staff and directed by a deputy Federal coordinating officer for mitigation and a State hazard mitigation officer.

Two types of help will be provided: technical assistance and financial assistance. The Federal-State team will distribute up-to-date materials about these programs; this section provides a brief overview of them. Note that they may be slightly different when implemented in an area in the future.

Technical assistance: The disaster assistance staff should be able to spend time with the community's mitigation planners. They can review mitigation measures, techniques, and funding sources.

One of their prime concerns will be proper regulation during reconstruction (see Section 19). They can help analyze damage to identify areas prime for acquisition and clearance and help develop mitigation plans.

The disaster team may also provide technical assistance to property owners. Information on repairing and retrofitting is given through public meetings, handouts, and news releases. Sometimes mitigation tables are set up in disaster recovery centers, or separate Reconstruction Information Centers are opened. They house architects, engineers, and other specialists who can work closely with owners to help design appropriate flood protection measures.

Financial assistance: FEMA will widely publicize the assistance programs that are made available after a disaster declaration. Three main types of assistance are available, each of which can fund mitigation measures: the Public/Infrastructure Assistance, the human services programs, and the Hazard Mitigation Grant Program.

1. Public/Infrastructure Assistance, formerly known as the Public Assistance Program, can provide 75 percent of the cost of repairing or restoring facilities owned by public agencies and certain private nonprofit organizations. If an applicant prefers to relocate a facility out of the floodplain rather than replace it, FEMA will also provide funds for the environmental analysis, the land, and the utility hook-ups.

FEMA takes the first step in obtaining Public/Infrastructure Assistance funding by completing a Project Worksheet (PW) for each facility. The community should have a representative on each PW team to provide local input into the repair or replacement design for damaged facilities.

The local PW representative should be aware that this program provides an opportunity to incorporate hazard mitigation features while replacing some damaged property. FEMA can provide funding above and beyond the cost of repairing or replacing a public facility, if it can be demonstrated that the proposed mitigation measure is permanent, technically feasible, and cost-effective. If possible these mitigation measures should be evaluated in the planning process. In the aftermath of the disaster it is very easy for these opportunities to be overlooked. FEMA will send out Disaster Assistance Employees (DAEs) to assist in the paperwork. They are from outside of the local jurisdiction so it is important to make sure they are aware of the mitigation possibilities.

Mitigation Example: A flood washes out a culvert that used to back up every time there was a 2-inch rain. FEMA and the State will estimate the cost to repair or replace it as it was. If someone points out that (1) a larger culvert can save more money than it costs by reducing flood damage to other properties, (2) the larger culvert will not create a new flood problem, and (3) floodplain regulations prohibit obstructions in the floodway, then FEMA may share the expense of replacing the lost culvert with a larger one.

Similarly, funds from this program can be used to protect or relocate damaged water and sewer lines, floodproof pumping stations, elevated roads, or replace bridges with clear spans.

Insurance note: Public/Infrastructure Assistance grants for public buildings are subject to a “deductible.” Under the Stafford Act, Federal disaster assistance for a flooded public building will be reduced by the amount of flood insurance coverage the community should have on that building. It does not matter whether the building is insured; FEMA will still only provide assistance for damage that exceeded the level of available insurance (structural AND contents).

Example: The maximum amount of structural flood insurance available for a non-residential building is \$500,000. Floodville’s \$2 million city hall is flooded and receives \$600,000 in damage. If the city hall is in an SFHA, the disaster assistance program will assume it’s insured for \$500,000. Federal aid to repair or rebuild the city hall will be 75% of \$100,000 (\$600,000 - \$500,000).

Floodville will receive \$75,000 in disaster assistance for a building that suffered \$600,000 in damage. If the city hall was not insured, Floodville’s taxpayers are going to have to come up with the balance. If it was insured, the city will have \$575,000 (\$500,000 in insurance claim and \$75,000 from disaster assistance) toward repairs and reconstruction.

Flood insurance is also a good idea because not every flood warrants a Federal disaster declaration. The moral of the story is to make sure that all publicly owned buildings subject to flooding have flood insurance.

2. Human services programs provide resources to assist residents and business owners, such as temporary housing, unemployment aid, food stamps, grants, and loans.

FEMA's Individual and Households Program – formally known as the Individual and Family Grant program (IFG) is designed to help disaster victims pay for “unmet needs,” such as those that are not funded by other programs. It is a grant to individuals, usually people who cannot qualify for a loan or cannot get a loan to cover all of their expenses.

Temporary housing can be particularly helpful in providing homes for people waiting to find out if their homes can be reoccupied or if they will be acquired and cleared.

Sometimes the housing assistance component has been used to fund minor mitigation projects, such as elevating a furnace, water heater, washer or electrical service box above the flood level. These grants can be especially useful in areas with lower income or fixed income families that are subject to shallow or basement flooding.

Generally, these grants are insufficient to retrofit an entire building. In addition, they are Federal funds and cannot be used towards the non-Federal cost-share required for larger mitigation grants.

3. Hazard Mitigation Grant Programs (HMGP) provides grants to local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the program is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during immediate recovery from a disaster.

Section 404 of the Stafford Act makes money available to assist eligible applicants after a Presidential disaster declaration. Section 404's Hazard Mitigation Grant Program will pay up to 75 percent of the cost of such mitigation projects. The amount of funds available is 7.5% of the Federal expenditures on the disaster. This was formally 15% but was reduced when the PDM program began. Available funds can vary greatly from \$33 million from the 1993 flood down to \$200,000 in a small disaster.

To be eligible, the community must have an approved hazard mitigation plan. Projects should be consistent with the recommendations of the plan and the State's mitigation plans and strategies. Projects must be shown to be cost-effective and they may mitigate hazards other than the one that caused the disaster.

Eligible projects include acquisition of floodprone properties and reversion to open space, elevation of floodprone buildings, minor drainage improvements, and some structural flood control projects. Traditionally, the program has most often been used to acquire floodplain properties. Since 1993, more than 3,000 properties have been purchased through the State. In some communities, the property owners volunteered to help pay the non-Federal share of the cost. All acquisitions must be voluntary on the part of the homeowners. In the aftermath of some disasters Congress has allocated funds through Housing and Urban Development to the Department of Commerce and Economic Opportunity (DCEO) that can be used for mitigation projects.

Even if a community did not receive a disaster declaration, it may be able to receive a Hazard Mitigation Grant. In 1997, FEMA ruled that the funds could be spent on appropriate projects

throughout a state that received a disaster declaration. However, priority funding is usually given to communities in the declared counties.

20.3.5. State programs

The State of Illinois sponsors several mitigation programs through the Illinois Department of Natural Resources/Office of Water Resources (IDNR/OWR).

The Flood Hazard Mitigation Program is funded by State Capital Bond funds and special appropriations. The program funds can be used to acquire flood-prone structures. The program is coordinated with the FEMA mitigation programs to provide the required 25% local match. On occasion the program will finance projects without FEMA/IEMA involvement. Because these are bond funds they cannot be used to purchase mobile homes, which are considered personal property.

Small Projects Program: This program provides direct assistance to rural and smaller urban communities statewide to reduce stormwater related flood damages by alleviating localized, significant drainage and flood problems. The program relies on cooperative utilization of local resources and is limited to a maximum of \$100,000 of IDNR/OWR funds at a single locality. The following are requirements for this program:

1. Justification must be shown for IDNR/OWR funds used for a project.
2. Each project must have a Local Sponsor(s) (generally a unit of local government or school district).
3. Each project must have an executed local sponsorship agreement. Under this agreement, the local sponsor(s) responsibilities include:
 - joining and remaining in good standing in the National Flood Insurance Program;
 - acquiring all necessary land rights for construction, operation, and maintenance of the project;
 - any utility alterations required for the project;
 - payment of any construction costs above the amount of IDNR/OWR's participation (\$100,000 maximum); and
 - operation and maintenance of the project upon completion.
4. Design, preparation of plans and specifications, and overseeing of construction can be done by either the local sponsor(s) or IDNR/OWR, if time and personnel are available. IDNR/OWR pays contract bills as the work is completed. Reimbursement is not allowable.

Stream Maintenance: This program allows IDNR/OWR to construct small flood control projects which have no State capital cost component other than manpower and equipment. The benefiting community is required to provide all capital costs associated with the project. Also under this program, benefits are provided to communities incapable of maintenance of a stream or existing flood control facility. IDNR/OWR provides a one time service to construct or improve an existing facility, thus providing a community with a project within their capabilities to maintain, and one which functions more efficiently and accrues benefits.

Stream Preservation: IDNR/OWR is the lead agency for the development and coordination of watershed-wide stream preservation programs for floodwater management plans in Northeastern Illinois. Stream preservation consists of periodic reconnaissance, maintenance, removal of trash and debris, vegetation management, and periodic removal of sediment deposits by local units of government. The program is a non-structural effort directed at preserving the existing flow capacity of designated stream channels.

IDNR/OWR works with local communities through Memoranda of Understanding which outline a cooperative approach to stream channels in a community. IDNR/OWR has a handbook that has been prepared which describes the program.

As in the Stream Maintenance program, prison workers could be used for the clearing and snagging of streams. The initial stream preservation project work could possibly be arranged for the communities by IDNR/OWR, with the communities making their own arrangements with Corrections for future stream preservation assistance.

The program has been undertaken in various Chicago Metro area watersheds.

Urban Flood Control Assistance Programs: IDNR/OWR receives many requests for assistance to solve urban flooding and other related water resources problems, each of which leads to some category of study or action. Requests for assistance are routed to the Division of Planning. Requests are received either in writing or verbally from a variety of sources, including local citizens and officials from local, State, and Federal levels of government. An investigation is made on each request, and the most efficient and cost effective approach to each solution is selected. The solution to a flood problem can generally be addressed by a private individual or some governmental entity. If the solution is within IDNR/OWR's authority and capability, a course of action is taken based on the following parameters:

1. magnitude of the problem,
2. responsibilities of the various parties involved,
3. potential feasible solution, and
4. most expeditious solution to the problem.

Technical Advice and Referral: IDNR/OWR reviews each request for assistance to determine if OWR has authority to respond in specific areas. An initial determination may be made that a particular flood problem is beyond the scope of IDNR/OWR programs (not an urban problem or too expensive) and it may be referred to a more appropriate agency (Corps of Engineers, Natural

Resources Conservation Soil Service, etc.). If the problem is related to some type of erosion process for instance, it is generally considered the responsibility of the property owner. In such a case, technical advice is provided to the owner to resolve the problem, and where applicable, assistance is requested from the Natural Resources Conservation Service.

If the problem involves property or improvements constructed by other State agencies, the problem is referred to those agencies. However, IDNR/OWR is frequently requested to provide technical assistance to those agencies to solve the problem or produce a multipurpose project to meet both agencies needs.

If the problem is generated as a result of construction activity by a private individual, the solution may be referred to the IDNR/OWR's Permit Section for enforcement action. An IDNR/OWR permit is required for work on Illinois streams if the drainage area at the proposed work is greater than 1 sq. mi. in urban/urbanizing areas, or 10 sq. mi. in rural areas, or if a mapped floodway exists at the project site.

Study Process: When a request for assistance is received relative to a severe flood problem, it may be addressed through a study process which begins with an initial feasibility determination based on preliminary estimates of flood damages and potential solutions. This preliminary investigation may be in the form of a Reconnaissance Study in which pertinent, available flood data is collected to determine whether or not a Strategic Planning Study is warranted. A Strategic Planning Study can take twelve months or longer to complete and provides an accurate prediction of flood damages and alternative solutions to the flood problem, including average annual benefits and costs associated with each alternative. IDNR/OWR authority generally requires a favorable Benefit/Cost Ratio (B/C ratio equal or greater than 1.0) to proceed to a Project Planning Study and construction as a total State project. Strategic Planning Studies are performed inhouse, by consultants, or by cost sharing/coordination with other governmental agencies or entities.

Project Planning Studies are performed in the next phase of the study process. This phase is initiated if the local entity requesting assistance is willing to be a local sponsor for a selected alternative. Project Planning Studies are more detailed engineering design studies and are only performed for projects scheduled to be constructed as IDNR/OWR projects. Environmental reviews and approvals as well as necessary permits are usually secured in this phase of the planning process.

Plans, specifications, permits and appropriation of funds, which follow the Project Planning Study phase, are the final steps required to bring projects to the construction phase.

20.3.6. Flood Mitigation Assistance Program

Recently, the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004 (Act) was signed into law. The Act reauthorized the National Flood Insurance Program until September 30, 2008, and reauthorized FEMA to provide grants to States and communities for planning assistance and for mitigation projects that reduce the risk of flood damage to structures covered by flood insurance. The overall goal of the Flood Mitigation Assistance (FMA) program is to fund cost-effective measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other insurable structures.

FMA will pay 75 percent of the cost of these measures under its planning grants, project grants, and technical assistance grants. If a state has an approved mitigation plan that specifies how the State intends to reduce the number of severe repetitive loss properties and FEMA determines that the State has taken such actions, then FMA will pay 90 percent. Each state receives limited annual funding for planning and project grants. The Illinois Emergency Management Agency (IEMA) administers the program. All funding applications must go through IEMA to be accepted by FEMA.

Planning grants: The purpose of a planning grant is to develop or update a Flood Mitigation Plan. To be eligible for an FMA project grant, an eligible applicant must develop, and have approved by the FEMA regional director, a Flood Mitigation Plan which “will articulate a comprehensive strategy for implementing technically feasible flood mitigation activities for the area affected by the plan.” With minor modifications a DMA2K plan can meet this requirement.

The regulations note that “existing plans, such as those credited through the Community Rating System ... may meet the requirements of FMA with few or no modifications.” Plans must be reviewed and approved by FEMA and IEMA. FEMA has a checklist that is available to see what their review looks for.

At a minimum, plans must include these elements, all of which are part of the 10-step hazard mitigation planning process that was discussed in Section 20.2.3:

- A description of the planning process and public involvement, which may include workshops, public meetings or public hearings.
- A description of the existing flood hazard and identification of the flood risk, including estimates of the number and type of structures at risk, repetitive loss properties and the extent of flood depth and damage potential.
- The applicant’s floodplain management goals for the area covered by the plan.
- Identification and evaluation of cost-effective and technically feasible mitigation actions that were considered.
- Presentation of the strategy for reducing flood risks and continued compliance with the NFIP, and procedures for ensuring implementation, reviewing progress and recommending revisions to the plan.
- Documentation of formal plan adoption by the legal entity submitting the plan.

Project grants: The following types of projects are eligible for funding through FMA, providing they meet all other eligibility criteria:

- Acquisition of insured structures and underlying real property in fee simple and easements restricting real property to open space uses.
- Relocation of insured structures from acquired or restricted real property to nonhazard-prone sites.
- Demolition and removal of insured structures from acquired or restricted real property.
- Elevation of insured residential structures in accordance with NFIP standards.
- Elevation or dry floodproofing of insured nonresidential structures in accordance with NFIP standards.
- Other activities that bring an insured structure into compliance with the NFIP's floodplain management requirements.
- Minor physical flood mitigation projects that reduce localized flooding problems and do not duplicate the flood prevention activities of other Federal agencies.

To be eligible for a project grant, a project must be:

- In conformance with the Flood Mitigation Plan. The type of project being proposed must be identified in the plan.
- Cost-effective, not costing more than the anticipated value of the reduction in both direct damages and subsequent negative impacts to the area if future floods were to occur. Both costs and benefits are computed using net-present value.
- In conformance with Federal regulations on floodplain management, protection of wetlands, seismic safety and applicable environmental laws and regulations.
- Technically feasible.
- In conformance with the minimum standards of the NFIP.
- Located physically in a participating NFIP community that is not on probation or must benefit such community directly by reducing future flood damage.

Under the recently enacted Bunning-Bereuter-Blumenauer Flood Insurance Reform Act 2004, if a State or community do not meet the FMA requirements or do not have the capacity to manage mitigation activities, then FEMA may offer funding assistance to individual property owners.

Pilot FMA Project: The Act also created a 5-year pilot program to give states and local communities financial assistance for mitigating potential future damages experienced by severe repetitive loss properties (properties that have made numerous substantial claims under the NFIP). The intent of the pilot program is to fund the mitigation projects and recoup some or all of the costs over the next several years through lower claim payments.

The eligible activities for this program are typical FMA activities, including acquisition, elevation, relocation, demolition, floodproofing, and minor physical flood control measures, with the addition of demolition and rebuilding. Funding will be the same as the FMA with FEMA funding 75 percent of the project cost or 90 percent if the State has an approved mitigation plan with special provisions to reduce repetitive losses. A key change in the pilot program compared to the existing FMA is that if the owner of a severe repetitive loss property refuses an offer made under the pilot program, then the flood insurance premiums on such property will be increased 150 percent. The premium will be increased another 150 percent subsequent to each future claim of more than \$1,500. The premium rate can not exceed the actuarial rate for the property.

20.4. NO ADVERSE IMPACT

No Adverse Impact (NAI) is an approach developed and encouraged by the Association of State Floodplain Managers (ASFPM). NAI is an explanation and rationale for local actions to ensure that flood problems are not increased. More information can be found at the ASFPM's website, www.floods.org.



20.4.1. The approach

For local governments, NAI floodplain management represents a more effective way to tackle their flood problems. The concept offers communities a framework to design programs and standards that meet their true needs, not just the requirements of a Federal or State governmental agency.

The NAI floodplain management initiative empowers communities (and their citizens) to work with stakeholders and build a program that is effective in reducing and preventing flood problems. NAI floodplain management is about communities being proactive—understanding potential impacts and implementing prevention and mitigation activities before the impacts occur.

NAI has many benefits. By developing activities that really address the local situation and that do not harm others, a community can prevent flooding from increasing or damaging others, see a reduction in flood losses over time, avoid challenges and lawsuits over causing or aggravating a flood problem, and receive recognition for the efforts through the Community Rating System

20.4.2. The Toolkit

NAI can provide a framework and rationale for hazard mitigation activities. The ASFPM has published *No Adverse Impact: A Toolkit for Common Sense Floodplain Management* to provide ideas on how this can be done. The *Toolkit* is available free through downloading from the Association's website.

No Adverse Impact is a principle, not a specific set of standards, requirements or practices. The objective is to incorporate the NAI concept into all ongoing local community activities. There are many ways a community can do this. It can incorporate the approaches into community plans, adopt specific regulatory or policy language, initiate individual projects, start or revise entire programs or prepare a master plan that addresses all activities that impact flooding.

The *Toolkit* is designed to help local officials or concerned citizens incorporate the NAI principle into their community's ongoing programs. The tools consist of a variety of activities that can improve a floodplain management program. They are organized under seven building blocks:

1. Hazard identification and floodplain mapping
2. Education and outreach
3. Planning
4. Regulations and development standards
5. Mitigation
6. Infrastructure
7. Emergency services

20.4.3. Multi-Objective Management

At the NAI level, all planning that involves flooding should identify *all* the impacts of the hazard *and all* of the alternative measures to address the impacts. What happens and who really pays should be specifically identified and discussed so the planners and decision makers are aware of all the ramifications.

Often floodplain management or mitigation plans focus on the hazard—something to avoid or get away from. Such plans can help prevent or reduce flood losses, but if they have only one concern, it is difficult to build broad support for them. To be really effective, plans need to address many concerns and to be proactive toward building a more viable and sustainable community.

All plans that address flooding can benefit from the multi-objective management approach or "M-O-M." This approach promotes public involvement and coordination of floodplain management with other community concerns, such as economic development, housing, water quality, habitat protection, and recreation.

Multi-objective management has six guidelines:

- 1. Keep the effort locally based.** Solutions must be acceptable to residents, their neighbors and others in the area. They must fit in with other local concerns and goals.
- 2. Understand the flood problem and its relation to the watershed.** The problem is not isolated; neither is it limited to one stream or one neighborhood. If people think in terms of the whole watershed, they will come up with more possible solutions — and the solutions will not cause problems for someone else.
- 3. Think broadly about possible solutions to reduce the flood problem.** There are more ways to do things than conventional wisdom may suggest. Don't get locked into wanting a floodwall or other single-purpose project without first checking out alternatives.
- 4. Identify the other community concerns and goals that could have a bearing on the flood problem.** People who are interested in those other concerns should meet and brainstorm possible solutions that can reach more than one of their objectives.
- 5. Obtain expert advice and assistance from government agencies and private organizations.** Planners should find out what financial assistance and advice are available. They should not put all their eggs in one basket and wait for that big “cure-all” project that may never be funded; there are literally hundreds of programs out there.
- 6. Build a partnership among the private and public groups and individuals that can be enlisted to work on the objectives.** More minds and hands mean that better ideas will result, people will be more likely to follow through, and more people will be available to do the work.

For more information on M-O-M, see *Using Multi-Objective Management to Reduce Flood Losses in Your Watershed*.



The planning process is credited under the Community Rating System, Activity 510 Floodplain Management Planning, in the *CRS Coordinator's Manual* and the *CRS Application*. It is explained in more detail in *Example Plans*. Plans developed according to this process are a prerequisite for funding under other FEMA programs.

HAZARD MITIGATION SUCCESS STORY

MOM Pays Off for a Small Town

Kampsville, Illinois, is a town of 400 residents on the Illinois River. Its residents could have continued to endure floods, wait for a flood control project that would not be built, or look for alternative ways to reduce flood losses. They chose the third option, and it paid off during the 1993 flood.

After Kampsville was flooded in 1979 and again in 1982, residents and local officials decided to do something. They knew they would not stop the Illinois River from flooding, and that to build a large enough levee would require removing many of the buildings they wanted to protect. So they began a systematic planning process to review alternative ways to reduce flood losses.

One of the first things they did was ask for help. The Illinois Department of Natural Resources provided staff support, and during a series of planning meetings, other agencies were invited to explain their ideas and tell how they could help.

It became apparent that the best solution was to purchase and relocate the worst-hit buildings. Because this would leave the town with a large open area, folks started talking about what they would do with it.

They also were concerned that they would lose some businesses when the floodprone properties were bought out. During this process, they realized that they had to think about more than just flooding; they had to consider the future of their town and its economic base. They expanded their planning process to encompass other goals, including redeveloping the acquired area, designing a park and building a base for tourism.

Taking the plan to various funding sources, Kampsville eventually received more than \$1 million to buy 50 properties and convert flooded and dilapidated buildings to open space. The money was used also to elevate some buildings that were not flooded very deeply, to floodproof the water treatment plant and to relocate the fire station. A new ferry landing and all-weather access into town were also built.

Pursuing its other objectives, the village started sponsoring recreation activities, including an annual celebration that brings in hundreds of people. They now view the riverfront as a resource, not a problem area.

In all, financial assistance was provided by three state agencies, two Federal agencies and the town's largest employer. Although it took almost 10 years to plan, fund and complete, Kampsville's approach paid off during the 1993 Midwest flood. The town suffered some damage because floodwaters exceeded the base flood elevation, but Kampsville did not make the news because its damage was relatively minor compared to that of its neighbors.