

**HELPING SMALL TOWNS ADOPT PROGRAMS FOR NONSTRUCTURAL  
FLOOD HAZARD MITIGATION**

by

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## Introduction

Helping communities tackle their flood problems can be a difficult task. The solutions can be expensive or complicated or both; most are highly dependent on local interest which, in turn, can be dependent on whether there has been a recent flood. Communities that do ask for help often lose interest when they find out that a levee, dam, or other structural project is not feasible.

Helping small communities cope with their flood hazard can be even more difficult. Small towns lack the resources and professional staff to adequately deal with major problems like flooding. Many do not know where to go to get help. Accordingly, small towns need considerable guidance and direct assistance from state or federal agencies to plan and implement a flood protection program.

This paper reviews the lessons learned from four case studies of state assistance to small towns with serious flood problems. French Wetmore was project manager for the Illinois Division of Water Resources' (DWR) program to assist the four communities. Larry Johnston was hired by DWR to conduct the case studies and evaluate the state's effort.

This paper is based on Johnston's report to DWR\* as well as both the authors' experiences in working with flood-prone communities for a combined total of over 25 years. The findings and conclusions should prove useful to any federal, state, or regional agency concerned with reducing flood damages.

## Structural and Nonstructural Solutions

The traditional approach to a flood problem has been a public works project that "fixes" flooding by keeping water off of property. These projects, which may take the form of levees, reservoirs, or channel work, are called "structural solutions" by flood management professionals. Before the 1970s, structural solutions were considered the best way to reduce flood damages.

By the mid-70s, the shortcomings of structural solutions were becoming apparent. Structural measures can be quite expensive and disruptive to the environment. Especially in sparsely settled rural areas, structural projects are not cost-effective. Levees and dams can create a false sense of security because people who live behind them assume that they are perfectly safe--that a flood will never reach them. Accordingly, many communities and state and federal agencies began turning to alternative or "nonstructural" solutions.

Nonstructural solutions adjust or prevent damage-prone human use of floodplain land rather than trying to control a waterway's natural overbank flooding. Nonstructural techniques include regulating floodplain development to prevent hazardous uses, implementing stormwater management throughout the watershed, altering buildings in hazardous areas by raising them above flood

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\*Copies of Johnston's report, "State Assistance to Illinois Communities for Non-Structural Flood Hazard Mitigation," are available free from the Illinois Division of Water Resources, 310 South Michigan Avenue, Room 1606, Chicago, Illinois 60604.

level or "floodproofing" them, installing flood warning systems, and planning for evacuation and emergency response activities.

Although nonstructural solutions can be cheaper and less disruptive to the environment than structural measures, they can be more disruptive to the plans and lifestyles of the floodplain residents. Furthermore, their implementation depends on the cooperation of local officials and floodplain residents. Because nonstructural solutions involve more than the government simply coming in and "fixing" the flood problem, they are not as readily acceptable to the local residents as a structural flood control project would be.

### The State's Experiment

The Illinois Department of Transportation, Division of Water Resources (DWR) has been in the business of building structural projects along the state's waterways for 150 years. By the mid-1970s DWR's leaders had become convinced that the agency needed a nonstructural program. This program included activities conducted directly by DWR, such as requiring permits for construction in floodways and purchasing and relocating flood-prone buildings, as part of a flood control project.

However, it was apparent that a successful nonstructural program required comprehensive nonstructural plans, developed and implemented by local governments. Accordingly, in 1977 DWR began providing assistance to communities using planning techniques developed by community development and urban renewal programs. The staff of DWR provided technical advice to local officials or local planning committees who prepared flood hazard mitigation plans. Those plans described the flood problem, reviewed alternative solutions, and recommended specific projects. After the plans were completed, implementation was left up to the local officials.

Later followup by state personnel revealed that the smaller communities were not fully implementing the activities recommended in their local flood hazard mitigation plans. To improve its planning assistance program, DWR needed to better understand what happened after its staff left town.

It was decided that someone with knowledge of state and local flood hazard mitigation, but without prior involvement with any of the communities or with DWR programs, should visit some of the assisted communities, review what happened, and report on his/her findings. The state contracted with L. R. Johnston Associates of Westport, Connecticut, to perform the case studies.

Four communities were selected for case studies: Villa Grove, Wilmington, Grafton, and Thebes. Each had received planning assistance from DWR because of its serious flood problems. The relative severity in flooding varied from shallow flooding that affected 20% of the community to deep, long-lasting flooding that affected 90% of the community. Table 1 summarizes the characteristics of the four towns.

Two other characteristics were shared by the four communities. First, they were all small. Their populations ranged from 450 to 4,500. Only one had a professional city administrator (who left after the plan was completed). None had full-time planners, engineers, or code enforcement personnel.

Table 1. SUMMARY OF COMMUNITY CHARACTERISTICS

	GRAFTON	THEBES	VILLA GROVE	WILMINGTON
Population (1980)	1,000	450	2,800	4,500
Form of Government	Aldermanic-City	Trustee-Village	Aldermanic-City	Aldermanic-City
Principal Source of Flooding	Illinois and Mississippi rivers	Mississippi River	Embarrass River	Kankakee River
Principal Type of Flooding	slow-rising, long-lasting, deep water	slow-rising, long-lasting, deep water	rapid-rising, short duration, shallow water	ice-jams, unpredictable, ice-cakes
Principal Type of Damage	buildings, contents, major community disruption, business loss, infrastructure	buildings, contents, community disruption, business loss	contents, minor community disruption	contents, community disruption
Approximate Area in Floodplain	90%	20%	50%	20%
Recent Flooding	1973, 79, 82, 83, 85	1973, 79, 82, 83, 85	1974, 79, 81, 83, 85	1979, 82, 83, 85
Flood Insurance Policies*	46	27	25	67
Number of Claims since 1/1/78*	313	95	14	79
Claims Amount since 1/1/78*	\$697,710	\$237,640	\$38,398	\$517,726
Preparation of Mitigation Plan	1982	1983-84	1977-78	1978-79
Prepared by	citizen committee, regional planning commission	regional planning commission, DWR	steering committee city administrator	steering committee DWR

\* As of 3/19/85. 1985 flood damage not included.

Sources: Illinois Department of Transportation, Division of Water Resources, Local Floodplain Programs; Community Hazard Mitigation Plans; site visits

Second, federal or state flood control studies had been conducted for all four towns, and all the studies had concluded that structural solutions were not feasible. From DWR's perspective, the only way to reduce flood damages in these communities was through nonstructural activities.

### Initial Findings

Johnston reviewed the four communities' flood hazard mitigation plans, determined which plan recommendations had been implemented, and spoke with local officials and floodplain residents about community attitudes toward the flood problem and possible solutions to it. The relative progress of each community in implementing the mitigation recommendations was assessed by assigning a score to individual recommendations as follows:

- 2 - recommendation completed or essentially complete
- 1 - recommendation partially completed or underway
- 0 - no action taken.

The recommended projects and the status of their implementation are summarized in Tables A-1 through A-4 in the appendix.

For each community an average score was calculated by averaging the scores assigned to all the recommendations. These scores are detailed in Table A-5 in the appendix. Villa Grove, Wilmington, and Grafton had surprisingly similar average community scores, 1.22, 1.28, and 1.20, respectively. Thebes' score was higher, 1.67. This is probably because Thebes, the last of the four communities assisted, benefitted from the lessons the state learned in the other three towns and therefore had a more realistic plan.

Of the 54 projects recommended in the four plans, six were unique to one or another community and were eliminated from the rest of the evaluation. The remaining 48 projects were classified in seven general categories, as shown in Table A-6 in the appendix. The implementation scores for each category were averaged and are displayed in rank order below.

Protection of city buildings	2.0
Regulations required by National Flood Insurance Program	1.8
Flood warning, evacuation plans, etc.	1.7
Public information projects	1.4
Channel improvements and maintenance	1.2
Acquisition or floodproofing of private property	1.0
Additional or tougher regulations	1.0

### Factors Affecting Project Implementation

Why were some projects implemented and others not? It was not because the communities had not had enough time; over one year had elapsed since the most recent plan had been completed. We identified eight factors that affected project implementation. These factors are peculiar to small towns or nonstructural solutions. Understanding these factors is important to anyone trying to plan for or implement a flood protection project in a small town.

**1. Public property is more important than private property.** City officials believe their primary responsibility is to protect city-owned properties such as sewage and water treatment plants. The taxpayers pay for these services and their continued operation is necessary for the public health and safety.

The actual protection measures recommended in the four plans were relatively inexpensive and performed by city crews. City officials believed that protection of private property could best be done by providing information to property owners and allowing them to take care of themselves. Because of this attitude, the implementation of self-help projects is highly dependent upon floodplain residents' awareness of the flood problem and their desire and ability to do something about it at their own expense.

In only one town was private property being protected to any great extent. Since the case study was conducted, federal and state funds were provided to purchase and relocate most of the flood-prone properties in Thebes.

**2. Local officials are more likely to implement inexpensive projects and those with which they are familiar.** Flood warning, evacuation plans, and distribution of public information booklets are relatively inexpensive to implement. The channel improvements and maintenance projects that were completed involved improvements to a small drainage ditch, some clearing of debris by city crews, and an investigation by state dam safety engineers. Many of the officials such as police chiefs, emergency services coordinators and public works directors, were experienced with these activities and understood the need for them.

**3. If they are not mandatory, land use or building regulations are unlikely to be enacted or enforced.** All four communities were participants in the National Flood Insurance Program (NFIP). Under their agreement with the federal government, they were required to enact "regular program" ordinances regulating development of land in the floodplain. It was a coincidence that the local plans were prepared before passage of the ordinance was required.

The category "regulations required by the NFIP," did not score a "2" to reflect full compliance because we found that one community was not enforcing the ordinance. Federal and state assistance has since been provided to ensure that the town fulfills its obligations to the federal government.

Three of the communities' plans recommended additional regulations or tougher standards than the minimum requirements of the NFIP. These included providing stormwater detention regulations for new development in the watershed and prohibiting development in certain high hazard areas. The fact that development did not proceed in certain high risk areas was not because of any local desire to prohibit it, but because of the general lack of development in these rural towns.

**4. Certain factors make nonstructural solutions inherently complicated and difficult to administer.** Nonstructural mitigation projects are more complex than structural solutions. They are harder to comprehend than buying ground and putting up a wall between the town and the river. The functions of some nonstructural measures, especially land use regulations, were not always clear to residents and officials and the results were less visible.

Consequently, it was difficult for people to see the value of every component of the plan.

Nonstructural projects require a much higher degree of cooperation and involvement by floodplain residents. In a small community where everyone is a friend, it is hard to refuse a permit to someone who does not want to spend more to meet building code standards. Some recommended projects such as acquisition, floodproofing, and regulation, run counter to established development and social patterns. A homeowner's strong emotional attachment to his or her lifetime residence may equal or exceed economic considerations that would recommend removal of or alterations to the building.

**5. Local resources directly affect local ability to implement a plan.** The four small communities were best able to deal with actions that involved use of local labor, equipment, and initiative; they were less capable of dealing with "paperwork" activities, and least able to provide local funding for matching funds or capital-intensive projects.

However, for many of the recommended projects, the major resource shortage was not money but the personnel and expertise to implement the projects. These limitations seemed to adversely affect the communities' abilities to pursue mitigation activities over a long period or to regularly and persistently follow up on needed actions such as enforcement of regulations.

**6. Local officials and residents do not accurately perceive the risk or cost of flooding.** Although the communities experienced several floods before and after the plans were prepared, the local perception was that things are not as bad as predicted in published maps and reports. In particular, most residents did not think about preparing for a flood more severe than those they had personally experienced.

Many residents quickly forgot the worst aspects of past floods and often spoke of them with great enthusiasm. Residents who were interviewed mentioned how well everyone pitched in and helped out. Once floods receded and community life returned to normal, floods often were not viewed as entirely negative events; rather, they tended to be remembered as occasions that brought out the best in individuals and the community.

Technical data provided during the planning process did not always alter these local perceptions of the risk. Engineering studies, published data and reports, and on-site presentations did not change views formed by years of living next to the water and observing and experiencing floods. There was often an inherent distrust of the conclusions reached by "experts" who had not shared the experiences of the local residents.

Local officials and residents did not base flood-related decisions solely on objective technical data; neither did they base them solely on economic considerations. As with many political situations, the short-term benefit of allowing development without restrictions outweighed the long-term benefit of preventing increased flood problems. Individuals often chose a course of action (e.g., continuing to live on the floodplain) that could not be justified on strictly economic grounds.

**7. People in general did not recognize that they may be contributing to the flooding problem or that they can help with a solution.** There was limited



recognition that the community itself and the individual floodplain residents are part of the flooding problem, either by failing to control building in the floodplain, or by living in a vulnerable area. A noticeable tendency was observed among those interviewed to look outside the community for both the cause of and a solution to the flooding problem.

On the other hand, it was found that mayors can play a dominant role in the community's efforts to cope with its flooding problem. The personal interest and involvement exhibited by the four mayors correlated with the community's progress in implementing the mitigation plans. While the personal initiative of chief officials may be the key factor in successful plans, their interests probably coincide with the relative severity of each town's flood problem. It may be that each official's level of involvement reflected an accurate assessment of the relative importance of the flood problem.

There was a perception that flooding problems used to be minor, but were getting worse as a result of actions outside the community: it was not nature but construction of levees, locks, and dams and major developments in the drainage basin such as airports and highways, that have made things worse. Closely related to this view was a desire for someone outside the community--usually the state or the U.S. Army Corps of Engineers--to take action to eliminate the flooding problem.

**8. While state and federal agencies are not trusted, they are still looked to for help.** There was a considerable lack of confidence in federal and state agencies. No agency escaped criticism. Complaints included agencies having incorrect information about the community or the river, belief by long-time local residents that they knew how the river works better than outside experts did, delays in receiving disaster assistance payments, and dissatisfaction with bureaucratic red tape.

Some local officials seemed less distrustful of state and federal officials. They were either employed by government agencies or had had many years of political experience outside their own town. They were accustomed to dealing with government agencies and with the paperwork involved in any state or federal program.

Even though residents expressed little confidence in the appropriateness of actions taken by the Corps of Engineers and other government agencies and often believed that structural controls (such as levees and dams) to protect other areas were at least partly responsible for current flood problems in their own community, they still preferred additional structural measures to deal with their flood problems. A common attitude was that because structures had been built to protect other communities from flooding, this community should be provided the same protection.

The preference for structural solutions was expressed by both residents and community officials. Only a few of those interviewed seemed to have any grasp of the large cost of structural measures. However, while many residents seemed to cling to a possible structural solution, most community officials had accepted the improbability of obtaining one and recognized the need to take other measures.

One final concern about state or federal assistance was whether the "outside experts" from the state agency were too heavily involved in the hazard

mitigation planning. If local officials had felt the plans were drafted by outsiders or imposed from above, they might have been less interested in implementing the recommendations. We could find no evidence that a high level of technical assistance from DWR detracted from local acceptance or implementation of the mitigation plan. On the contrary, technical assistance from DWR was observed to be a positive factor in both mitigation planning and implementation.

### Recommendations

The following recommendations are based on Johnston's study as well as the authors' experiences in working with flood-prone communities. While they are specifically oriented to nonstructural flood damage reduction planning in small towns, they should prove useful to any federal, state, or regional agency concerned with reducing flood damages.

**1. Recognize that a serious flood problem is only one criterion for scheduling assistance to communities.** Local attitudes and interest in implementing new types of activities can be equally important. If there is no recognition of both a flood problem and the community's need to do something about it, nonstructural projects are unlikely to be implemented.

**2. Community officials and residents should be educated on the costs, benefits, and limitations of both structural and nonstructural solutions.** The economic costs of not tackling the flood problem should be clearly shown without technical terminology. There are plenty of publications, slide shows and similar media available to inform the community about the impact of flooding and the various mitigation responses available.

**3. Maximize the amount of staff time spent in contact with locals.** Personal contact creates better relations with local officials and residents and will reduce the distrust of outside experts. Personal contact also provides opportunities to educate and involve key community leaders. In addition, a high level of contact permits state personnel to better understand local problems and tailor the recommendations to local needs.

**4. Get the involvement and support of the political leadership, not just a citizens' planning committee.** For best results, find someone on the city council (preferably the mayor) who is in contact with the "outside world." Our experience has been that a white collar employee of a large industry or government agency often is more comfortable with planning, intergovernmental relations, grantsmanship, paperwork, and new ways of doing things. If this person is trusted by fellow council members, he or she can act as a bridge between the technicians and the local citizens.

**5. Do not overemphasize technical data or assume that decisionmaking will be based solely on objective or economic criteria.** Neither individuals nor communities are likely to base their decisions on strict benefit/cost assessments. Social, personal, and political factors may ultimately be as important in decisionmaking as economic ones. An understanding of the social and other noneconomic factors that may be critical to a community's decision about recommended mitigation measures will be useful.

**6. Focus on activities that are acceptable to the community.** Where possible, flood hazard mitigation actions should be combined with other community

goals. The potential for achieving dual goals may provide the extra incentive needed for decisive action or expenditure of local funds. Some towns have succeeded because they viewed their programs more as economic development or housing improvement than as flood damage abatement.

**7. The plan's recommendations should stress those actions that a community can take by itself.** Where possible, avoid paperwork projects such as ordinances, reports, or record keeping or provide extra assistance in implementing them. Have some projects that show early visible results. For example, cleaning trash from a channel may have little impact on a large flood but it will enable residents to see that something is being accomplished.

**8. The plan itself should be a clear and concise set of instructions.** It should specify what should be done, by whom and by when. Priority actions should be identified so that the most important tasks get the greatest effort. The plan should be formally adopted by the governing body and should include a requirement for periodic review and updating.

**9. Follow through.** The project does not end when the plan is printed. Be ready to conduct annual and post-flood reviews of progress and effectiveness. Such reviews also will facilitate assistance and encouragement for continued community action. Agency personnel should be prepared to work with communities for extended periods and to help them obtain assistance in implementing selected actions.



## APPENDIX



**Table A-1. CITY OF VILLA GROVE: STATUS OF HAZARD MITIGATION RECOMMENDATIONS**

RECOMMENDATION	STATUS
1. Public information	
a. Set aside \$1000 in FY 78-79 for distribution of information regarding methods of reducing flood damages	No funds set aside; limited distribution of documents
b. Emergency Services and Disaster Agency (ESDA) provides training to floodplain residents	No training
2. Regulations	
a. Adoption of regulations regulating development in designated floodplain areas	Floodplain and subdivision regulations adopted
b. Modify municipal building code.	No
c. Subdivision regulations	Yes, started during plan
3. Join the regular phase of the NFIP	Now in regular NFIP
4. Establish a flood forecasting and warning system and flood fighting plan through a newly established ESDA	ESDA established; no flood forecasting; police provide warning
5. Undertake a program of annual improvements to municipal storm water facilities and maintenance of river channel, ditches, culverts, bridges, etc.	No annual maintenance program; improvements to two bridges
6. Construct a flood shield for the front door of the municipal water supply building	Apparently done

Sources: **City of Villa Grove: Flood Plain Management Activities**, Villa Grove Flood Damage Reduction Steering Committee, May 1978; Mayor John A. Leon, May 1985; Alfred J. Figuly, former City Administrator, July 1985.

Table A-2. CITY OF WILMINGTON: STATUS OF HAZARD MITIGATION RECOMMENDATIONS

RECOMMENDATION	STATUS
<p>1. Control of floodwaters:</p> <p>a. Examine additional, less expensive methods to control flooding in the Kahler Road area.</p> <p>b. Remove dam and bridge at McIntyre Street to reduce flooding in Forked Creek area.</p>	<p>Local farmer, with informal City approval dug drainage channel to Kankakee River</p> <p>Not removed; drainage improvements to reduce localized flooding</p>
<p>2. Floodproofing buildings</p> <p>a. Complete levee around sewage treatment plant.</p> <p>b. Inform floodplain property owners about floodproofing.</p>	<p>Levee completed, but over-topped in subsequent flood</p> <p>Meetings held; DWR document distributed; some owners have elevated homes</p>
<p>3. Preserve channel capacity</p> <p>a. Enact and enforce prohibition against dumping in or near channels.</p> <p>b. Maintain stream channels clear of vegetation and debris.</p>	<p>General ordinance against dumping passed</p> <p>Vegetation cleared from McIntyre Bridge annually; no total program of channel maintenance</p>
<p>4. Erosion and sediment control</p> <p>a. Pass an erosion and sediment control ordinance</p> <p>b. Control of cropland erosion by soil &amp; water conservation district.</p>	<p>Status not determined</p> <p>Good program apparently in effect</p>
<p>5. Investigate safety of dams on Kankakee River.</p>	<p>Inspected by DWR; no action by City</p>
<p>6. Development regulations</p> <p>a. Revise floodplain regulations</p> <ul style="list-style-type: none"> <li>- no obstructions to flood flows in floodways</li> <li>- no more building permitted in undeveloped areas of Kankakee River floodplain</li> <li>- new buildings in other flood-prone areas to be protected from 100-year flood</li> <li>- require that purchasers of new lots be advised of flood hazard and flood regulations.</li> </ul> <p>b. Adopt stormwater management ordinance requiring retention or detention of stormwater in new developments</p> <ul style="list-style-type: none"> <li>- require on-site detention/retention for residential developments over 5 acres</li> </ul>	<p>Apparently enforced</p> <p>Apparently enforced</p> <p>Regulations require elevation or floodproofing</p> <p>Apparently required; new owners shown Flood Insurance Rate Map (FIRM) and given copy of DWR publication</p> <p>Required as part of Subdivision Regulations</p> <p>Required</p>



Table A-2. (continued).

- as alternative to on-site detention/retention, permit financial contribution to serve several developments	No; on-site detention always required
- release rates in accordance with Northeastern Illinois standards	Undetermined
- detention/retention facilities should be dedicated to City	Required, but City would prefer private maintenance
7. Public ownership	
a. Sell or donate locks to public or non-profit agency.	No action
b. Arrange for public ownership or easement of fossil area.	No action, but see # 8.b., below
c. Will County Forest Preserve District acquire easement along Forked Creek between Forsythe Woods and the City	No action; owners don't wish to sell
8. Land use restraints	
a. Adjust tax assessments to encourage floodplain property owners to participate in floodplain management program.	No action
b. Zoning	
- agriculture zoning for parcels over 5 acres	No 5-acre parcels in City; County only
- open space zoning for fossil area	No zoning, but 7 acres to be donated to City
- ordinance restricting uses/structures incompatible with scenic appearance of Kankakee River shoreline	No; have encountered no problems
9. Public information and warnings	
a. Information on various aspects of flood hazards and flood program	One public meeting held; poorly attended
b. Notify floodplain residents when flash flood watch issued.	Police provide warnings
c. Notify floodplain residents when flash flood warning issued.	Police and ESDA provide warnings
10. Flood fighting	
a. Create strong emergency services organization for other types of disasters.	ESDA more active in recent years
b. Provide for evacuation needs of handicapped and invalid.	City has list of handicapped persons and relatives; send police squad car
c. Protect flooded areas from looting and vandalism.	No problem in City; County provides protection
11. Provide information on post-flood relief assistance.	Pamphlets in City Hall

Sources: **Report on Wilmington's Floodplain Program**, Illinois Department of Transportation, Division of Water Resources, July 1979; and interview with Mayor Robert Weidling, May 1985.

Table A-3. CITY OF GRAFTON: STATUS OF HAZARD MITIGATION RECOMMENDATIONS

RECOMMENDATION	STATUS
1. Approve and adopt flood response procedures outlined in report.	Adopted
2. Approve and adopt Flood Zone Map and first floor house elevations.	Adopted
3. Undertake Citizen Awareness Program, including:	
- posting Flood Zone Map at City Hall	Posted
- posting first floor elevations at City Hall	Not posted, but available
- distributing materials on flood preparedness	Distributed
- hold public meeting on desire to reduce flood problems	Many meetings held
- hold public meeting on Flood Zone Map boundaries	Meeting held
4. Enforce provisions of existing floodplain ordinance.	Largely enforced, recently updated; some problems with elevation requirements
5. Amend Floodplain Ordinance with provision regarding elevation or temporary relocation of mobile homes.	Amended to conform with NFIP; no temporary relocation provision
6. Research Mayor's legal power in emergency situations	Done by DWR
7. Formal agreements with schools and churches for use as temporary shelters and storage facilities	Informal only
8. Identify transportation routes and temporary storage locations for evacuated mobile homes.	Informal by City; Corps of Engineers doing detailed study
9. Research availability of state and federal programs for elevation or relocation assistance.	Limited attempt, without success; one property acquired with 1362 funds
10. Update Flood Zone Map and first floor elevations.	No update

Sources: **Grafton's Flood Hazard Mitigation Program**, Grafton Citizen Advisory Committee, Sept. 1982; and interviews with Mayor Gerald L. Nairn and members of City Council, May 1985.

**Table A-4: VILLAGE OF THEBES: STATUS OF HAZARD MITIGATION RECOMMENDATIONS**

RECOMMENDATION	STATUS
1. Flood warning a. Prepare a River Stage Data Graph. b. Prepare a Flood Stage Forecast Map.	Prepared during Hazard Mitigation Plan (HMP) development Prepared during HMP development
2. Distribute copies of Thebes Hazard Mitigation Plan and <b>Protect Your Home From Flood Damage</b> to each Thebes family.	Distributed
3. Flood response a. Post predicted flood crest and other information in front of the community building. b. Notify various government offices, media, Red Cross, and church of need for evacuation assistance. c. Follow specified procedures to protect utilities and block roads. d. Relocate Village files and equipment from community building to Senior Citizens Center if needed.	Posted Notified Procedures followed Procedure followed
4. Long range plan a. Floodplain regulations b. Acquire flood-prone properties through FEMA's Section 1362 program, Community Development Assistance Program (CDAP), and other sources. c. Provide housing for relocated residents. d. Acquire vacant land in floodplain, especially purchase or lease of Missouri Pacific Railroad land e. Redevelop floodplain as recreational area.	Regulations adopted prior to HMP FEMA 1362 funds approved for 11 homes; applications submitted for CDAP funds CDAP funds applied for; County Housing Authority relocating existing public housing units, and seeking Housing and Urban Development funds for 48 new housing units City has no funds for purchase of railroad land, lease expired; DWR funds may be used to acquire vacant land in floodplain. RPC has contract with DWR to seek funds to redevelop floodplain as recreational area.

Sources: **Flood Hazard Mitigation Plan, Village of Thebes, Illinois**, Illinois Department of Transportation, Division of Water Resources, January 1984; Village President John Masterson, May 1985; French Wetmore, DWR, various dates, 1985; Mary Alice Myers, Alexander County Housing Authority, July 1985; Bill Powers, FEMA, Region V, July 1985; and Ben Schmidt, Southern Five Regional Planning Council, July 1985.

Table A-5: COMPARATIVE SUMMARY OF COMMUNITY IMPLEMENTATION OF MITIGATION RECOMMENDATIONS

VILLA GROVE Recommendation No.	VILLA GROVE Implementation Score	GRAFTON Recommendation No.	GRAFTON Implementation Score	WILMINGTON Recommendation No.	WILMINGTON Implementation Score	THEBES Recommendation No.	THEBES Implementation Score
1a	1	1	2	1a	2	1a	2
b	0	2	2	b	0	b	2
2a	2	3	2	2a	2	2	2
b	0	4	1	b	2	3a	2
c	2	5	0	3a	2	b	2
3	2	6	2 (by DWR)	b	1	c	2
4	1	7	1	4a	2	d	2
5	1	8	1 (by COE)	b	2	4a	2
6	2	9	1	5	2 (by DWR)	b	1
		10	0	6a	2	c	1
				b	1	d	1
				7a	0	e	1
				b	1		
				c	0		
				8a	0		
				b	0		
				9a	1		
				b	2		
				c	2		
				10a	1		
				b	2		
				c	2		
				11	2		
Average	= 1.22	Average	= 1.20	Average	= 1.28	Average	= 1.67

\* See Tables A-1, A-2, A-3, and A-4 for text of recommendations.  
 2 = done or essentially done  
 1 = partially done or underway  
 0 = not done

Table A-6: COMPARATIVE SUMMARY BY TYPE OF RECOMMENDATION

PUBLIC INFORMATION			FLOOD WARNING & RESPONSE		
	Recommendation No.	Implementation Score		Recommendation No.	Implementation Score
Villa Grove	1a*	1	Villa Grove	4	1
	b	0	Wilmington	9b	2
Wilmington	2b	2		c	2
	9a	1		10a	1
	11	2		b	2
Grafton	3	2	Grafton	1	2
Thebes	2	2		2	2
Average		= 1.4		6	2 by DWR
				7	1
				10	0
REGULATIONS: NFIP			Thebes	1a	2
	Recommendation No.	Implementation Score		b	2
Villa Grove	2a	2		3a	2
	3	2		b	2
Wilmington	6a	2		c	2
Grafton	4	1		d	2
Thebes	a	2	Average		= 1.7
Average		= 1.8			
ACQUISITION OR REDEVELOPMENT			REGULATIONS: ADDITIONAL STANDARDS		
	Recommendation No.	Implementation Score		Recommendation No.	Implementation Score
Grafton	9	1	Villa Grove	2b	0
Thebes	4b	1	Wilmington	3a	2
	c	1		6a	2
	d	1		b	1
	e	1	Grafton	8b	0
Average		= 1		5	0
				8	1
			Average		= 1.0
CHANNEL IMPROVEMENTS & MAINTENANCE			PROTECTION OF CITY PROPERTY		
	Recommendation No.	Implementation Score		Recommendation No.	Implementation Score
Villa Grove	5	1	Villa Grove	6	2
Wilmington	1a	2	Wilmington	2a	2
	b	0	Average		= 2.0
	3b	1			
	5	2 by DWR			
Average		= 1.2			

\* See Tables A-1, A-2, A-3, and A-4 for text of recommendations  
 2 = done or essentially done  
 1 = partially done or underway  
 0 = not done

