

VII. The National Flood Insurance Program

The National Flood Insurance Program (NFIP) is the major Federal vehicle for promoting the nonstructural management of flood hazards. As such it brings many of the issues in chapter VI to the fore. NFIP seeks to promote two interrelated objectives in the Nation's coastal and riverine , flood hazard areas:

- To stabilize and eventually reduce flood losses by stimulating the planning and management of flood hazard areas by State and local governments.
- To reallocate the costs of financial assistance to flood victims from Federal taxpayers to occupants of flood-prone areas through the mechanism of insurance.

These are related goals. Effective management of floodplains will keep losses from continuing to rise, while the federally sponsored flood insurance program is intended to reinforce the management of floodplains by setting insurance premium rates for new structures according to the risks at specific sites.

The flood insurance program is discussed in two parts because of its importance as a major innovation in the public management of flood hazards and their consequences. Background information on the origins and operations of the program and the results of some studies of flood and hazard insurance gathered with the assistance of the Federal Insurance Administration* (FIA) are presented in this chapter. Certain key policy issues that the program now confronts are identified in chapter VIII.

ORIGINS OF THE PROGRAM

The private insurance industry abandoned the coverage of flood losses in 1929. Their decision reflected an accurate perception of the nature of

floods. First, the risk of flooding within known floodplains is certain; the only uncertainty relates to the timing and magnitude of the event. Second, when floods do occur they may cause severe losses in the affected areas; this requires an insurer to maintain sizable cash reserves. Third, premium rates that reflect the actuarial risks in floodplains are likely to be so high that those most in need of flood insurance are discouraged from purchasing it. Consequently, before the advent of NFIP in 1968 virtually no private insurance covered coastal or riverine flood losses.

In the absence of insurance coverage flood victims must turn to the Federal and State governments for the major proportion of their relief and rehabilitation needs. As cited in chapter III, Federal disaster assistance outlays increased from \$52 million in 1953 to \$374 million in 1966 when NFIP was proposed; in fiscal year 1973, Federal aid jumped to \$2.5 billion as a result both of Hurricane Agnes and the flood in Rapid City, S. Dak., the previous year.

Congress in the Southeastern Hurricane Disaster Relief Act of 1965 called for a study of flood insurance as an alternative to ever increasing disaster relief outlays. The U.S. Department of Housing and Urban Development (HUD), recommended that flood insurance, through the mechanism of rate premiums, could shift some of the costs of floodplain occupation to the occupants themselves. In order to attract widespread participation in the program it was recommended that the Federal Government subsidize insurance premiums paid by owners of existing structures in flood-prone areas, but that this subsidy would be inappropriate for new development, which should not be encouraged in floodplains. New structures should be insurable only at full actuarial rates, reflecting the actual risk inherent in their location and elevation.

*Richard Krimm, Assistant Administrator of FIA, was particularly helpful in this regard.

¹U.S. Department of Housing and Urban Development, *Insurance and Other Programs for Financial Assistance to Flood Victims* (Committee Print No. 43) 89th Cong. 2d sess. (Washington, D. C.: U.S. Government Printing Office, 1966).

This caution was reaffirmed by the 1966 report of the Task Force on Federal Flood Control Policy:

A flood insurance program is a tool that should be used expertly or not at all. Incorrectly applied, it could exacerbate the whole problem of flood losses . . . It would not be improper to subsidize flood loss insurance for existing property. That might be done, provided owners of submarginal development were precluded from rebuilding destroyed or obsolete structures on the floodplain, however, to the extent that insurance were used to subsidize new capital investment, it would aggravate flood damages and constitute gross public irresponsibility.²

Congress heeded this advice. NFIP, as passed in 1968 (Public Law 90-488 Title 13) made the adoption of local floodplain regulations a prerequisite to the availability of flood insurance in any local community. To avoid the charge of "federal usurpation" the form and precise content of such regulations was left to State and local governments. But such regulations must be designed to meet floodplain management criteria established by FIA.

Since 1968, the historical evolution of NFIP (depicted in figure 7) has been characterized by persistent competition between lofty purpose and practical accommodation. The program as established in 1968 called for the immediate adoption of floodplain management regulations by local communities in order to qualify for the sale of flood insurance to their residents. Although the interdependence of flood insurance and floodplain management appeared theoretically reasonable, NFIP met with little enthusiasm on its adoption. During its first year, only 4 communities out of some 20,000 with flood hazard areas joined the program and only 20 policies were sold. (See table 15.)

Two deficiencies were remedied in subsequent amendments. Recognizing that most communities lack sufficient floodplain data on which to base substantive regulations, a 1969 amendment (Public Law 91-152) authorized provisional eligibility during an "emergency phase," pending completion of Federal floodplain mapping studies for each community. Satisfaction of the full Federal performance standards was deferred and property owners could purchase a modest amount of flood

insurance at subsidized rates even for new structures.

The program was substantially modified by the Flood Disaster Protection Act of 1973 (Public Law 93-234), which specified that no "federally related financing" could be extended to owners of flood-prone property unless they purchased a flood insurance policy. "Federally related financing" has been construed to mean direct Federal funding or subsidy as well as conventional mortgage loans by financial institutions insured or regulated by Federal entities. Thus, the banking industry has become involved with NFIP to the extent that loan officers are required to determine whether property on which a loan is to be secured is flood-prone or not, and to notify the applicant accordingly. (Failure to obtain flood insurance where available results in denial of Federal disaster assistance in the event of a flood).

These two modifications-emergency implementation and compulsory purchase of insurance—have accounted for a sizable increase in NFIP activity. By September 30, 1979, 16,566 communities were enrolled in the program of which 3,381 were in the "regular phase." More than 1.6 million policies were in effect covering a total of \$60 billion worth of flood-prone structures and facilities. Total claims filed during the life of the program have exceeded 146,000 with about 40,000 of these received since October 1, 1978. Total payments made to flood victims have exceeded \$572 million. Flood insurance now exceeds either Federal grants or loans (reduced to the amount of Federal subsidy) as a source of postflood disaster assistance.

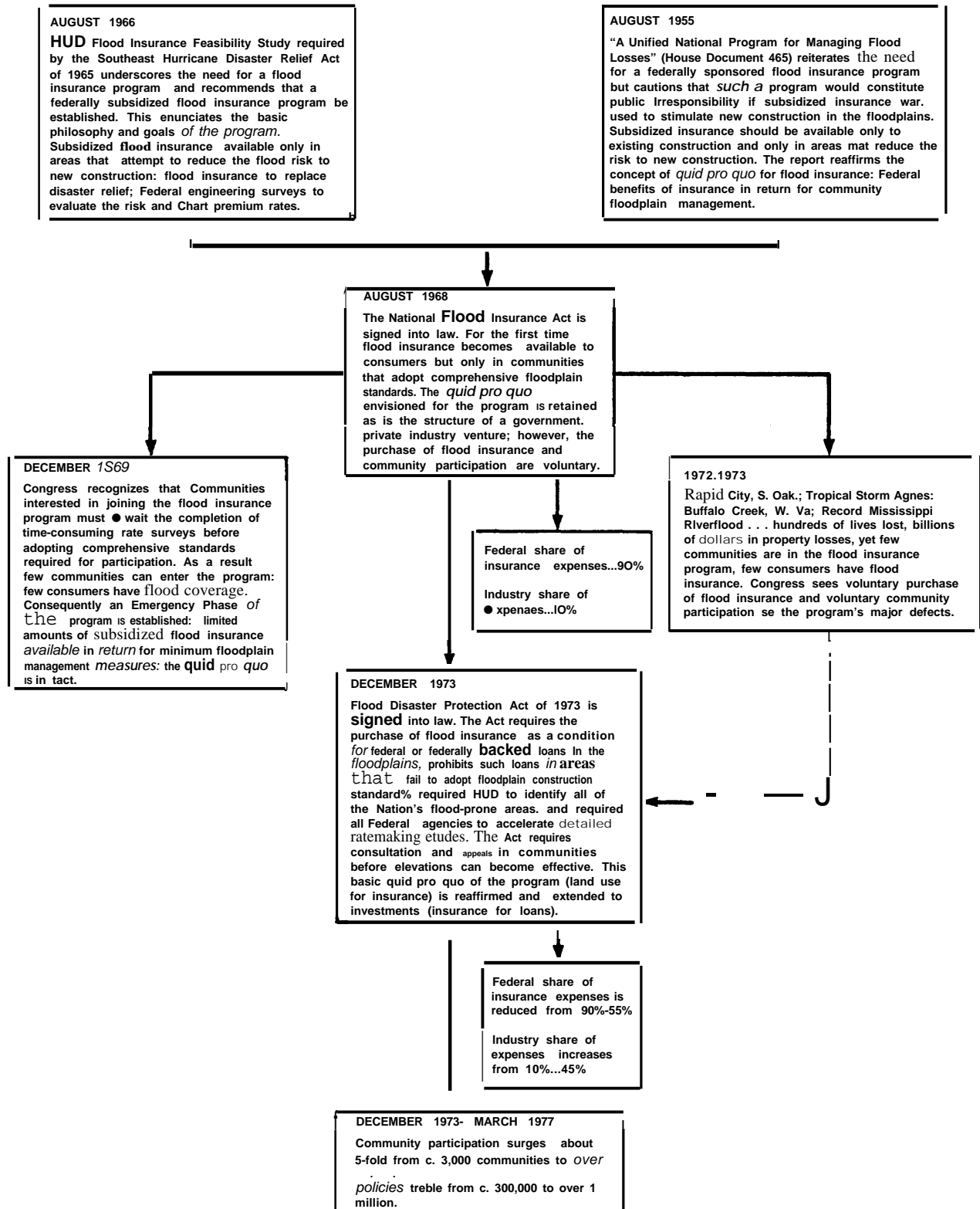
With respect to the approximately 6,000 communities that do not participate in NFIP, a 1977 amendment eliminated the restriction on private mortgage loans to owners of flood-prone property in nonparticipating communities (where the owner cannot obtain flood insurance). Direct Federal assistance under such circumstances remains proscribed, and Federal disaster relief is specifically denied to nonparticipating communities, which remain subject to the terms of the 1973 Act.

THE PRESENT PROGRAM

For the past 10 years NFIP has been administered by FIA, which until the formation of the Federal Emergency Management Agency (FEMA)

²Task Force on Federal Flood Control Policy, *A Unified National Region For Managing Flood Losses*, House Document 465 (Washington, D. C.: U.S. Government Printing Office, 1966).

Figure 7.-National Flood Insurance Program's History



SOURCE: Federal Insurance Administration, Department of Housing and Urban Development.

Table 15.-Growth of Coverage Under the National Flood Insurance Program

Date	Participating communities emergency/regular	# of policies	Coverage	Premiums paid	Claims paid
12/31/69	4	16	\$ 392,000	\$ —	\$ —
6/30/69 - 70	158	5,177	83,246,000	373,274	—
6/30/70 - 71	637	75,864	1,194,569,000	6,341,893	251,318
6/30/71 - 72	1,174	95,123	1,535,105,000	7,003,383	2,562,806
6/30/72 - 73	2,271	272,448	4,646,835,000	15,315,372	15,007,149
6/30/73 - 74	4,090	385,478	8,463,083,000	25,777,224	36,638,631
6/30/74 - 75	9,625	539,888	13,735,517,000	40,950,701	26,235,018
6/30/75 - 76	14,502	793,779	22,772,837,000	57,524,951	81,359,082
6/30/76 - 77	15,585	1,123,575	33,605,911,000	83,783,715	59,190,026
7/1/77 - 12/31/77	15,770	1,199,749	37,150,208,000	40,235,594	50,887,801
9/30/78	16,100	1,300,000	44,717,000,000	277,306,107	272,131,831

SOURCE: Federal Insurance Administration, Department of Housing and Urban Development.

in June 1979 was part of HUD. Like several other HUD programs, NFIP is characterized by a Federal-local relationship in which the States largely perform a supportive role. The National Flood Insurance Act established a direct working relationship between FIA and the Nation's 22,000 flood-prone areas. Local communities and counties are expected to adopt regulations for the management of their respective flood hazard areas. The rigor and specificity of such measures relates to the quality of information provided to them by FIA—the more detailed the flood hazard maps and studies, the more specific the local regulations should be. Thus, under NFIP there is a phased adoption of floodplain management restrictions by local communities in response to Federal technical assistance. If a community fails to adopt the level of regulation commensurate with available flood hazard data, it is no longer eligible for participation in NFIP and loses eligibility for the further sale or renewal of flood insurance policies within its jurisdiction. Existing policies remain in effect until they expire.

The basic stages of the NFIP partnership between FIA and flood-prone communities is summarized below. A more detailed breakdown is given in table 16, prepared by Illinois for the benefit of its local communities.

No Flood Data

When FIA has provided no local flood hazard information, local communities are expected to require building permits. Before granting a permit, the community should determine whether the site appears to be "reasonably safe from flooding." If not, structures should be anchored and built of flood-resistant materials. If a subdivision will be

flood-prone, utilities should be flood-proofed and adequate drainage should be ensured. The community must also ensure that all State and Federal permits (e.g., wetlands) are obtained by the applicant before a building permit is issued (24 CFR, sec. 1910.3(a)).

Flood Hazard Areas Identified

When FIA has formally identified flood hazard areas within the community (through a flood hazard boundary map), the community must obtain and utilize the best available flood data from any source, to ensure that new residential construction will be elevated above the 100-year flood level (if known), and that nonresidential construction will be flood-proofed to that level. Adjoining communities and the State Coordinating Office must be notified before altering or relocating any watercourse. Mobile homes must be properly anchored and a community evacuation plan should be developed (sec. 1910.3(b)).

Publication of a Rate Map

With the publication of its flood insurance rate map, the community must formally adopt regulations within 6 months that require the elevation or flood-proofing of residential and nonresidential construction above the indicated 100-year flood level (sec. 1910.3(c)).

Determination of Floodway

A "floodway" is that portion of the floodplain required to convey the 100-year flood with no more than a 1-foot rise due to encroachment upon adjoining land—the "floodway fringe." When FIA has determined the location of the floodway, no

Table 16.—Community Progression in the National Flood Insurance Program

Community* not in NFIP*	Community in NFIP's emergency program	Community in Regular program
1. No FHBM, "no requirements, no sanctions."	4. FIA* accepts community's application and community enters emergency program.	13. FIA accepts Regular Program ordinance, community enters Regular -- Program on the effective date on FIS. *
2. FHBM* issued, sanctions* take effect 1 year after initial issue date.	5. Community amends ordinance as the Federal law and/or regulations are amended.	14. Community amends ordinance as the Federal law and/or regulations are amended.
3. Community applies to join NFIP (see "NFIP Local Government Application Procedure," Local Assistance Series 26). Community may apply with or without FHBM, before or after sanctions take effect.	6. FIS* scheduled by FIA to begin 1 to 10 years after joining NFIP.	
	7. FIA schedules time and cost meeting, scope of FIS planned out with community.	
	8. Study review meeting, community officials review draft FIS.	
	9. Final CCO meeting, FIS and regular program requirements explained to the public.	
	10. FIA changes FIS as per comments and appeals from public and community officials.	
	11. FIA issues final elevation determination, FIS is thereby finalized and community has 6 months to pass a regular program ordinance or be suspended. .	
	12. Regular program ordinance passed and submitted to FIA (may be done during steps 10 or 11).	
Floodplain regulations: Application to join requires passage of emergency Program Development regulation ordinance (See Model NFIP Ordinance).	During steps 4 to 11 community enforces the emergency program development regulations ordinance (see regulations handout and model ordinance).	Community enforces regular program Development regulations Ordinance.
	Failure to adequately enforce the development regulations ordinance may cause suspension.*	
Flood insurance availability: none	Subsidized emergency program flood insurance is available for all property in the community.	Regular program flood insurance rules take effect.
Flood insurance purchase requirements: none	A flood insurance policy may be purchased to cover most Federal grants or loans and most commercial loans and mortgages made for buildings located in areas of special flood hazard* (see insurance handouts).	

*See definitions below.

NFIP—the National Flood Insurance Program.

Community—any local government with the statutory authority to enact and enforce floodplain regulations. In Illinois the term includes only the State government, cities, villages, counties (whose authority only controls unincorporated portions of the county), and special towns (not townships).

FIA—the Federal Insurance Administration in the U.S. Department of Housing and Urban Development.

FHBM—flood hazard boundary map—a map of a community, prepared by FIA, to identify areas of special flood hazard. The map is prepared according to the best flood data available to FIA at the time of preparation. It may be revised as better data is made available to FIA (see handout on how to appeal FHBM).

Areas of special flood hazard—areas in a community identified on a FHBM or in a FIS. These areas are floodplain lands susceptible to a 1-percent or greater chance of flooding in any given year. A 1-percent chance flood is also known as the 100-year flood or base flood.

FIS—flood insurance study—a study paid for entirely by FIA to delineate the areas of special flood hazard as accurately as possible. The study also produces data on the 10-, 50-, and 500-year floods and sets the regular program actuarial insurance rate zones.

Sanctions—NFIP's sanctions were set by Congress to encourage communities to enact floodplain regulations and join NFIP. Once the sanctions go into effect there will be no new Federal financial assistance for acquisition of or construction in the areas of special flood hazard in the community.

Assistance that would be cut off includes Veterans Administration loans, Federal Housing Administration loans, Farmers Home Administration loans, Small Business Administration loans, Environmental Protection Agency grants and loans, community development block grants, and similar direct Federal loans and grants for properties in the floodplain. Federal disaster relief would be denied in the event of a flood, but would be granted after other types of disasters.

Loans from banks, savings and loan associations, credit unions, and other lending institutions may be granted for floodplain properties. However, once the sanctions go into effect, lending institutions that are federally supervised, regulated, or insured (99 percent of them are) have new requirements. These lending institutions must notify applicants for loans for properties located in areas of special flood hazard that there is a flood hazard and that, in the event of a flood, there will be no Federal disaster aid.

Suspension—a community in NFIP may be suspended for failure to adequately enforce its emergency program or regular program ordinance. A community will automatically be suspended for failure to pass its regular program ordinance by the specified deadline. Once a community is suspended, the sanctions go into effect and no more flood insurance policies may be sold or renewed in the community.

SOURCE: Illinois Department of Transportation, Division of Water Resources, Floodplain Regulation Workshop materials, no date.

further fill or encroachment will be permitted within such area (sec. 1910.3(d)).

Coastal Areas

Where FIA has designated a “coastal high hazard area” (V Zone), communities shall require new or substantially improved structures in the V Zone to be located landward of the reach of mean high tide and elevated on piles or columns above the 100-year flood level. Within the V Zone, no new mobile homes are allowed and manmade alteration of sand dunes and mangrove stands is to be forbidden (sec. 1910.3(e)).

The objective of these standards is that communities will prohibit any further fill or encroachment on their regulatory floodway. Outside the floodway, limited new construction will be provided as long as the 100-year flood elevation will not be increased by more than 1 foot. Some States or localities have adopted more stringent rules, allowing encroachment to raise the 100-year flood water height by only 6 inches or not at all. In the latter case, the entire 100-year floodplain is treated as a floodway.

WHAT NFIP HAS ACCOMPLISHED

NFIP is a new and rapidly expanding program. It is therefore too early to assess the Program’s effectiveness for reallocating flood losses and for promoting improved floodplain management. Some preliminary NFIP accomplishments are considered below from three standpoints: 1) objective or quantitative measures of program activity to date, 2) informed judgments expressed by experts, and 3) anecdotal evidence from recent flood experience.

Quantitative Data on Program Growth

The rapid growth of the program since its inception and modification is shown in table 15. As of October 1, 1979, 1.6 million policyholders in either the emergency or the regular programs in 16,100 communities were covered for \$60 billion. There were 2,262 communities in the regular program. Flood insurance rate studies for 8,691 communities were underway of which 3,147 were completed. Of these 886 were on appeal.

Informed Judgments

- Building codes and practices in flood-prone communities have improved.
- Mapping of the Nation’s flood-prone areas has promoted public awareness of flood hazards.
- The program is stimulating consumer purchase of flood insurance in high-risk areas.
- The state-of-the-art has improved in such pertinent subject areas as home construction, economics, environmental engineering, hydrology, and hydraulics.
- The preliminary mapping of flood-prone communities has informed some 19,000 local governments about their flood hazards. (The national objective of completely mapping about 20,000 flood-prone communities by 1983 raises some questions to be discussed below).
- The Flood Disaster Protection Act of 1973, which amended NFIP to provide for compulsory participation and emergency eligibility, succeeded in making the insurance scheme a permanent feature of Federal flood policies, as evidenced by the \$60 billion in coverage in effect by October 1, 1979. Although some dissatisfaction has been expressed about filing procedures and delays in the adjustment process, NFIP is realizing its goal of flood loss reduction.

NFIP in Action: Early and Recent Experience

Early experience of NFIP was not promising. When Hurricane Camille hit the Gulf Coast in August 1969, only one community in the State of Louisiana was eligible for the sale of flood insurance. (This situation led to the adoption of the “emergency phase” amendment to NFIP in 1969). In 1972, only 29 policies were in effect in Rapid City, S. Dak., when it was hit by a catastrophic flash flood. Three weeks later only \$5 million in flood insurance coverage was in effect in Pennsylvania as compared with an estimated \$2 billion in losses caused by Tropical Storm Agnes. Reasons given for the failure of the public to take advantage of flood insurance included.

- Citizens were not aware of the program.
- Agents were not selling the program.
- Local officials were not seeking the eligibility.

- The rates were too high.
- The normalcy bias that “it can’t happen to me” deterred interest.
- Central to all major hazards insurance appears to be that ‘large numbers of people would not buy the insurance at actuarial rates voluntarily.

The Great Blizzard and Coastal Flood of February 6 to 7, 1978, was the most damaging weather event to strike the northeastern seaboard of the United States since March 1962. Successive high tides driven by winds gusting above 100 miles per hour caused what has been estimated to be a 75-year flood along the Massachusetts coast north and south of Boston. Some 9,000 homes were estimated to have been damaged or destroyed. Over 2,000 were demolished in the towns of Revere, Hull, and Scituate. Additional damage was inflicted on public roads, shore protection works, sewage treatment plants, recreational facilities, and utilities. Damage to automobiles alone was estimated at \$23 million, mostly occurring in the coastal area.

For the first time, flood insurance was widely held by flood victims. In 15 of the most severely hit communities in Massachusetts, 3,159 policies were in effect on which 1,663 claims were filed by March 1, 3 weeks after the flood. Payments authorized or actually made as of September 30, 1978 totalled slightly less than \$20 million. The Boston Regional Office of FIA provided prompt assistance in processing claims.

The February 1978 storm proved a test of a different sort for NFIP. Among the 15 Massachusetts communities with 30 or more flood insurance claims, 8 were enrolled in the NFIP regular program. Reconstruction of the buildings in those communities that were damaged more than 50 percent must comply with existing regulations for flood-proofing, minimum elevation, and location that reflect NFIP floodplain management standards. This makes it less likely that these structures will be damaged again. It is still too early to state with assurance that NFIP has, in fact, succeeded in mitigating the exposure of coastal investments to repeated loss. Research underway at this time should clarify this question. FIA has made a strong effort, however, to provide technical assistance to the most severely damaged communities to help them direct their reconstruction away from zones of high velocity wave action and to enforce minimum elevation requirements.

In April 1979, a massive flood along the Pearl River in Jackson, Mississippi afforded an opportunity to test NFIP in an inland setting. With fewer than 1,000 policies in Jackson where most of the flood damage occurred, NFIP covered a smaller proportion of losses than in the Massachusetts storm. Nevertheless, FIA launched a pioneering -- effort to employ all available resources to reduce future flood losses. Surveys were undertaken to investigate the feasibility of relocating certain flood victims, and seminars on flood-proofing were arranged. FIA persuaded the Small Business Administration to limit the allocation of disaster loans to sites outside the floodway. As in Massachusetts, the results were not consistent. FIA then developed new approaches that it later utilized after Hurricane Frederick in September 1979.

SOME RECENT STUDIES OF FLOOD INSURANCE

Before turning to the issues in the next sections it would be useful to examine three studies concerned with the behavioral and management aspects of flood hazards that comprise the background for the future evolution of the program.

- Howard Kunreuther of the University of Pennsylvania conducted a 3-year study on insurance protection from the point of view of natural hazards, focusing on flood and earthquake insurance.³
- From 1976 to 1977, Jiri Nehnevajsa and others at the University of Pittsburgh studied the preparatory activities that were carried out in anticipation of severe flooding in the Pittsburgh area.⁴
- In 1975, Don Anderson of the University of Wisconsin reviewed the strengths, weaknesses, and accomplishments of the program through 1973. He presented suggestions from a management and insurance perspective.⁵

³Howard C. Kunreuther, et al. *Limited Knowledge and Insurance Protection—Implications for Natural Hazard Policy*, University of Pennsylvania, March 1977.

⁴Jiri Nehnevajsa and Henry Wong, *Flood Preparedness 1077: A Pittsburgh Area Study*, University of Pittsburgh, May 1977.

⁵Dan R. Anderson, “The National Flood Insurance Program—Problems and Potential,” *The Journal of Risk and Insurance*, December 1974, pp. 586-592.

Individual Perceptions and Decisionmaking: The Kunreuther Study

Howard Kunreuther and his associates at the University of Pennsylvania recently completed a 3-year study on insurance protection from the point of view of natural hazards policy. They focused on flood and earthquake insurance. The study included extensive field interviews of 2,055 homeowners in 43 areas of 13 States subject to coastal zone and riverine flooding, and an additional 1,066 homeowners in 18 earthquake-prone areas in California. Half of the interviewers had purchased insurance and half had not. The field survey was complemented by laboratory investigations of choices among insurance alternatives. Some of the conclusions drawn from this study were:

- The view of the citizen as an "economic man" who makes fundamental decisions such as about purchasing insurance based on maximizing his own utility, is a seriously inadequate model of what happens. Choices are based on what Kunreuther and his associates call a series of contingent claims.
- At the time of the survey, individuals had extremely limited information about floods, earthquakes, and the insurance options available. For example, even among those holding flood insurance, only 17 percent were able to give a reasonable estimate of the cost of the insurance, and only 44 percent could estimate the deductible amount. The awareness of the potential for flood damage shows that the insured had the relatively more pessimistic view. Fifty-five percent of the uninsured expected damage to be \$10,000 or less and almost 30 percent expected to incur no damage, whereas among the insured, only 31 percent felt they might incur \$10,000 or less. (See table 17.)
- In general, the respondents did not expect to receive aid from the Federal Government should the disaster occur; but rather anticipated that losses would be covered by other sources, notably personal funds.
- Kunreuther's studies sustain the earlier observation made by Robert Kates of Clark University that there is "a major limitation in the human ability to use flood hazard information."⁶ Basic reliance is on experience. A per-

⁶Robert Kates, *Hazard and Choice Perception in Flood Plain Management*, University of Chicago, Department of Geography, Research Paper #78. As cited in Howard Kunreuther, "Limited Knowledge and Insurance Protection," *Public Policy*, vol. 2 No. 2, Spring 1976, p. 243.

Table 17.-Individual Perception of Flood Damage
Damage expected to property and contents from a severe flood or earthquake (Qq, 119-122) (% of sample)

Total damage class	Flood survey		Earthquake survey	
	Insured	Uninsured	Insured	Uninsured
No damage.....	9	29	2	12
\$10,000 or less.....	22	26	13	19
\$10,001 to \$30,000...	37	24	32	27
Over \$30,000.....	24	12	47	34
Unable to estimate..	8	9	6	8
Total.....	100	100	100	100

Subjective probability of severe flood or earthquake causing damage to your home next year (Q. 126)
(% of sample)

Subjective probability of flood or earthquake	Flood survey		Earthquake survey	
	Insured	Uninsured	Insured	Uninsured
.10 - 1.00.....	24	12	7	4
.01 - .10.....	26	18	63	54
.01 - .00001.....	20	26	15	15
.00001 or less.....	13	30	8	17
Unable to estimate..	17	14	7	10
Total.....	100	100	100	100

SOURCE: Howard Kunreuther, "Limited Knowledge and Insurance Protection," *Public Policy*, Spring 1975, pp. 234, 235.

son living on a floodplain appears to be strongly influenced by personal experience. There is a widespread inability to conceptualize floods.

The observations, in general, support the following conclusions with regard to the choice to buy insurance:

- A person who is aware of the hazard when he moves into a neighborhood is more likely to be insured than one who is unaware.
- A person who is experienced with flood hazards and whose home has been damaged is more likely to purchase insurance than someone who has not had such an experience.
- The person who has purchased flood insurance is more likely to know someone who has purchased a policy than is an uninsured individual.
- An individual who purchases flood insurance is more likely to have discussed insurance with friends, neighbors, and relatives than is an uninsured individual.
- Kunreuther's key finding is that people refuse to worry about future losses from disasters that they perceive as having little chance of happening. Therefore, it follows that:
–Disseminating information is extremely valuable. In one area in New York State, for

example, he finds that individual communities were not properly advised by local leaders about the procedure for joining NFIP because of the political sensitivity of land-use regulations involved.

- The degree of concern about the hazard is likely to be strongly influenced by the way in which risks are presented. Talking about a 100-year flood would obviously have less of a psychological impact than talking about the likelihood of flooding over the next 10 years (one chance in ten).
- The insurance agent plays a key role in the effective delivery of insurance.
- The way in which insurance is marketed is particularly critical in dealing with the poor, the highly mobile, and the aged.
- The significant role of financial institutions is growing by statute since flood insurance is required for all new mortgages in flood hazard areas.
- Coordination with other adjustments to flood hazards is needed.

Response to Warning: The Nehnevajsa Study

Following the severe winter of 1976 to 1977, the University of Pittsburgh Center for Urban Re-

search undertook a study of preparatory activity in anticipation of serious flooding in the Pittsburgh area. They concluded that "given a prior negative experience with the disaster (of the flood type) and realistic warning of an impending flood; given a reasonable time in which to develop ways to prepare for the disaster, public agencies, businesses as well as households become quite motivated to attempt to prepare themselves for the worst . . ."

Much time and effort is spent in activities appropriate for preparing to cope with an impending flood. A majority of the residents in the high risk region had purchased flood insurance, and in 3 additional communities almost half the sample residents had flood insurance. The overall participation fell below 30 percent in only two communities. Furthermore, in all of the communities, businesses tended to carry flood insurance although there was a wide fluctuation in the average amounts reported. Almost all of the residential insurance policies were new. These were purchased in anticipation of the extent of flooding estimated in 1977. Tables 18 and 19 summarize the purchasing patterns.

Table 18.—Flood Insurance: Residents and Businesses Through 1977

	Residents				Businessman		
	Purchased insurance	New policy*	Waiting period*	Average amount	Have flood insurance	Average amount	Businessmen who gave amt.
Allegheny							
Natrona	89.3	70.1	18.5	\$19,867	100.0	\$ 80,000	(7)
Tarentum	60.7	94.4	0.0	15,290	100.0	87,142	(7)
Sharpsburg.	78.7	89.8	3.4	14,386	92.3	34,000	(10)
Millvale	46.7	67.6	16.2	13,833	90.9	53,125	(8)
Monongahela							
McKeesport	29.5	65.2	13.0	13,250	72.7	96,000	(5)
Elizabeth.	22.1	66.7	33.3	20,500	71.4	10,000	(4)
West Elizabeth.	46.2	52.9	11.8	9,928	80.0	51,667	(3)
Ohio							
Coraopolis	70.7	79.3	13.8	19,900	80.0	70,625	(8)
McKees Rocks.	87.8	79.3	12.3	15,036	83.2	8,333	(3)
Neville Island	84.0	87.9	3.0	22,012	76.9	102,500	(8)
Pittsburgh	46.2	87.8	2.4	15,074	87.1	109,687	(16)

*These are percentages of those with policies not of total sample. "New policies" and "waiting periods" do not necessarily add up to 100 percent: the remaining respondents had flood insurance prior to the 1977 winter period.

SOURCE: Jiri Nehnevajsa and Henry Wong, *Flood Preparedness 1977: A Pittsburgh Area Study* (University of Pittsburgh, May 1977), p. 102.

Table 19.-Patterns of Flood Insurance Purchase in 43 Pennsylvania Communities*

Residents without insurance were also asked about their reasons for choosing not to acquire a policy.

- 37.1 percent of these uninsured residents gave general reasons for not carrying insurance—disliking the idea as such, not getting to it, not needing it, and the like.
- 27.6 percent of the residents felt that they did not need insurance because they live on upper floors of homes and apartment houses.
- 14.0 percent felt that they do not live in a potentially impacted area and that, therefore, they would not be directly threatened by flooding anyway.
- 10.2 percent thought that they did not need insurance because they lived in a rented property.
- 7.3 percent could not afford to purchase a policy though they might have done so if money had been available.

In all, 69.0 percent of the residents and 76.2 percent of the businessmen expressed some opinion about the flood insurance program itself:

- 42.1 percent of the residents and 38.5 percent of the businessmen considered it to be a good program.
- 19.4 percent of the citizens along with 17.4 percent of the businessmen believed the program to be "adequate."
- A few additional respondents, both residents and businessmen thought that the insurance rate was favorable, and a few others explicitly stated that they liked the Government's backing of the program.

- Among the negative comments, which in all account for a minority of residents as well as businessmen the following types of concerns appear:
 - that people don't understand how the program works;
 - that the program is good mainly for insurance companies;
 - that it is open to abuse—both by insurance companies and policyholders;
 - that the 15-day waiting period is unfair;
 - that the coverage which the program facilitates ought to be expanded to other items (basement items, carpeting, and the like);
 - that it does not, in fact, cover the needs of residents or of businessmen adequately at all;
 - that full value for damaged items is not repayable;
 - that it should cover a high percentage of reconstruction and rebuilding costs;
 - that maximum coverage should be increased;
 - that deduction rates are unfair; and
 - that business disruption insurance should also be added.
- Furthermore, a few respondents, both residents and businessmen, deferred judgment: they said that the adequacy of the program will best be seen, or prove itself, after actual flooding.

*This study surveyed 43 communities in the Pittsburgh region in the Monongahela, Allegheny, and Ohio Rivers.

SOURCE: Jirt Nehnevajsa and Henry Wong, *Flood Preparedness 1977: A Pittsburgh Area Study* (University of Pittsburgh, May 1977), p. 102.