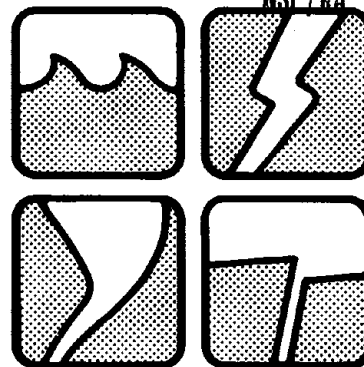


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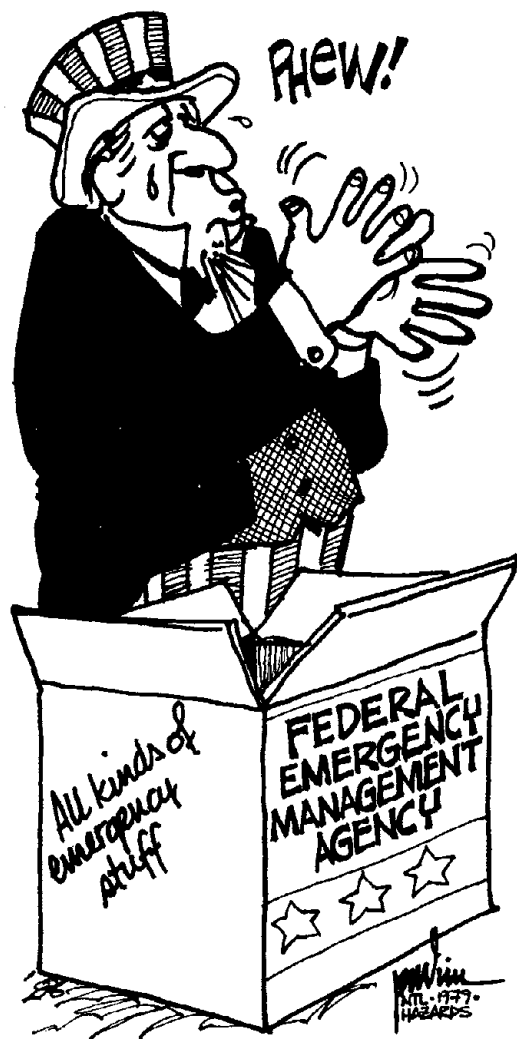
Natural Hazards OBSERVER



VOLUME IV

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FEMA SIGNALS NEW EMPHASIS FOR EMERGENCY MANAGEMENT

—an invited comment

The creation of the Federal Emergency Management Agency signals a new respect and enhanced status for emergency management activities at all levels of government.

The first, and most immediate benefit of FEMA will be the establishment of a single focal point for emergency management concerns at the federal level. The consolidation of scattered and often overlapping functions throughout the government will end a major source of frustration for emergency management professionals in state and local government and in the private sector.

FEMA will be a cooperative undertaking, with federal government as a supportive partner to supplement the efforts of state and local governments and private agencies in preparing for and responding to periods of crisis and duress. FEMA will respect the proposition that the federal government enters the picture only when the crisis exceeds the capabilities of those resources. FEMA will operate on the principles that planning and response must be adequate and efficient and services are delivered where they are delivered best—at the local level.

The consolidation of a variety of emergency management activities into a single agency provides an opportunity to combine planning and research with response and recovery on a day-to-day basis.

The enormous resources dedicated to our response to a nuclear attack will now be used and tested during the instances of natural and man-made disasters which we will face on a continuing basis. The often discussed "dual-use" is in reality a "multiple-use". That concept is now a reality as FEMA moves to mobilize all potential

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resources to provide support and assistance during periods of crisis.

Planning, preparedness, and mitigation will assume a priority position in FEMA operations. Response and recovery activities will then become a laboratory of experience against which we can test our plans. Theory will become practice at the moment FEMA is called upon to respond to an emergency situation. Having those responsible for planning, preparedness and mitigation working hand in hand with those responsible for responding to and recovering from disasters will force an immediate evaluation and dictate the development and improvement of those plans.

The Carter administration has demonstrated its commitment to a better and more efficient emergency management activity at the federal level. FEMA will expand that commitment through a close and active working partnership with public and private personnel at the local level.

John W. Macy, Jr.
Director
Federal Emergency
Management Agency

NATURAL HAZARDS RESEARCH WORKSHOP

John W. Macy, Jr., Director of the Federal Emergency Management Agency, generated a renewed spirit of optimism with his opening speech before the fourth annual Invitational Workshop on Natural Hazards Research in Boulder, Colorado, July 29-August 1, 1979. Macy launched the 3-day workshop with statements confirming his enthusiasm for the reorganization of the emergency response branch of the federal government. He emphasized the existence of an atmosphere for change in which the federal government can coordinate better its own emergency response activities and work more closely with state and local governments to reduce human suffering and property loss from extreme natural events.

Throughout the workshop, participants heard reports of many of the past year's activities—new research starts, conclusions of research projects, a growing concern among political decision-makers about comprehensive emergency management, and the increasing number of hazard-related conferences. Discussions following these reports revealed a continuing vital interest in the type of information that can be gathered through research and a growing concern with the need to ensure that research conclusions are useful and used. State and local officials and planners were singled out as being those most likely to apply research information. Spirited discussion made it clear that research findings are *not* being effectively communicated to users.

Discussion then turned to ways in which the communication network might be made more effective. There was mention of television, radio and newspapers, and the increasingly important role they might play in

disseminating results. FEMA will also be looked to as an organizer and disseminator of hazards information with its governmental contacts and pre-existing structure. There was continued support among participants for the researchers' presentations of short reports and summaries of findings and recommendations geared to users. Participants felt that in the future focused meetings and workshops would be a very effective means of getting findings to users in understandable form.

Members of groups that could potentially serve as links between users and researchers talked about what their organizations could do. Four of the major public interest groups (PIG's), the Council of State Governments, the International City Management Association, the National Governors' Association, and the U.S. Conference of Mayors, were represented and urged researchers to consult with them as they begin their projects and intermittently throughout the research. The PIG's are aware of the needs of their constituencies and have regular channels of communication with them.



Voluntary groups such as the Red Cross and the National Voluntary Organizations Active in Disaster are distinguished by their acute awareness of the human suffering brought on by disasters. Information about ways to reduce the impact of hazards can be disseminated through these groups to the disaster victims who are trying to rebuild their lives.

There are literally thousands of consumer groups in the United States dedicated to seeing that citizens receive a fair deal. To get these groups involved it may be necessary to characterize hazard mitigation as a personal safety issue. Simple steps that parents can take to protect their children, or the purchase of insurance to protect the home are issues that might spark their interest and participation in the hazards communication network.

Newspapers, radio, and television are a direct means of communicating with groups with whom the research

community is not normally in touch. To use the media in disseminating research, it is necessary to establish contact with local media personnel. Press releases sent out in mass mailings receive little attention.

A landslide victim from California spoke to the group about the need for researchers to be more sensitive to the needs of victims. After she watched her home slide to ruin, no fewer than 15 people attempted to interview her for research purposes. When she tried to find out what researchers had discovered that might help her in her situation, she could find no one with answers. The victims of this slide have organized and need precise information on legal rights, liabilities, and possibilities for compensation for all landslide victims.

The Information Center will not publish proceedings of the workshop, but copies of materials which were distributed at the workshop are available upon request from the Center. Listed below are five different categories of materials: RP's—summaries of findings of recently completed or ongoing research; NR's—abstracts of newly funded research; PIG's—descriptions of the various public interest groups and their activities; C's—summaries of conferences held during the past year or descriptions of future conferences; and PPA's—abstracts of ongoing programs and projects throughout the country which were not specifically discussed at the workshop.

Interested persons may obtain free copies of any of the abstracts by writing to the Information Center. All abstracts include the name and address of a person connected with the program or project who may be contacted for more detailed information.

LIST OF RESEARCH PRESENTATIONS

- RP-1 Forecasting Seismically-Induced Rubble Blockage of Urban Streets in California
David E. Schwarz, Robert Raburn
- RP-2 Inflationary Changes in Construction Cost
Harold C. Cochrane
- RP-3 Community Response to Earthquake Threat in Southern California
Ralph Turner, Joanne M. Nigg, Denise Heller Paz, Barbara S. Young
- RP-4 Requirements for Evaluating the Effectiveness of Flood Plain Land Use Management
Raymond J. Burby, Steven P. French, Edward J. Kaiser, David H. Moreau, Patricia P. Rieker, Shirley F. Weiss
- RP-5 The 1979 Flooding of Jackson, Mississippi: Perception and Planning
Rutherford B. Platt, Richard V. Francaviglia
- RP-6 Community Response to Natural Hazards Warnings
T. Michael Carter, John P. Clark, Robert K. Leik
- RP-7 Physical and Economic Damage Estimates for Earthquakes in New Madrid, 1980-2030
Ben-Chieh Liu
- RP-8 Concerns of Local Officials About Flood Warning Systems
Herbert S. Groper

- RP-8a Concerns of Local Officials About Flood Warning Systems
H. James Owen
- RP-9 Public Response to Geologic Hazard Information
Thomas F. Saarinen
- RP-10 Lena Gulch Evacuation: An Examination of Warning and Response
Marvin Waterstone
- RP-11 Real Estate Agents and Dissemination of Information on Natural Hazards in the Urban Area
Risa Palm
- RP-12 The Role of the Mass Media in Disaster Reporting
Alcira Kreimer
- RP-13 Micro Simulation Models for Flood Plain Management
Louis Miller, Joseph Vinso, Howard Kunreuther, Norman Katz
- RP-14 Estimating the Long-Term Effects of Floods, Tornados and Hurricanes
Peter H. Rossi, James D. Wright, Sonia R. Wright, Eleanor Weber-Burdin
- RP-15 Famine Causes and Relief
William I. Torry
- RP-16 A Study of Functional Inter-Relationships Between Nuclear Disasters and Other Types of Disasters
Charles E. Fritz
- RP-18 Socio-Behavioral Responses to Chemical Hazards
E. L. Quarantelli
- RP-19 Post-Earthquake Land Use Planning
George G. Mader
- RP-21 Floodplain Acquisition
Jon Kusler
- RP-23 Search and Rescue Missions in Natural Disasters and Remote Settings
Thomas E. Drabek
- RP-24 Study of Elderly Victims of the Wichita Falls Tornado
Robert Bolin
- RP-25 Disaster Preparedness and the Office of U.S. Foreign Disaster Assistance
Gudrun Huden

LIST OF NEW RESEARCH ABSTRACTS

- NR-1 Prototype Regional Observing and Forecasting Service (PROFS)
David H. George
- NR-2 International Working Group for the Study of the Social and Behavioral Aspects of Disasters
E. L. Quarantelli
- NR-3 Study of Earthquakes and Financial Institutions
Frank G. Steindl
- NR-4 Studies of Disaster Evacuation Behavior and Problems
Barbara Baisden
- NR-5 Conference on Flood Plain Management: Westfield Massachusetts
David Harrison
- NR-6 Training Program to Enhance Local Disaster Recovery Planning
Claire Rubin
- NR-10 Towards an Earthquake Engineering Index for Architecture and Planning
Fred Krimgold

LIST OF CONFERENCE SUMMARIES

- C-1 National Conference on Hurricanes and Coastal Storms
Earl J. Baker
- C-2 APWA Natural Hazards Workshop: Public Works Preparedness and Response
Michael Robinson
- C-3 Second International Conference on Microzonation for Safer Construction—Research and Application
M. A. Sherif
- C-4 Hazard Awareness Workshop
Sally Davenport
- C-5 Social Science Contributions to Natural Hazards Research: An Assessment
James Wright
- C-6 International Symposium on Earthquake Prediction
Charles C. Thiel
- C-7 Fifth International Conference on Wind Engineering
J. E. Cermak
- C-13 Natural Disaster Insurance Scheme for Australia
Charles Bubb
- C-14 Hurricanes and Florida: An Invitation to Disaster
Denise A. Parlak
- C-15 Differing Views on Man and the Seashore
Ron Noble

LIST OF PUBLIC INTEREST GROUP ABSTRACTS

- PIG-1 The State and Natural Hazards
Hirst Sutton, Council of State Governments
- PIG-2 1979 Emergency Management Project
Hilary Whittaker, National Governor's Association
- PIG-3 Comprehensive Emergency Preparedness Program
Michael Clancy, U.S. Conference of Mayors
- PIG-4 Emergency Preparedness Assistance Program
Lorrie Webb, New England Municipal Center

LIST OF PROGRAM/PROJECT ABSTRACTS

- PPA-1 Earthquake Education in the Schools of California
Raymond Sullivan
- PPA-2 Geotechnical Hazards Assessment Study
Tony Burns
- PPA-3 Hurricane and Erosion Hazard Zones: Development Problems and Innovative Solutions
Dinesh C. Sharma
- PPA-4 Barrier Islands and Beaches of the United States
Dinesh C. Sharma
- PPA-5 Coastal Flood Hazards and Responses in Puerto Rico
Larry R. Johnston
- PPA-6 Portable Earthquake Exhibit
John Glare
- PPA-7 Hazards Information Available from the National Weather Service
Herbert S. Groper
- PPA-8 Comprehensive Flood Prevention Measures in Urban Japanese Rivers
Osamu Arai
- PPA-9 Land Use for Unstable Geologic Units
Dale T. James

- PPA-10 Virginia's Flash Flood Warning Program
Stanley W. Campbell
- PPA-11 Volunteers in Earthquake Prediction Research Water-Level Monitoring Project
Marilyn P. MacCabe
- PPA-12 Virginia Hurricane Preparedness Program
Neil M. Chapin
- PPA-13 Liability of Local Governments for Earthquake Hazard
Terry Margerum
- PPA-14 USGS Warning of Geologic Hazards
- PPA-15 USGS Hazards Awareness Efforts
Hazards Information Coordinator, U.S. Geological Survey
- PPA-16 Utah Seismic Safety Advisory Council
Delbert B. Ward
- PPA-17 A Study of Increasing Natural Hazard Potentials in High Growth Areas of Wyoming
Joseph Zuckernick
- PPA-18 International Association of Fire Chiefs and Emergency Preparedness
Michael Hildebrand
- PPA-19 Seismic Workshop for Building Officials and Land Use Planners
Louis F. Murphy
- PPA-20 Community Disaster Exercise
Louis F. Murphy
- PPA-21 Public Official Attitudes Toward Disaster Preparedness in California
John D. MacLeod
- PPA-22 The Integration of Seismic Design Principles into Preliminary Architectural Design
Kenneth Britz
- PPA-23 Implementation Aspects of Flood Warning and Preparedness Alternatives
George Antle
- PPA-24 Effectiveness of Flood Warning and Preparedness Alternatives
George Antle
- PPA-25 Procedures for Filling in a floodplain Under the Floodplain Management Guidelines
Ray Stanland
- PPA-26 Creek Assessment Study: Upper White Rock Creek
Ray Stanland
- PPA-27 The Escarpment Report: Environmental Assessment & Development Guidelines for the White Rock Escarpment
Ray Stanland
- PPA-28 Apathy and Inexperience: A Study of Hurricane Hazard Perception
Charlene Callahan Levy
- PPA-29 Land Capability/Suitability Study for Los Angeles County
L. Charness
- PPA-30 Regulating Development in Fault Rupture Areas
William J. Kockelman
- PPA-31 Requiring Site Investigations in Seismic Hazard Areas
William J. Kockelman
- PPA-32 Increasing Building Standards on Unstable Lands
William J. Kockelman
- PPA-33 Disclosing Geologic Hazards to Real Estate Buyers
William J. Kockelman
- PPA-34 Local Government Emergency Preparedness: An Economic Perspective
Adam Rose
- PPA-35 The Role of the Mass Media in Disaster Reporting
Everett M. Rogers, Rahul Sood

- PPA-36 Natural Disaster Recovery Planning, A Brochure
for Local Public Officials
Claire Rubin
- PPA-37 Agro-Climate Monitoring and Assessment for the
Developing World
Paul F. Krumpke
- PPA-38 Tropical Cyclone Disaster Early Warning Systems
Paul F. Krumpke
- PPA-39 Project Sesame
Edwin Kessler
- PPA-40 National Severe Storms Laboratory Projects 1979
Edwin Kessler
- PPA-41 Origin and Rationale of the Criterion Used in
Designating Floodways
Melita Rodeck
- PPA-42 Methodology of Mudflow Analysis
Melita Rodeck
- PPA-43 Erosion Study of the Michigan Coastline
Melita Rodeck
- PPA-44 Residential Flood Emergency and Repair
Handbook
Melita Rodeck
- PPA-45 Flood Resistant Construction
Curt Chandler
- PPA-46 Design and Construction Standards for Residential
Buildings in Coastal High Hazard Areas
Curt Chandler
- PPA-47 Tsunami Resistant Design
Curt Chandler
- PPA-48 Floodproofing Residential Basements
Curt Chandler
- PPA-49 Coastal Wetlands
Doug Lash
- PPA-50 Central Appalachia Development Project
R. K. Kelley
- PPA-51 Hurricane Response Model Update #2
Carlton E. Ruch
- PPA-52 An Assessment of Research and Practice in
Australian Natural Hazards Management
Joseph E. Minor
- PPA-53 Research Information Exchange Conference on the
Wichita Falls Tornado
Kishor C. Mehta
- PPA-54 Analysis of Hailstone Properties Affecting
Engineered Systems
Milton L. Smith
- PPA-55 Assessment of Tornado Risks and Analysis of Near
Ground Tornadic Windfields
James R. McDonald
- PPA-56 Reporting Economic Effects of Extreme Events
Joseph Scanlon

WARNING AND RESPONSE

Although the final report from the University of Minnesota's project, "Dissemination of and Response to Natural Hazard Warnings," funded by the National Science Foundation, will not be available until early summer of 1980, some preliminary findings have been released by the investigators, T. Michael Carter, John P. Clark, and Robert K. Leik. Carter and Clark note that very few local civil defense offices in the communities studied are structured to facilitate communication among emergency organizations. Lack of communication and coordination among such agencies was found on a grand scale.

Another influence on community response to warnings is the nearly complete lack of communication between the emergency service agencies and the local broadcast media. In most cases the public in the locales studied receives its information on hazardous weather from commercial media, yet in at least half of the places studied the media's only contact with emergency agencies was through monitoring the agencies' already sketchy radio transmissions.



Carter and Clark's preliminary analysis of their data on household response to warnings reveals, however, that even with complete, concise warnings, more than half of the population bases its response decisions on a myriad of other considerations. For instance, residents' predispositions *not* to evacuate upon receipt of a hurricane warning were greater the longer they had lived in an area affected by hurricanes. While reluctance to evacuate has complex causes, Carter and Clark suggest that the reluctance can be analyzed, and many of the causes dealt with through educational and community preparedness programs.

A more detailed discussion of the research design, methods, and tentative findings is contained in two working papers now available: "Organizational and Household Response to Hurricane Warnings in the Local Community," NHWS No. 79-01; and "Community Warning Systems: The Interface Between the Broadcast Media, Emergency Service Agencies, and the National Weather Service," NHWS No. 79-02. Both papers can be obtained from *Natural Hazards Warning Systems*, 1927 South 5th Street, University of Minnesota, Minneapolis, MN 55454, (612) 376-1865.

CORRECTION

An article on page 7 of the March 1979 *Observer* may have left readers with a partially incorrect impression of the focus of the International Working Group for the Study of Social and Behavioral Aspects of Disasters. The group is not confined only to those concerned with the sociological aspects of disasters, but includes anyone with interest in social and behavioral issues such as social and behavioral scientists, disaster planners, emergency operations staffs and medical personnel. The *Observer* regrets the error.

LAND ACQUISITION TO REDUCE FLOOD LOSSES

A report given at the workshop concerning recent Federal Insurance Administration actions prompted by the severe floods in Mississippi this year offered encouragement to those who have long urged the federal government to take a more active role in hazard mitigation. The FIA (now with the new Federal Emergency Management Agency) has begun the process of trying to coordinate federal, state and local activities following a disaster in order to lessen the vulnerability of the community in the future.

FIA is exploring land acquisition and relocation as an important flood plain management tool. FIA believes through studying the Jackson experience that

- 1) acquisition will be cost-effective in the long term;
- 2) acquisition is attractive because it can be used to realize other community benefits such as open space and reduced pollution, and
- 3) acquisition is a permanent form of flood damage reduction.

They have found that many people in flood-prone areas are willing to relocate if they can do so without financial loss. A survey of 199 residents in three communities in Mississippi revealed that 142 of the respondents wanted to move off the flood plain but were restrained because of costs.

With this kind of support from disaster victims, FIA is exploring ways to implement Section 1362 of the National Flood Insurance Act and to coordinate FIA acquisition efforts with other federal and local programs.

For information contact *Gloria J. Jimenez, Federal Insurance Administration—FEMA, 451 7th Street, S.W., Washington, DC 20410, (202) 755-6770.*



NEW ADDITIONS TO FEMA

Executive Order 12148, signed by President Carter on July 20, 1979, officially transferred the functions of the Defense Civil Preparedness Agency, the Federal Disaster Assistance Administration, and the Federal Preparedness Agency to the new Federal Emergency Management Agency, effective July 15, 1979.

The addition of these three agencies consolidates the federal programs involved with preparedness, mitigation and response to national emergencies into one agency as called for by President Carter's Reorganization Plan No. 3. John W. Macy, Jr. was sworn in as director of FEMA on August 1, 1979.

WRC TAKES A FURTHER LOOK AT NONSTRUCTURAL FLOOD PLAIN MANAGEMENT

The Water Resources Council has undertaken a study in response to the administration's concern with nonstructural alternatives, and because evidence is mounting that certain locations are susceptible to repetitive flood losses with consequent duplication of federal expenditures for flood insurance and disaster relief. These federal outlays themselves have tended in many cases to reinforce the tendency to rebuild in the same vulnerable locations. Thus, the nation faces a vicious circle of repeated losses, prompting federal assistance, setting the stage for further losses. It is imperative that federal policies be adjusted to interrupt this cycle. The study will review land acquisition and relocation programs at the federal level, possible revisions of the *Principles and Standards* to encourage the adoption of nonstructural flood control measures, and coordination of federal post-flood recovery programs to reduce future flood loss potential.

For information contact *Frank Thomas, U.S. Water Resources Council, 2120 L Street, N.W., Suite 800, Washington, DC 20037, (202) 254-6453.*

BIG SUR FLOOD PROTECTION

A pre-Corps of Engineers form of structural flood protection is being revived in Big Sur, California. Buzz Brown, a 65-year old resident woodsculptor in the area is constructing an ark which he claims is several cubits larger than the original. Brown's efforts were not spurred, however, by ephemeral voices or dark dreams of doom, but rather by those latter day messengers, the Army Corps of Engineers who, following a serious fire in the Big Sur area which drastically changed the watershed configuration, put up ribbons around town indicating the expected water height from potential floods. This, according to Brown, is what motivated his ark-building activities. Talk about response to warnings!



CONFERENCES

The Second Conference on Coastal Meteorology, sponsored by the American Meteorological Society, will be held January 30-February 1, 1980, in conjunction with the 60th AMS annual meeting in Los Angeles, California. The conference will focus on the physical processes of coastal meteorology with papers emphasizing the influence of the coastal/oceanic system on geological, chemical, biological, social, and economic problems. For information contact: V. R. Noonkester, Code 532, Naval Ocean Systems Center, San Diego, CA 92152. (714) 225-7206.

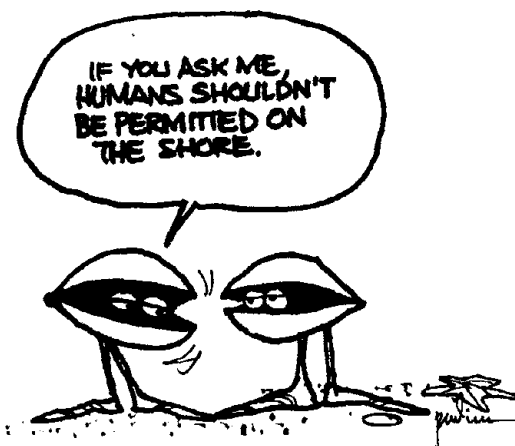
A National Conference on Stormwater Management Alternatives to be held in Wilmington, Delaware, October 3-5, 1979 will address the problem of pollution caused by stormwater runoff. The sponsors, University of Delaware Water Resources Center and the U.S. Department of the Interior Office of Water Research and Technology, hope to formulate and review alternative methods for handling stormwater runoff that consider cultural, social and environmental factors as well as engineering design and cost-effectiveness. Senator Edward S. Muskie will address the conference planned for engineers, architects, planners, river and port authorities, public works officials, conservation commission employees, voluntary association representatives and interested individuals. Conference information may be obtained from Joachim Tourbier, Project Director, Water Resources Center, University of Delaware, 42 East Delaware Avenue, Newark, DE 19711, (302) 738-2191.

Hurricanes and Florida: An Invitation to Disaster will be the topic of the Florida Audubon Society's annual convention, October 26-28, 1979, in Miami Beach. The program will examine ways to prevent or reduce hurricane destruction through stricter coastal zone management, more stringent building codes, and population limits in hazardous areas. For information, contact Denise A. Parlak, Convention Coordinator, Florida Audubon Society, P.O. Drawer 7, Maitland, FL 32751, (305) 647-2615.

On August 22-24, 1979, the Earthquake Engineering Research Institute held the 2nd U.S. National Conference on Earthquake Engineering in Stanford, California. In addition to technical sessions on seismic risk, design criteria, siting, etc., there were papers presented on public policy and economic aspects of earthquakes. Proceedings are available from the Earthquake Engineering Research Institute, 2620 Telegraph Avenue, Berkeley, CA 94704, (415) 848-0972 at \$26.00 for EERI members and \$36.00 for nonmembers.

The American Shore and Beach Preservation Association has announced its 1979 forum, Differing Views on Man and the Seashore, to be held September 20-22, 1979 in Los Angeles. The forum will be sponsored jointly by the ASBPA, U.S. Army Corps of Engineers Los Angeles District, American Society of Civil Engineers Waterway, Port, Coastal and Ocean Division, and the California Department of Resources. Advocates of differing viewpoints on the uses of the seashore, including scientists, industrialists, land developers, elected officials, homeowners and environmentalists, will present their insights and concerns. Issues to be discussed involve industrial siting, recreational activities, developers' perspectives, coastal zone permits, public access and coastline ownership.

For information contact Ron Noble, Chairman, ASBPA, P.O. Box 607, Los Angeles, CA 90053.



The National Public Policy Forum for Disaster Relief, sponsored by the National Voluntary Organizations Active in Disaster (NVOAD) and the National Conference of Catholic Charities, was held at the Wingspread Conference Center in Racine, Wisconsin, May 23-25, 1979.

Representatives of national voluntary organizations, key government officials, researchers, and representatives from communities that have experienced disasters met to explore how provisions for disaster relief may be better planned and coordinated. Participants concluded that improved coordination between NVOAD and other disaster-related agencies, including formalized patterns of collaboration, will be essential to effective disaster response.

Roles in response efforts which are particularly suited to voluntary organizations were discussed:

- advocacy—intercession on behalf of victims to ensure fair treatment;
- pioneering of new ideas for disaster response;
- advance planning, since voluntary agencies are largely free from crisis-oriented constraints which affect most response agencies;
- filling gaps which are left by other groups.

Information about the conference and proceedings is available from Brother Joseph Berg, National Conference of Catholic Charities, 1346 Connecticut Avenue, N.W., Suite 307, Washington, DC 20036, (202) 785-2757.



GRANTS

State mitigation options. "Emergency Management Project/Contract Add-on for Study of State Mitigation Options," Defense Civil Preparedness Agency, \$69,000, 12 months. Principal Investigator: *Subcommittee on Public Protection, National Governors' Association, Center for Policy Research, 444 North Capitol Street, Washington, DC 20001, (202) 624-5365.*

The Center will develop a range of options by which FEMA may stimulate and support emergency mitigation efforts, on the part of state and local governments and the private sector, for natural and man-made hazards. The study will examine state community development plans, preparedness plans, and hazards vulnerability analyses; select 80-90 mitigation efforts and review them; gather information on the efforts and on the problems associated with them; and suggest possible federal strategies to support the efforts.

Emergency assistance handbook. "Emergency Management Project/Contract Add-on for Expansion and Updating of NGA Handbook *National Emergency Assistance Programs (NEAP)*," Defense Civil Preparedness Agency, \$61,000, 12 months. Principal Investigator: *Subcommittee on Public Protection, NGA, Center for Public Policy Research, 444 North Capitol Street, Washington, DC 20001, (202) 624-5365.*

In addition to updating the NEAP handbook, the Center will establish a prototype for FEMA's automated data system; it will aggregate research data, respond to state inquiries, and build a national clearinghouse for emergency assistance information.

Disaster recovery training. "Training Program to Enhance Local Disaster Recovery Planning," Defense Civil Preparedness Agency, \$55,000, 8 months. Principal Investigator: *Claire Rubin, Academy for Contemporary Problems, 400 North Capitol Street, N.W., Suite 390, Washington, DC 20001, (202) 638-1445.*

The Academy will prepare a prototype training program on local disaster recovery training and will organize and conduct two workshops at which the training program will be tested. Before designing the training package, the Academy will 1) review relevant training programs and materials available from government and private sources on recovery from disasters; 2) conduct extensive interviews with federal, state and local officials to obtain contributions and materials for the design of the program; and 3) convene an advisory committee including public practitioners to provide advice and guidance.

After conducting the two prototype workshops, the Academy will evaluate the information and outcome of the workshops and prepare a final report covering the findings, results, and recommendations of the study.

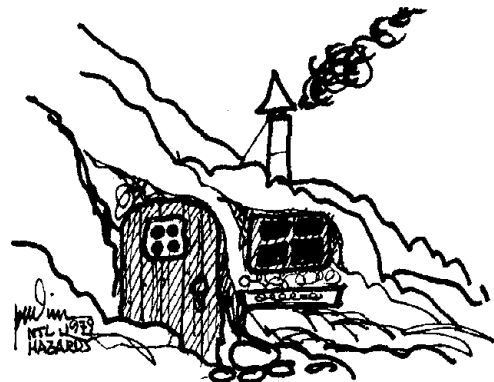
Evacuation behavior in disasters. "Studies of Disaster Evacuation Behavior and Problems," Defense Civil Preparedness Agency, \$50,000, 10 months. Principal Investigator: *E. L. Quarantelli, The Disaster Research Center, 128 Derby Hall, 154 North Oval Mall, Columbus, OH 43210 (614) 422-5916.*

Research focusing directly on evacuation behavior in disasters has been relatively rare. Much of what is known about this subject has come indirectly from looking at other disaster problems or questions. The Disaster Research Center has begun a project to discover what is now known and unknown about evacuation in disaster situations, with special attention paid to the implications for planning, operations and future research.

The project will develop a model of evacuation behavior and a research prospectus for future comparative field work. The model will deal with such matters as different types of evacuation, the distinctive characteristics of the phenomena, the more significant conditions or factors affecting the pattern and occurrence of evacuation and the typical problems associated with the behavior when it takes place. In addition, researchers will prepare a stand-by plan for doing field work in an actual evacuation should a suitable opportunity arise.

Earth covered buildings. "Earth Covered Building Techniques to Achieve Protection from Weapons and Natural Disaster Effects and Energy Conservation Goals," Federal Emergency Management Agency, \$60,000, 12 months. Principal Investigator: *Frank Moreland and Associates, 904 Boland Street, Fort Worth, TX 76107, (817) 335-2883.*

The focus of the project will be to determine the technical compatibility of earth-covered building programs to conserve energy and to provide physical protection. Other social values such as protection of the environment and improved living space will also be identified. Architectural and building design techniques compatible with the above goals will be evaluated, as will public policy issues, and incentives and constraints to acceptance of such structures.



EFFECTS OF FLOOD PLAIN REGULATIONS

Conclusions of a research project conducted by Sheaffer and Roland, Inc., for the Federal Insurance Administration (see *Natural Hazards Observer*, Vol. 1, No. 1, p. 5) have recently been released for review.

The study was initiated to evaluate quantitatively the economic, social and environmental effects of regulating use of the 100-year flood plain in the United States. Twenty-one case studies of flood-prone communities were selected for evaluation of the effects of regulation. A scenario method was used to forecast development conditions in the near (1980) and more distant (1990) future for each community under three different regulatory situations—no regulation, moderate regulation (similar to present National Flood Insurance Program standards), and stringent regulation (prohibition of development and substantial improvements and correction of past uses by removal of existing vulnerable structures).

The projections indicate that although moderate regulations will not serve to reduce flood losses, a decrease in the rate of escalation may be expected. Likewise, current regulations will reduce the rate of population movement into the flood plain and the rate of conversion of open space flood plains to urban uses but will not halt the processes completely. The scenario projecting no regulation results in greatly increased flood losses and in housing on the flood plain. Only the most stringent regulations would bring about an actual reduction in flood losses, flood plain housing and the conversion of open space land to developed uses.

Copies of the report will be available from the Federal Insurance Administration (now part of FEMA) after completion of the review process.

OLD McDONALD HAD A STORM CELLAR

The Cooperative Extension Service of The Pennsylvania State University has recently published a new version of the *Disaster Handbook for Extension Agents*. Designed to be used by extension agents and private individuals, the comprehensive volume reviews all pertinent ways to survive and clean up after floods, hurricanes, tornadoes, winter storms, and nuclear disasters. Loose-leaf, one-page fact sheets present lucid information on a multitude of considerations: understanding warnings, protecting livestock and buildings, insuring human safety, salvaging crops, sanitation precautions after a disaster, protecting swine from fallout, and sources for disaster rehabilitation loans.

The handbook recommends that each state Extension Service establish an Extension Emergency Preparedness Committee to aid in pre-emergency education and planning, and post-disaster rehabilitation. The composition and responsibilities of such a committee are outlined.

Prepared in cooperation with the Extension Service of the USDA and the Defense Civil Preparedness Agency, the handbook is supplied to each Pennsylvania county extension office. For information about the handbook write the Cooperative Extension Service, The Pennsylvania State University, University Park, PA 16802.



FROGGIES FROM HEAVEN

The Soviet news agency Tass reported in early July that a thunderstorm had rained frogs on the village of Dargan-Ata on the Amu Daria River. "Whirlwinds pick up living and inanimate objects off the ground and from streams, and carry them up to the clouds," Tass said. "When the air flow grows weaker, the travelers and the rain return to the ground together."

Tass said that the frogstorm paled in comparison with an earlier thunderstorm that rained silver coins on the Gorky region. The news agency did not explain, however, why silver coins might have been lying around in the Gorky region, nor did it note whether there had been a redistribution of wealth as a result of the storm.

NEW MONOGRAPHS AVAILABLE

The Natural Hazards Research and Applications Information Center announces the publication of two new monographs in the Technology, Environment and Man Series.

Natural Hazards Data Resources: Uses and Needs, 1979, 202 pp., edited by Susan K. Tubbesing, contains a number of papers prepared for a workshop held in April, 1978, at which a group of producers and users of natural hazards data resources met to consider the adequacy of present data collection and storage. Lack of uniformity in recording and classifying observations of atmospheric and geophysical hazards and the scattered storage and publication of existing information have hindered the use of data resources to predict and solve hazards-related problems in the United States. Recommendations developed during the workshop to improve accessibility of hazards data and avoid duplication of effort in collection and storage are discussed.

Conflict Management in Federal Water Resource Planning, 1979, 106 pp., by William B. Lord, et al., reports the results of an interdisciplinary research project funded by the Office of Water Research and Technology, which studied conflict management in federal water resource planning. The project developed

a classification of conflict situations faced in water resource planning which can be used to determine the types of conflict management techniques to employ and when to do so. The monograph also applies appropriate conflict management methods to current disputes in the western United States over the allocation of water to economic development or environmental preservation.

For individual orders (@\$6.00) or for subscription information: *Natural Hazards Research and Applications Information Center, Institute of Behavioral Science #6, Box 482, University of Colorado, Boulder, CO 80309, (303) 492-6818.*

CHURCH RESPONSE HANDBOOK

The Domestic Disaster Office of the Church World Service, a cooperative relief and development agency of 29 U.S. Protestant and Orthodox communions, has released a handbook for local church groups to use in assisting disaster response efforts.

Church Response to U.S. Disasters is designed to disseminate the experience accumulated by CWS in organizing church response efforts, making limited funds and material aid available to stricken communities, and assisting local churches in locating further sources of funding and assistance.

The handbook guides a local church leader through all aspects of a response effort, including

- advance preparedness measures,
- initial organizational meetings,
- kinds of aid and information that may be expected from the government, Red Cross and other agencies,
- utilization of volunteers and professional counseling services,
- effective communication within the response effort and between the church group and the community, and
- the church's role in long-term recovery and planning.

The handbook is supplemented by lists of resources available from federal, state and local governments and the Red Cross, addresses of the regional Federal Disaster Assistance Administration offices, and questions aimed at evaluating the effectiveness of the response effort after the crisis has passed.

For information contact *Church World Service Domestic Disaster Office, P.O. Box 188, New Windsor, MD 21776.*



CONFERENCE OF MAYORS RESOLUTION

At the U.S. Conference of Mayors Annual Meeting in June, 1979, a resolution was adopted strongly endorsing the concept of a "comprehensive emergency preparedness and response system at the federal level which enhances comprehensive efforts at the state and local level." The Conference also resolved "to investigate all aspects of disaster mitigation, planning, response and recovery at the local level and encourage integration and coordination of emergency preparedness and response efforts at all levels of government." Support was voiced for legislation which would allow federal civil defense funds to be used for preparation and response to natural and man-made disasters as well as for protection from general attack.

Additional resolutions were passed dealing with urban environmental hazards such as oil spills and hazardous wastes and nuclear power plants. The resolutions recognize the growing vulnerabilities of cities to hazards—both natural and man-made—and call on all sectors of government to improve their emergency preparedness and response systems.

For copies of the resolution write *Michael Clancy, U.S. Conference of Mayors, 1620 Eye Street, N.W., Washington, DC 20006, (202) 293-4911.*



RECENT PUBLICATIONS

NOTE: The publications listed below should be obtained from the author, organization or publisher cited. They are *not* available through the *Natural Hazards Observer*.

Federal Response to the 1976-77 Drought: What Should Be Done Next?, Report of the Comptroller General of the U.S. General Accounting Office, Document Handling and Information Service Facility, P.O. Box 6015, Gaithersburg, MD 20760. Publication No. CED-79-26. January 31, 1979. 21 pp. Single copies are free.

This report overviews the scope of the federal response to the 1976-77 drought and specifically reviews six major programs administered by the Departments of Commerce, Interior, Agriculture, and the Small Business Administration. The GAO analyzes programs that were implemented too late, or that failed to achieve their objective. It also contends that many programs overlapped each other unnecessarily and that there is a definite need for legislation to clarify the role an agency will play in relief measures. In the case of this particular drought, some of the legislation was enacted too late for effective implementation.

Progress on Seismic Zonation in the San Francisco Bay Region. E. E. Brabb, Editor. U.S. Department of the Interior, Geological Survey. U.S.G.S. Circular 807. 1979. 91 pp. Copies may be obtained free on application to the Branch of Distribution, U.S.G.S., 1200 South Eads Street, Arlington, VA. 22202.

This report updates the efforts by survey scientists to use the earth sciences as a basis for a comprehensive approach to reducing earthquake hazards. The eight contributions to the volume include studies on seismically induced landslide susceptibility and examples of seismic zonation in the Bay region. A summary article by J. B. Perkins assesses past accomplishments and future directions of the project. All papers presented in this report are also incorporated in the proceedings of the Second International Conference on Microzonation held in San Francisco in November, 1978.

Better Understanding of Wetland Benefits Will Help Water Bank and Other Federal Programs Achieve Wetland Preservation Objectives. Report to the Congress. U.S. General Accounting Office, Document Handling and Information Services Facility, P.O. Box 6015, Gaithersburg, MD 20760. Publication No. PAD-79-10. February 8, 1979. 58 pp. Single copies are free.

The Department of Agriculture's Water Bank Program will be the subject of proposed legislation from the administration and the 96th Congress. In the past, the greatest destroyer of wetlands has been agricultural drainage and flood control projects. Water Bank, a program which offers landowners an annual payment for preserving wetlands, not only protects waterfowl nesting areas, but also provides flood control, groundwater recharge, and sediment control. Since only the waterfowl nesting function was used in determining the program's benefit-cost ratio, the GAO questions whether the public may be paying more for these ancillary functions, such as flood control, through federal public works projects than would have been paid to obtain these same benefits by protecting wetlands from drainage. The report presents information about the current status of the wetlands controversy from the perspective of involved federal agencies.

Earthquake Hazards Reduction Program Project Summaries—Fiscal Year 1978. Marilyn P. MacCabe. U.S. Department of the Interior, Geological Survey. Open-File Report 79-387. 1979. 113 pp. Available from the Open-File Services Section, Branch of Distribution, U.S.G.S., Box 25425, Federal Center, Denver, CO 80225. Paper copy: \$15.25. Microfiche: \$3.50.

This publication contains summaries for the nearly 300 projects undertaken by the Earthquake Hazards Reduction Program of the Geological Survey during Fiscal Year 1978—a threefold expansion over the previous year. A brief description of each project includes the name and address of the principal investigator, the project's goal, and the current status of the investigation. In addition, there is a short discussion of the program's fund allocation together with highlights of major accomplishments in earthquake hazards reduction, earthquake prediction, induced seismicity, and global seismology.

Inventory of Natural Hazards Data Resources in the Federal Government. James F. Lander, Robert H. Alexander, and Thomas E. Downing. Available from the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Geophysical and Solar-Terrestrial Data Center, 3100 Marine Street, Boulder, CO 80303. 1979. 122 pp.

This inventory is the result of explorations into the adequacy of available natural hazards data to meet users' needs and proposals to promote a more systemic collection and use of natural hazards data. Over 100 federal data resources prepared by 19 agencies are listed. The inventory, which treats 13 natural hazards, includes more data summaries that describe the natural event and post-disaster investigations than references to sources of demographic and economic data.

Our Nation's Wetlands. President's Council on Environmental Quality. 1978. 70 pp. Available from the Environmental Protection Agency, Office of Printing and Management (PM-215), 401 M Street, S.W., Washington, DC 20460. Please enclose a self-addressed mailing label.

Only recently has the United States begun to understand the importance of wetlands and taken steps to protect them. This beautifully illustrated report describes the vast acreage of inland and coastal wetlands that have been converted to marinas and ports, drained for agricultural production, highways and building sites, or used as dumps. In their natural state, wetlands are highly productive, providing food and habitat for fish and wildlife. They also furnish natural flood control, protect water quality, and recharge aquifers.

Specific case reports in the publication highlight wetland uses and abuses on south central Florida's Kissimmee River Canal, the Charles River in eastern Massachusetts, the prairie pothole regions of the Northern Great Plains, and the Big Cypress Jetport north of Everglades National Park, among others. The report concludes with a discussion of the role of federal and state governments in wetlands protection.

Family Recovery Following a Natural Disaster: the Case of Managua, Nicaragua. Patricia Ann Bolton. Doctoral dissertation, Department of Sociology, University of Colorado, Boulder, CO 80309. 151 pp. Arrangements for borrowing the study should be made through the Inter-Library Loan service. Copies of the dissertation are available for the cost of reproduction from the Natural Hazards Research and Applications Information Center, Institute of Behavioral Science, Campus Box 482, University of Colorado, Boulder, CO 80309. \$6.00.

This case study hypothesizes that a family's subjective perception of being recovered from a disaster depends upon a number of factors which can be objectively measured, such as the recovery of previous dwelling size and conveniences, income recovery, and employment continuity, and also upon both pre-disaster socioeconomic status and post-disaster recovery assistance. Research findings imply that 1) attempts to give post-disaster assistance by combining the society's traditional distribution patterns and mechanisms with external mechanisms inconsistent with the sociocultural setting are likely to cause misunderstanding and organizational difficulty, and 2) disaster recovery is not a unique social phenomenon, but is dependent upon the efficiency of pre-existing social and economic networks.

Economic Feasibility of Floodproofing: Analysis of a Small Commercial Building. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Plain Management Division, 451 Seventh Street, S.W., Washington, DC 20410. HUD-508-FIA. 1979. 43 pp. Copies are free and can be obtained from the above address or from FIA's regional offices.

A case study approach was used to further research knowledge about the economics of floodproofing. The site, a small annex to a small commercial building, was located in Jersey Shore, Pennsylvania, where widespread damage occurred in 1972 due to Hurricane Agnes. Alternative floodproofing techniques examined were 1) raising the building on fill to one foot above a projected 100-year flood, 2) a compromise utilizing both fill and watertight closures, and 3) raising the building on columns to six feet above the 100-year flood. Benefit/cost ratios are favorable for all three approaches with the most favorable being the building raised on fill. The study determined that floodproofing costs are more than offset by either reduction in flood insurance premiums or a reduction in potential flood losses. An added advantage is that the marketability of rental space is increased.

"Disasters and Social Change in Italy." Francesco Battisti. 1978. 13 pp. For information on availability of the article, contact Dr. Battisti at the University of Rome, Viale 4 Venti 166, 00152 Rome, Italy.

The author argues that the growth of a social and normative system of assistance during disasters is not the result of a process of planned social reform, but is the consequence of a series of historical experiences lived out as "disasters" by the people and the governments of a country. The legal basis for emergency relief in Italy is over-viewed, as are the results of government reconstruction programs over the years. Unique to the study is a discussion of the impact of World War II on Italian disaster legislation and recovery. It is suggested that this impact is quite strong, in part because exceptional legislation enacted for war damage may be transferred to the problems created by a natural disaster. The paper was presented at the 9th World Congress of Sociology held in Uppsala, Sweden, August 14-18, 1978.

"Cutting Our Flood Losses." Gillian Page. *Emergency Planning Digest 6* (January-March, 1979) 1:11-13. A brochure of the same title is available from the Publications Branch, Inland Waters Directorate, Environment Canada, Ottawa, Ontario K1A 0E7.

In 1975, Environment Canada launched a national Flood Damage Reduction Program (FDRP) which emphasized nonstructural mitigative measures. Objectives of the FDRP include 1) discontinuing investment of public funds for structures in flood risk areas, 2) stopping flood disaster assistance for future development once a flood risk area has been identified and publicized, and 3) requiring feasibility studies prior to construction of flood control schemes in developed areas. Briefly discussed are agreements providing for federal-provincial cooperation, flood risk maps, and the designation of flood risk areas.

The NATURAL HAZARDS RESEARCH AND APPLICATIONS INFORMATION CENTER is intended to strengthen communication between research workers and the individuals, organizations, and agencies concerned with public action relating to natural hazards. Please let us know of any research or research needs or other information which should be brought to the attention of the Center. The Center is funded by Corps of Engineers, the Defense Civil Preparedness Agency, the Federal Disaster Assistance Administration, the Federal Insurance Administration, the National Atmospheric and Oceanic Administration, and the U.S. Geological Survey, acting through the National Science Foundation.

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