Natural Hazards Observer

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Disasters, Development, and Mitigation

Taking a Proactive Stance

--an invited comment

The 1995 hurricane season was the second most active on record in the U. S. Beginning with Allison and ending with Tanya, there were a total of 19 named storms, with 11 reaching hurricane strength. At one point in late August, storm systems were lined up across the Atlantic like planes queuing for landing at Miami International Airport. Three hurricanes, Allison, Erin, and Opal, made landfall in Florida, and Hurricane Marilyn hit the Virgin Islands and Puerto Rico. The final toll in the United States was 58 dead and more than $5.2 billion in property losses.

A positive outcome of this season was that it kept pressure on Florida's policy makers to deal with issues that emerged in the wake of Hurricane Andrew in 1992. These include new ways of thinking about hurricane risk, preparation, evacuation, recovery, and mitigation, as well as the appropriate roles of government, the private sector, and not-for-profit organizations. It is important that this momentum be maintained--even broadened. In particular, hazards researchers and practitioners concerned with mitigation must become more vocal and proactive on community development issues.

Development and Redevelopment

More than anything else, Andrew and this past season brought into question conventional wisdom about development, which is a slippery concept. It rolls off the tongue so easily, as in: "Our policies are prodevelopment"; "This community needs more development"; or "Without development, there will be no jobs." To many, develop-ment implies change and growth in a positive direction. The assumptions and directions of normal community development are only rarely questioned or adjusted. Indeed, policies, ordinances, or codes that modify the rules or direction of community development all too often wither on the legislative vine, along with the politicians promoting them, when the economic weight of prodevelopment forces enter the political fray.

After a community has experienced a major disaster, however, it is easier

to question the directions, assumptions, and processes associated with development. In the wake of $30 billion in damage following Hurricane Andrew, the underlying notions of development came under critical evaluation. Discussions of "redevelopment" were often punctuated with cautions that if it was development that contributed to these levels of damage and destruction, then perhaps we do not need it.

Disaster as Failures in Development

Disasters, as social and economic events, represent failures in development. They can dramatically point out problems with certain technologies and bring into question the policies and social processes that resulted in their use. They are also likely to draw attention to failures in the distribution and development of better technologies. As such, redevelopment must entail a re-evaluation of not only technology, but the direction and larger issues of development itself. Technological reappraisal comes relatively easy when compared to successfully implementing changes in building codes and enforcement standards. Even more difficult and contentious, however, is the questioning of more global notions of what constitutes positive development and the implementation of alternatives.

In its limited form, the reappraisal after Hurricane Andrew focused on building codes and inspection. The destruction exposed shoddy construction practices, poor code enforcement, and the watering down of Dade County's building codes since the 1960s. These factors contributed to higher levels of damage, and both the codes and procedures have since been strengthened. Unfortunately, there is a tendency for those living in other hurricane- prone areas to deceive themselves into thinking that these problems were the only reason for the extensive damage. They fail to recognize that Dade County already had some of the strongest building codes in the nation but that Andrew's winds were even stronger. Yet, building code reappraisal elsewhere has been rare and modifications even rarer. Normal development, without mitigation, continues unabated.

More fundamental re-evaluations of development have also taken place since Andrew. As one example, We Will Rebuild, the private organization of business and community leaders responsible for distributing millions of

donated and public dollars, funded the New South Dade Planning Charrette. The recommendations from this intensive planning exercise mapped out alternative ways of thinking about community development and the relationship between built and natural environments. They challenged the creation of vast urban wastelands, proposing viable compact communities and greenways that preserve natural resources and minimize exposure. While implementation of these ideas has been limited, they established a precedent for questioning standard development schemes. Other organizations such as Women Will Rebuild, Habitat for Humanity, the Interfaith Coalition for the Andrew Recovery Effort (ICARE), and Centro Campesino, to name a few, successfully lobbied for alternative redevelopment projects, combining low-cost, hurricane-resistant housing with the creation of socially resilient communities. Again, these initiatives were relatively modest when compared to total reconstruction efforts; nonetheless, they represent meaningful alternatives and incremental modifications to normal development schemes. Most important, these efforts made mitigation a central feature in a more comprehensive notion of community development.

Important initiatives have also been undertaken at the state level in Florida. The Academic Task Force on Hurricane Catastrophe Insurance developed a comprehensive program to deal with Florida's insurance crisis [see the Recent Publications section in this *Observer*]. Its recommendations call for aggressive mitigation as part of normal development and strengthening of the process for evaluating building codes and code enforcement at the county level. Insurers are adding pressure by using these ratings in their underwriting. The Florida Division of Housing and Community Development is beginning to incorporate mitigation directly into its programs and is seeking policy mechanisms for promoting mitigation in other development activities. However, new obstacles continue to arise. The state legislature recently passed a property owners' rights bill that promises to make development with mitigation more difficult. Without vigilance and community pressure, perhaps combined with the continuous threat of hurricanes, these reform efforts will be limited and short-lived.

The key to mitigation is the realization that it is inextricably linked to

normal community development. Development issues are mitigation issues. The discourse on development must incorporate mitigation, environmental sustainability, enhanced living conditions, and equity issues. Researchers and practitioners interested in hazard reduction, therefore, must also be involved in community development. Proactive mitigation implies being players in the game, not simply reacting to the losses.

Walter Gillis Peacock
Chair, Academic Steering Committee for the International Center for Hurricane Damage and Mitigation Research, Florida International University

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Mark Your Calendar

International Day for Natural Disaster Reduction

Wednesday, October 9, 1996

The International Decade for Natural Disasater Reduction (IDNDR) Secretariat is seeking success stories related to disaster mitigation in cities and urban areas. These activities will be featured in a special summer issue of *STOP Disasters*, the official publication of the IDNDR. This month the secretariat will issue its report on IDNDR Day 1995, which summarizes Decade Day activities by country and provides details on where to obtain further information about them--a useful resource for those planning 1996 activities. For information about the report or Decade Day 1996, contact *Natalie Domeisen, Promotion Officer, IDNDR Secretariat, United Nations Department of Humanitarian Affairs, Palais des Nations, CH-1211, Geneva 10, Switzerland; (+41 22) 798 6894; fax: (+41 22) 733 8695; e-mail: Natalie.Domeisen@dha.unicc.org*.

Case Western Goes to Extremes

Case Western Reserve University recently established the Center for Design of Special Facilities and for Extreme Loads. The director of the new center is John D. Stevenson.

The center was created to develop design and construction standards for special or critical facility structures, systems, and components whose failure would significantly affect public health, safety, and the environment. Although a number of academic and research centers are devoted to a particular hazard, such as earthquakes, extreme wind, or floods, this new center will address all extreme events, including both human-caused disasters and natural hazard phenomena.

As an initial effort, the center will conduct a 4-day course April 22-26, 1996, on "Malevolent Vehicle Blast Effects and Mitigation Actions Applicable to Civilian Structures, Systems, and Components." The course will address the vulnerability of buildings to bomb blasts, provide strategies to mitigate blast impacts, and introduce a newly developed computer-aided design program to evaluate such threats.

For more information about the center or the course, contact *John D. Stevenson, Department of Civil Engineering, Room 210A, Bingham Building, Case Western Reserve University, 10900 Euclid Avenue, Cleveland, OH 44106-7201; (216) 368-2406 or (216) 587-3808; fax: (216) 368-5229 or (216) 587-2205.*

Remembering Chernobyl

April 26 will mark the 10-year anniversary of the world's worst nuclear accident--the Chernobyl disaster in the Ukraine. That catastrophe displaced more than 400,000 people and devastated the region's economy and environment. However, for all its similarities to other major disasters, Chernobyl remains unique. Many of the displaced victims can never return home, and many suffer from cancer and stress-related diseases.

To mark this event, the United Nations Department of Humanitarian Affairs (DHA) has published a special issue of *DHA News* entitled "Focus: Chernobyl--No Visible End to the Menace" (September/October 1995, No. 16). It includes articles that describe the Ukrainian governmental bodies' attempts at coping with the disaster; the impacts of radiation on the

Republic of Belarus, which received 70% of the fallout; the World Health Organization's efforts to aid victims; the efforts of numerous organizations to provide assistance; and the Chernobyl Union, which was formed by the victims of the disaster.

Copies of *DHA News* are free and can be obtained from the *United Nations, Department of Humanitarian Affairs, Palais des Nations, 1211 Geneva 10, Switzerland; (+41 22) 917.12.34; fax: (+41 22) 917.00.23; telex: 414242 dha ch; e-mail: dhagva@un.org.*

One correction . . .

Art Botterell, author of the November 1995 article on "Mitigation and the Information Environment," was misidentified. He was writing as the moderator of the Internet-based *Networks in Emergency Management Forum.*

Letters to the Editor

Editor:

I feel compelled to respond to a letter printed in the last edition of the *Natural Hazards Observer* from George Bernstein regarding federal disaster legislation currently under consideration by Congress.

Mr. Bernstein, a former administrator of the Federal Insurance Administration (FIA), provides an overwhelmingly negative critique of the Natural Disaster Protection Act (NDPA) (H.R. 1856/S. 1043). Our organization would like to respond as one of the primary proponents of the legislation because we believe that Mr. Bernstein's position as a former FIA administrator may lead your readers to assume that he speaks with authority and clarity on these issues. Unfortunately, that is not the case.

This legislation does not shift the burden of disaster response from private insurers to the federal government. In fact, if anything, the bill tries to

lessen that burden by encouraging those living in risk-prone areas to purchase adequate insurance rather than rely on federal disaster relief. Mr. Bernstein rightly points out that a large por-tion of federal expenditures on disasters go to uninsurable public infrastructure. While the insurance provisions of the bill will not prevent those losses, we believe that the sections of the bill calling for states and local governments to commit to more comprehensive disaster planning and providing more resources to accomplish these goals will reduce public disaster costs.

The insurance envisioned under the legislation will result in premium increases for those who are not currently insured for the perils they face, but specifically prohibits cross-subsidization of high-risk areas by those at little or no risk. We believe that the premium increases that do occur will be modest and are justified given the enormous losses that can result. Surely Mr. Bernstein must be aware of the premium increases that are already being granted by state insurance commissioners today when faced with incontrovertible evidence that current rates are inadequate to cover the risk. Nobody likes to be told that their insurance premium will increase, but the alternative is for insurance companies to walk away from high-risk markets, a situation that is already a reality in California and Florida.

I am not aware of any estimates from within the insurance industry of the massive federal disaster costs Mr. Bernstein quotes in his letter. However, he is correct that if a catastrophic disaster like the Kobe, Japan, earthquake were to occur in this country, the cost to states and the federal government would be enormous. We must have a system in place to attempt to reduce these costs and begin to pre-fund them.

When Mr. Bernstein states that the mitigation elements of the bill are inadequate, I assume that one of his major concerns is that the legislation would provide that hazard insurance for earthquakes and hurricanes be offered universally without restriction based on whether a state or community has met federal mitigation mandates, as is the case with federal flood coverage. The *Observer*'s readers should know that earthquake and hurricane coverage is offered universally today (if it is available), and we believe that telling homeowners that a new federal law

may prohibit them from purchasing something they already have is not viable in today's political climate.

Clearly, the insurance industry is a natural ally of mitigation professionals. Both share the goal of loss reduction. The Natural Disaster Coalition is pleased to work with those groups and individuals who share our concern about disaster losses but recognize that passing legislation means that compromise is necessary. I am pleased to report that national organizations representing both state and local emergency managers have been active participants in this process. They have proposed constructive modifications to the bill and the Coalition has advocated those changes to Congress. If Mr. Bernstein had been privy to these discussions or discussions between the Coalition and Clinton Administration officials, which he has not, he would know that all these parties agree with the basic concepts behind the NDPA and are working with us to ensure the passage of federal disaster legislation in this Congress.

The Natural Disaster Protection Act represents the best hope we have of enacting major federal disaster legislation within the next decade. I hope that Mr. Bernstein begins to recognize this fact and puts his years of experience to use in a constructive manner.

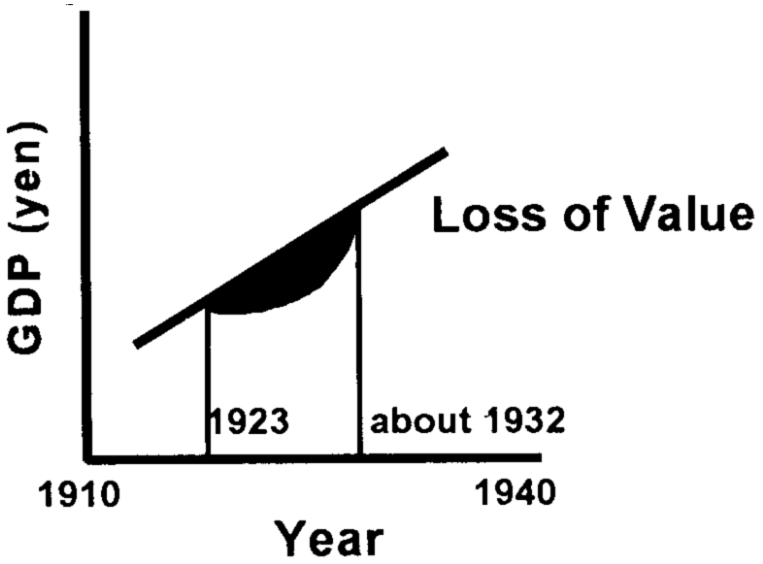
Dave DeSantis
Natural Disaster Coalition, Washington, D.C.

Editor:

In the November 1995 *Natural Hazards Observer*, Haresh Shah stated in his Invited Comment--"Scientific Profiles of 'The Big One' "--that "the researchers welcome comments from readers to improve our ability to develop such complex scenarios" [see the *Observer*, Vol. XX, No. 2, p. 1]. In that regard, I have the following brief observations:

1) One can develop an understanding of the costs and losses to an *economy* by plotting the growth of the Gross Domestic Product (GDP) for a region or for a country over time and noting the dip in the curve

compared to an extrapolated version. The curve drawn below gives an insight as to the total losses (or loss of value) that were incurred after the great 1923 earthquake in Japan. This diagram illustrates that, immediately following the earthquake, Japan's GDP dropped, as depicted by the bottom of the dark area. However, after 10 years, the GDP returned to the same rate of growth that was occurring prior to the earthquake. A Japanese economist I met produced a curve like this.



2) Shah mentions that a repeat of the 1906 San Francisco earthquake would cost between $170 and $225 billion in total economic losses and insured losses of $80 to $105 billion. I have worked these scenarios myself, and I do not get these high numbers.

3) Likewise, I compute much less than the $175 to $225 billion total economic losses or the insured losses of $95 to $120 billion for the Los Angeles event.

4) I have not worked the Tokyo scenario; however, I think that $2 to $4 trillion (more than one-half the Japanese GDP) is also too high. We must be careful in *believing* the numbers we calculate using mathematical systems that are "iffy" at best.

5) There are a number of reasons why it was difficult for earthquake risk forecasters to compute insured losses. The insurance companies in California after the Northridge earthquake overpaid by as much as a factor of two, according to my calculations. Some of the reasons for

overpayment were:

- **fear of the insurance commissioner,**
- **fear of the California courts (bad faith),**
- **improperly written and monitored policies,**
- **paying nonearthquake policies,**
- **improperly trained adjustors who pay too much,**
- **paying high bids (see first and second reasons),**
- **inspection engineers worrying more about their errors and omissions liability than about valuing claims,**
- **escalation of costs under catastrophic conditions, and**
- **Department of Building and Safety changes in repair requirements.**

I have firsthand knowledge of every one of the factors mentioned above that caused escalation in insured payments.

6) We must recognize there are gainers as well as losers in the earthquake risk process. Counting only the losers does not give a good perspective of *net* community loss.

7) We must be careful in using the word "loss." The word "value" is a better indicator for a community in determining the net economic results of an earthquake. In today's age of plenty (a scenario quite different from the Great Depression), what is spent after an earthquake on alleged earthquake repair to like kind and quality is not always earthquake related. Yet it may be counted erroneously as such.

In summary, whereas I agree that these types of information should be developed for public consumption, I would rather see a *consensus* of hazard and risk forecasters presenting numbers to the press. Then, one could take the mean or mean plus one sigma of all the various models to

alert the public. These high numbers presented by Shah could seriously damage the confidence level that laypersons have in professionals like ourselves who do this kind of work. A great deal of *judgement* still goes into the process. Computers can give us a false sense of security in the numbers they forecast.

John Wiggins
J.H. Wiggins Company, Redondo Beach, California

Hazards Assessment Update

With the help of dozens of experts, the Natural Hazards Research and Applications Information Center is currently undertaking an assessment of knowledge and research needs regarding natural hazards in the United States (see the *Observer*, Vol. XX, No. 2, p. 6). This column has been instituted to inform readers of the *Observer* of the efforts of the many contributors to the project.

Emergency Preparedness and Response

Since the first assessment on natural hazards, the U.S. has experienced many of the costliest and most disruptive crises in its history, including the Three Mile Island nuclear plant accident, the Mount St. Helens eruption, Hurricanes Hugo and Andrew, major flooding in the Midwest, and the Loma Prieta and Northridge earthquakes. The pattern has been much the same worldwide, with events such as Bhopal, Chernobyl, and the Mexico City and Kobe earthquakes.

This same period has seen significant changes in emergency management policies and programs and the introduction of new technologies and crisis-management strategies. Among these are the creation of the Federal Emergency Management Agency (FEMA), the development of the Federal Response Plan, the passage of new legislation such as Title III of the Superfund Amendments and Reauthorization Act of 1986, the growing professionalization of the field of emergency management, and the advent of the computer revolution.

Research on emergency preparedness and response has typically been both event- and problem-driven. Major emergencies and disasters also present major research opportunities; knowledge increases as activities, impacts, and issues are studied across different disasters and different communities. The two decades since the first assessment have been marked by exponential growth in the amount of empirical data available, increased methodological sophistication, and important conceptual and theoretical advances.

The Subgroup on Emergency Preparedness and Response is documenting and assessing these changes. To accomplish these tasks, the subgroup will first systematically review what we currently know about the preparedness and response activities of various social units (households, organizations, communities, etc.) and identify those areas where we still need to know more. Second, the subgroup will develop a framework for understanding the broader social, economic, political, and cultural factors that shape how disasters are planned for and managed.

To date, our work has primarily centered on reviewing the literature on preparedness and response, focusing on such topics as public and organizational response to disaster predictions and warnings, emergency preparedness and response networks, emergent groups and volunteer behavior, factors affecting the quality and effectiveness of preparedness and response activities, and related topics.

Our task is a very large one, and we welcome contributions from both researchers and practitioners. If you have ideas or suggestions, please contact *Kathleen Tierney, Disaster Research Center, University of Delaware, Newark, DE 19716; (302) 831-6618; fax: (302) 831-2091; e-mail: tierney@udel.edu.*

Recovery and Reconstruction

Since the initiation of systematic empirical studies of disasters and hazards in the 1950s, the issue of disaster recovery has been relatively ignored. The earliest studies focused on emergency preparedness and response. Only in the past two decades have researchers paid extensive attention to the critical issues of recovery and reconstruction.

As part of the assessment project, a Recovery and Reconstruction Subgroup has been formed to evaluate the state of our knowledge regarding these issues. Given the nature of the problem, the subgroup is multidisciplinary and includes some of the foremost researchers and practitioners in the country.

A major focus of the effort will be the assessment of knowledge relative to mitigation. However, in examining the important link between recovery and mitigation, the subgroup is studying this relationship within the concept of sustainability. To accomplish its mission, the subgroup will examine the following: 1) the conceptualization and reconceptualization of recovery; 2) research findings on recovery at the individual, household, organizational, community, and societal levels; 3) models of physical reconstruction; 4) the recovery policy process; 5) major economic issues inherent in recovery and reconstruction; 6) long-term impacts of hazards and disasters; 7) sustainability and the recovery process; and 8) major knowledge gaps and proposed future research.

If you would like to participate in this effort or contribute information, please contact *Dennis Wenger, Hazard Reduction and Recovery Center, College of Architecture, Texas A&M University, College Station, TX 77843-3137; (409) 845-7813; fax: (409) 845-5121; e-mail: wenger@archone.tamu.edu.*

Disaster Preparedness Seminars from BOCA International

With the assistance of the Federal Emergency Management Agency and the Insurance Institute for Property Loss Reduction, Building Officials and Code Administrators (BOCA) International, Inc. has initiated a series of seminars to prepare code officials or other related officials to respond to disasters in their jurisdictions. The seminars focus on tactics and procedures for both immediate and longer-term response. Participants learn how to prepare an effective postdisaster response plan that defines the code official's role during response, recovery, and reconstruction; the official's role as a mutual aid inspector; and actions needed to coordinate

this plan with other agencies, organizations, and the general public.

In 1996, the disaster preparedness seminar will be available at the sites listed below.

Date	Site
October 23	Columbus, Ohio
October 24	Richmond, Indiana
November 7	Country Club Hills, Illinois
November 20	Falls Church, Virginia
November 20	Framingham, Massachusetts
December 18	Overland Park, Kansas

The seminars are open to any person who deals with building issues following disaster. For more information, contact the *Seminar Secretary, BOCA International, 4051 West Flossmoor Road, Country Club Hills, IL 60478-5795; (708) 799-2300, ext. 329*.

Contracts and Grants

Environmental Risk Decision Making and Conflict Resolution with GIS, United Nations Environment Program, $50,000, 12 months. Principal Investigators: *Ron Eastman and Sri Emani, Clark Labs for Cartographic Technology and Geographic Analysis, The George Perkins Marsh Insitute, Clark University, 950 Main Street, Worcester, MA 01610-1477; (508) 793-7283; fax: (508) 793-8842; e-mail:semani@vax.clarku.edu.*
This project will include: 1) conducting a bibliographic database search and literature review on decision making and conflict resolution in the fields of Geographic Information Systems (GIS) and hazards; 2) applying the approaches and techniques identified in the literature review to a set of case studies; and 3) constructing a World Wide Web site on conflict resolution.

Enabling the Next Generation of Hazard Researchers, National Science Foundation, $171,411, 24 months. Principal Investigator: *Dennis E. Wenger, Hazard Reduction and Recovery Center, Texas A&M University, College Station, TX 77843-3137; (409) 845-7813; fax: (409) 845-5121; e-mail: wenger@archone.tamu.edu.*
This project will integrate research and education through a program of activities aimed at developing and supporting a new generation of social science researchers in investigating hazards and disasters. It is intended to be a comprehensive and creative program that promotes mentoring of recently appointed junior faculty by seasoned researchers from several universities through sustained contact over a one-year period. A faculty panel of six persons with strong research and publication records will mentor 12 junior faculty who will be competitively selected.

The Internet Page

Some Places to Surf the Net

Besides the nifty sites listed below, surfers should also check out the other documents and pointers on the Natural Hazards Center home page. For the monster list of all hazards-related organizations on the net, check out the FEMA World Wide Web site.

Below are some tubular Web sites that we either discovered recently or were turned on to by our buds. Hang 10 on that keyboard, dude, and catch the next wave of hazards info.

http://vulcan.wr.usgs.gov/home.html
One of the best places on the Web to garner volcano information is the Cascades Volcano Observatory home page, and at that site, there's a nice bundle of material on the "Volcanic Hazards" page: *http://vulcan.wr.usgs.gov/Hazards/framework.html*. That section includes a couple of good, general full-text introductions to volcanic hazards and volcano terminology; maps, photos, and other graphics; lists of abstracts, publications, and on-line reports; and articles on the hazards associated with specific volcanoes of the Cascadia region.

http://gldage.cr.usgs .gov/html_files/nlicsun.html

Now if it's landslide information you're after, check out the U.S. Geological Survey National Landslide Information Center's home page, which, not surprisingly, is full of landslide information and indexes to related publications available both in hard copy and on-line.

http://adgrafix.iserver.com/nlsi/home.htm

For lightning information, take a look at the National Lightning Safety Institute (NLSI) site. It includes tip sheets on lightning safety and descriptions of the many services available from NLSI. (For more information on NLSI, see the *Observer*, Vol. XX, No. 2, p. 15.)

http://incede.iis.u-tokyo.ac.jp/Incede.html

The International Center for Disaster-Mitigation Engineering (INCEDE) at the University of Tokyo now offers a lot of material on-line: a description of INCEDE, back issues of the center's newsletter and other reports and publications, information about current INCEDE investigations, general disaster information, a list of upcoming seminars and workshops, and a page devoted to KOBEnet (see the accompanying article).

http://www.unige.ch/hazards

The Natural Hazards Mitigation Group at the University of Geneva has a lot of material available via the Web, including information about the group's volcano mitigation team, the Swiss disaster team, and the group's seismic hazard studies; pictures of volcanic hazards; an extensive hot list; and details about the group's training program--the "Certificat d'Etude des Risques Géologiques" (CERG) (see the Conferences and Training section of this *Observer*).

http://www.simeon.org

The Pacific Emergency Management Center is a nonprofit organization and network of emergency professionals; educators; trainers; local, state, and federal government officials; business executives; nonprofit leaders; and neighborhood activists working together to improve community safety. A project of the Simeon Institute, the center conducts research and provides international training. It is currently developing certificate and credential

programs with two California universities and providing support and planning services to communities around the Pacific Rim and beyond. The work of the Pacific Emergency Management Center is being coordinated with the California Governor's Office of Emergency Services and its training arm, the California Specialized Training Institute. The center's Web site includes summaries of ongoing research, a "Penultimate Glossary of Emergency Management Terms," and descriptions of training, education, and support services available from the center. More information about the center is available from *Wesley D. Balda, Pacific Emergency Management Center, 112 North Harvard Avenue, Suite 30, Claremont, CA 91711; (909) 626-1399; fax: (909) 626-1499; wbalda@simeon.org.*

http://www.emergency.com

The Emergency Response and Research Institute (ERRI) specializes in current news regarding disasters and emergencies, but the institute's Web site includes numerous pages devoted to various aspects of emergency management--from terrorism to emergency medicine to hazardous materials incident management and more.

http://vishnu.glg.nau.edu/wsspc.html

The Western States Seismic Policy Council (WSSPC) home page describes the council, its mission, and its work, and includes a full-text draft monograph on seismic hazards to transportation in the western U.S., a catalog of member states' earthquake preparedness and mitigation products, a membership database, WSSPC '95 annual meeting abstracts, information about the WSSPC '96 annual meeting, a calendar of related events, links to World Wide Web resources of the membership, and images of the 1994 Northridge earthquake.

http://www.atcouncil.org

The Applied Technology Council (ATC) is a nonprofit corporation involved in earthquake hazard preparedness, response, and mitigation research related to the design and engineering of structures. ATC now has a home page and is publishing more and more of its reports on the World Wide Web (the most recent documents update ATC's widely disseminated studies regarding postearthquake building safety evaluation). The site also includes information about ATC products (reports, slide sets, etc.) and

upcoming seminars, as well as a copy of the current ATC *News Bulletin*.

SCEC on the Net

As mentioned in these pages before, the Southern California Earthquake Center (SCEC) maintains a Web site:

http://www.usc.edu/dept/earth/quake

containing extensive information about the center, its research efforts, and the products and educational programs it produces. In addition, SCEC Knowledge Transfer and Education Programs are now reachable via electronic mail at *scecinfo@usc.edu*. Through that address, interested persons can ask general questions and send information for use in the SCEC resource center or to be considered for publication in the SCEC newsletter.

And a New SAR List

A new search and rescue mailing list has been established for discussion about all aspects of search and rescue. To subscribe to the Search and Rescue Discussion List (SAR-L@islandnet.com) send the one-word message "subscribe" to:

SAR-L-request@islandnet.com

KOBEnet

In response to the Great Hanshin Earthquake of January 17, 1995, a group of concerned persons in Japan has formed a voluntary organization called KOBEnet to promote information transfer among earthquake engineering researchers worldwide, voluntary technical activities related to the Kobe disaster, and international cooperation among researchers.

In addition to establishing an on-site exhibit room, KOBEnet will distribute information through various media such as the Internet, fax, and newsletters to foreign and Japanese engineers and other researchers. The group will also support development of technical databases covering the

earthquake. For additional information about this new disaster network, contact *Tsuneo Okada, Institute of Industrial Science, University of Tokyo, 7-22-1 Roppongi, Minato-ku, Tokyo 106, Japan*, and see the KOBEnet page on the International Center for Disaster-Mitigation Engi neering (INCEDE) home page:

http://incede.iis.u-tokyo.ac.jp/Incede.html.

[Adapted from *NCEER Information Service News*]

Seeking Information for FEMA Flood Manual

The Federal Emergency Management Agency (FEMA) is currently developing a manual on *Flood-Damage Resistance Design and Construction of Mechanical, Electrical, and Other Building Support Systems* under the National Flood Insurance Program. The guide will cover installing or retrofitting such systems to eliminate or reduce potential damage due to floods. It will include examples of successful practices, demonstrate various systems of retrofitting, discuss the advantages and disadvantages of these methods, and estimate their costs. The proposed manual will cover all types of building support systems, including mechanical, electrical, telephone, cable television, water distribution, sewage, natural gas, and other utility systems threatened by flooding.

The corporation developing this manual, Ward Industries, Inc., is currently seeking any information *Observer* readers may have in this area. Persons who can contribute knowledge or information should contact *Hares Sayed, Ward Industries, Inc., 1020 North Fairfax Street, Suite 401, Alexandria, VA 22314; (703) 836-9730; fax: (703) 836-9733.*

Washington Update

FEMA Finalizes Review Process for Flood Map Disputes

The Federal Emergency Management Agency (FEMA) has issued its final

rule for resolving disputes regarding contested Special Flood Hazard Area (SFHA) determinations. The rule, which took effect January 2, 1996, addresses FEMA's requirement under federal code to review whether a building or manufactured home is located in an SFHA, if such a determination is jointly requested by the borrower and lender of a mortgage.

A review will cost $80.00, but who will pay the fee and whether it can be considered a finance charge has yet to be determined. FEMA's failure to respond before a loan closing would *not* exempt a property owner from purchasing flood insurance if the agency subsequently determines that insurance is required; it merely delays the purchase requirement. Further, FEMA has ruled that due to the wording of the National Flood Insurance Reform Act of 1994, a review can only be provided when *both* the purchaser and lender request one. This procedure applies to all loans, including existing loans that require flood insurance.

The details of this final rule can be found in the *Federal Register, Vol. 60, No. 233, Tuesday, December 5, 1995, pp. 62213-62218*. For further information, contact *Michael K. Buckley, Hazard Identification Branch, Mitigation Directorate, FEMA, 500 C Street, S.W., Washington, DC 20472; (202) 646-2756; fax: (202) 646-4596.*

FEMA Issues NEHRP Guidance

The National Earthquake Hazards Reduction Program (NEHRP) was created to support research and implementation of knowledge to reduce the impacts of earthquakes in the U.S. In an effort to update guidance for building codes in the U.S., the Building Seismic Safety Council (BSSC) recently released the *1994 NEHRP Recommended Provisions for Seismic Regulations for New Buildings*. Because this document contains revisions of earlier versions, FEMA has revised a number of supporting documents as well.

For example, *Nontechnical Explanation of the 1994 NEHRP Recommended Provisions* (FEMA-99, 1995, 82 pp.), prepared by the BSSC, provides a simplified overview of the *1994 NEHRP Recommended Provisions*. It explains ground motion generated by earthquakes, how this motion

affects buildings, what design techniques resist earthquake forces, and how the *Provisions* translate this information for use by designers and builders.

Seismic Considerations for Communities at Risk **(FEMA-83, 1995, 114 pp.), also developed by the BSSC, provides information to individuals and community decision makers about determining seismic risk and appropriate mitigation activities. It includes information on the scope of earthquake risk in the U.S., the effects of earthquakes on buildings, structural design to mitigate impacts on buildings, seismic building codes, and the importance of the *NEHRP Provisions*. It also provides a checklist of factors to consider when determining whether and how to take action to mitigate risk, as well as suggestions for encouraging community action.**

Guide to Application of the 1994 NEHRP Recommended Provisions in Earthquake-Resistant Building Design **(FEMA 40, 1995, 467 pp.), prepared by J.R. Harris and Company, discusses various building materials and systems, including structural steel, reinforced concrete, timber, masonry, and nonstructural elements. It also provides charts that describe the processes for satisfying the *NEHRP Recommended Provisions*.**

All of these documents are free and can be ordered from the *FEMA Distribution Center, P.O. Box 2012, Jessup, MD 20794; (800) 480-2520; fax: (301) 497-6378.*

FEMA Releases Community Floodplain Management Guidebook

Floods have caused a greater loss of life and property and disrupted more communities in the United States than all other natural hazards combined. In an effort to reduce these impacts, FEMA has released a new publication aimed at local officials, citizens, landowners, and groups interested in protecting and restoring the natural resources and functions of floodplains.

Protecting Floodplain Resources--A Guidebook for Communities **(1996, free) focuses on local, grassroots efforts to manage and protect the floodplain environment, including wetlands, wildlife habitat, historic sites, and aesthetic aspects. It provides planning guidelines that can be used by flood-prone communities to ensure this environment is maintained.**

Published under the auspices of the Federal Interagency Floodplain Management Task Force, the book draws on two years of research that included surveying local officials and private interest groups to identify their specific needs and concerns. It presents case studies of communities that have transformed riverine areas at risk from flooding into community assets such as parks. The cases include the Chattahoochee River near Atlanta, Georgia; the Wildcat/San Pablo Creek in Richmond, California; the Blackstone River between Worcester, Massachusetts, and Providence, Rhode Island; and the Verde River north of Phoenix, Arizona.

Copies of *Protecting Floodplain Resources* can be obtained from the *FEMA Distribution Center, P.O. Box 2012; Jessup, MD 20794; (800) 480-2520; fax: (301) 497-6378*.

FEMA Mitigation Directorate and ICMA Launch Cooperative Agreement to Further Local Disaster Mitigation

The Federal Emergency Management Agency's Mitigation Directorate has entered into a cooperative agreement with the International City/County Management Association (ICMA) to determine how mitigation can be integrated into the day-to-day administration of cities and counties. This multiyear effort will examine what governments are presently doing to prepare for disaster, the effectiveness of these actions, and what further steps can be taken to reduce long-term risks. The results of the ICMA research will be used to form a long-range plan to educate local government administrators on the benefits of mitigation and to demonstrate how mitigation can be incorporated into community planning, development, and decision making.

To guide ICMA in this process, the program will include an Advisory Group of mitigation experts, a special content group to help craft the needs assessment, and a series of focus groups to evaluate the findings of the assessment and mold them into guidelines for implementation. ICMA will produce a comprehensive report of strategies for local mitigation. ICMA's Community Planning Program welcomes input and response to this program; for more information, contact *Don Geis, Program Director, ICMA, Suite 500, 777 North Capital Street, N.W., Washington, DC 20002-4201;*

(202) 962-3531; fax: (202) 962-3500*; or *Kendra Briechle, Project Manager, ICMA; (202) 962-3685.

On The Line

Building Partnerships to Restore Floodplain Open Space

Three Iowa communities are looking forward to the benefits of creating public open space in neighborhoods that were damaged by floods in 1993. With the assistance of several federal agencies, the Iowa Department of Emergency Management, and other agencies and private groups, these communities have adopted a mitigation strategy to reduce the impacts of recurrent flooding.

Nevada, Audubon, and Cherokee, Iowa, among many other towns that were flooded in 1993, decided to pursue a local "buyout" of properties that were severely damaged by floodwaters; many had been flooded before 1993, as well. Funding for the buyouts was provided by the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Grant Program and the Iowa Department of Emergency Management.

All buyouts were voluntary. When the city or county acquired a property, structures were removed and the land was placed under the jurisdiction of local government as public open space.

While eager to help homeowners move to safer areas and reduce damage from future floods, residents and city officials were concerned about uses of the vacated properties. Thus, FEMA expanded its postdisaster services to include open space planning assistance from the National Park Service (NPS).

During the past year, staff of the NPS Rivers, Trails and Conservation Assistance Program have worked with Nevada, Audubon, and Cherokee to develop floodplain open space plans. NPS has also helped link these communities with the U.S. Fish and Wildlife Service (USFWS), the Natural Resources Conservation Service (NRCS), county conservation departments, and other agencies with expertise and resources to

implement the plans.

Nevada

Nevada's flood buyout area contains 11 properties along Indian Creek. However, residents broadened their open space planning to include the entire creek corridor within city limits. For some time, the city of Nevada has wanted to develop a system of trails and greenways, and the flood buyout created an unexpected opportunity for the Nevada Parks Board to initiate this project along Indian Creek.

A community workshop facilitated by NPS staff and sponsored by the parks board generated core ideas for Nevada's greenbelt plan. Residents wanted a greenbelt with primarily natural vegetation, links to existing parks and public spaces, and low-impact recreation and environmental education opportunities (such as a trail, picnic shelter, and nature study area). After the workshop, USFWS Partners for Wildlife staff and Story County's conservation director, along with NPS staff, helped parks board members evaluate opportunities for restoration and trail development.

Now, the board looks forward to implementing the first phase of the project--restoring 15 acres in the buyout area and adjacent city park land to native prairie. The restoration is funded through $8,900 from the USFWS Partners for Wildlife program. The Nevada Parks Board also received a $100,000 Resource Enhancement and Protection (REAP) grant from the Iowa Department of Natural Resources. With these funds, Nevada will be able to begin trail development and acquire additional floodplain land to convert to open space.

Cherokee

Cherokee's buyout is the largest in Iowa--187 residential properties on more than 60 acres along the Little Sioux River. NPS staff helped the city of Cherokee organize a local advisory committee to lead the buyout and open space planning effort. Through a series of public workshops, the town has developed a Green Space Plan that includes trails, river access, natural area restoration and enhancement, outdoor education sites, playgrounds, picnic and camping areas, and a community garden. The

USFWS has approved a $40,000 project for streambank stabilization and habitat restoration, enabling Cherokee to implement its plan in the coming year.

An NRCS landscape architect developed maps and concept drawings of Cherokee's buyout site. Staff from NPS, USFWS, NRCS, the Iowa Department of Natural Resources-Forestry, and other agencies assisted with technical evaluations of the community's ideas. Siouxland Interstate Metropolitan Planning Council provided valuable administrative and grant-writing support. Many local private organizations also contributed to the effort, including conservation and sporting clubs, recreation groups, and school children.

Audubon

Audubon's buyout open space plan involves reuse of 25 properties along Bluegrass Creek. Again, the NPS helped organize a steering committee that sponsored a community planning workshop. Staff from USFWS, NPS, the county department of conservation, and the city public works department evaluated the feasibility of the community's ideas. The plan calls for habitat restoration, an outdoor classroom, a creek access area, a community garden or arboretum, and recreational facilities (an ice rink, picnic shelters, playground, half-court basketball, and horseshoe pits).

Audubon will implement its plan in the coming year with an $8,000 Partners for Wildlife habitat restoration grant. The city has submitted a $75,000 REAP application for the outdoor classroom, a trail, trailhead, parking area, and landscaping.

Kate Hanson
National Park Service, Rivers and Trails Conservation Assistance, Iowa Field Office

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Conferences and Training

These are the latest meetings for which the Hazards Center has received announcements. A comprehensive list of upcoming hazard/disaster

meetings is posted on our Home Page.

Postponed: *ASCE International Conference and Exposition on Natural Disaster Reduction. Sponsor: American Society of Civil Engineers (ASCE). Washington, D.C.: March 5-8, 1996*. Due to the recent shutdowns of the federal government and the consequent uncertainty of federal funds and lack of planning time, the ASCE International Conference and Exposition on Natural Disaster Reduction has been postponed until the first week of December 1996. Details about the rescheduled conference will be published here when they become available.

91st Annual Meeting of the Seismological Society of America (SSA 96). St. Louis, Missouri: April 1-3, 1996*. In keeping with its location, SSA 96 will focus on the New Madrid Seismic Zone and other, less publicized, seismic areas in the central U.S. The meeting will also include a special session for science educators. For more information, contact *Robert B. Herrmann, Department of Earth and Atmospheric Sciences, St. Louis University, 3507 Laclede Avenue, St. Louis, MO 63103; (314) 977-3120; (314) 977-3117; e-mail: rbh@eas.slu.edu; World Wide Web: http//www.eas.slu.edu; or e-mail: ssa96@eas.slu.edu (Subject: help)*; or the *Seismological Society of America, Suite 201, Plaza Professional Building, El Cerrito, CA 94530-4003; (510) 525-5474; fax: (510) 525-7204.

Retrofitting Flood-Prone Residential Buildings Course. Sponsors: Federal Emergency Management Agency (FEMA) Mitigation Directorate and Emergency Management Institute. Emmitsburg, Maryland: May 6-10, 1996 and September 9-13, 1996*. This 4-day course, held at FEMA's National Emergency Training Center, will cover current engineering principles and practices for retrofitting flood-prone residential buildings (see the *Observer*, Vol. XX, No. 3, p. 16). For more information, contact *Dan Bondroff, National Emergency Training Center, 16825 South Seton Avenue, Emmitsburg, MD 21727; (301) 447-1278.

***1996 National Flood Conference. Sponsor: Federal Emergency Management Agency. Nashville, Tennessee: May 20-23, 1996*. The annual National Flood Conference is intended for the agents and agencies involved in buying, selling, or insuring property in flood-prone areas. This**

year's meeting will feature presentations by Elaine McReynolds, the Federal Insurance Administrator, and other key persons involved in the National Flood Insurance Program (NFIP), as well as smaller workshops and technical sessions. For a conference brochure, contact *Becky Reardon, NFIP, 10115 Senate Drive, Lanham, MD 20706; (301) 918-1439; fax: (301) 918-1479.*

Continuing Emergency Disaster Studies and Strategies (CEDSS) Symposium. University Park, Pennsylvania: May 28-June 1, 1996*. Pennsylvania State University's CEDSS Symposium is intended to aid federal, state, and local employees, corporate emergency personnel, and scholars in developing decision protocols to save lives and re-establish community services following disasters. In addition, the symposium will foster communication with and among essential emergency officials and agencies. For details, contact *William J. Rothwell, Workforce Education and Development, The Pennsylvania State University, 104 Rackley Building, University Park, PA 16802-3202; e-mail: ksb120@psu.edu.

Response '96. Sponsor: National Association for Search and Rescue (NASAR). Denver, Colorado: May 29-June 1, 1996*. The NASAR annual meeting offers pre-conference training May 24-28, as well as seven different tracks of conference workshops. The training and conference cover virtually all aspects of search and rescue: incident command, fundamental search and rescue, advanced rescue, medical considerations, canine and wilderness search and rescue, and many other facets of the discipline. For conference details, contact *NASAR, 4500 Southgate Place, Suite 100, Chantilly, VA 22021; (703) 222-6277; fax: (703) 222-6283; e-mail: nasar@laser.net.

***Emergency Management and Business Resumption (EMBR) Conference and Exhibition. Sponsor: Colorado Rocky Mountain Chapter of the Association of Contingency Planners (ACP). Denver, Colorado: May 30-31, 1996*. The 1996 EMBR conference will feature presentations by individuals directly involved in response to the Oklahoma city bombing and in emergency planning for the 1996 Summer Olympic Games. It will also include a panel discussion of the various emergency management education programs available across the U.S. For a conference circular,**

contact *EMBR Conference Registration, P.O Box 3943, Englewood, CO 80155-3943, attn: Sue Williams; (303) 782-3080; fax: (303) 782-3557.*

Third Annual Congress on Natural Disaster Loss Reduction. Sponsor: Insurance Institute for Property Loss Reduction (IIPLR). Dallas, Texas: June 10-11, 1996*. IIPLR's Annual Congress is intended "for anyone interested in natural hazards loss reduction strategies and programs." This year's meeting will emphasize hail and freezing. To register, contact *IIPLR, 73 Tremont Street, Suite 510, Boston, MA 02108-3910; (617) 722-0200; fax: (617) 722-0202.

Post-Graduate Course on Analysis of Geological Risks. Sponsors: University of Geneva; Swiss Federal Institute of Technology, Lausanne; University of the United Nations, Tokyo; and University of the West Indies. Kingston, Jamaica: July 8-August 17, 1996. **The objective of the "Certificat d'Etude des Risques Géologiques" (CERG) is to develop expertise in hazard risk evaluation as an integral part of development and environment planning. This year's course, directed toward Caribbean and Central American residents (although open to others), will focus on developing an integrated set of mitigation strategies to include in land-use management, designing natural hazard monitoring systems, and determining protective engineering measures. Participants will receive training in such fields as seismic, volcanic, flood, and landslide hazards and then apply the mitigation strategies identified to their respective countries. The course, to be taught in English, includes theoretical classes, laboratory exercises, and field work, including one week in Montserrat conducting a situation assessment. For more information, contact the *CERG Secretariat, University of Geneva, 13 Rue des Maraichers, 1211 Geneva 4, Switzerland; tel: +41 22 702 6602; fax: +41 22 320 5732; e-mail: cerg@sc2a.unige.ch; World Wide Web: http://www.unige.ch/hazards/cerg/.***

Wetlands '96: Forming Fair and Effective Partnerships. Washington, D.C.: July 9-12, 1996. **This symposium will update participants regarding wetland science, knowledge application, and public policy. It will also explore ways to form effective federal, state, local, nonprofit, and private partnerships to improve wetland protection and regulation. The meeting includes a training session on "Improving Communications and Analysis:**

Wetland, Floodplain, and River On-Line Services and GIS Applications." For conference particulars, contact the *Association of State Wetland Managers, P.O. Box 269, Berne, NY 12023-9745; (518) 872-1804; fax: (518) 872-2171.*

Southern California Environment and History Conference: "Southern California Before 1900: Landscape, Climate and Ecology." Northridge, California: September 20-22, 1996. **This initial Southern California Environment and History Conference is an interdisciplinary meeting bringing together researchers and archivists from a variety of fields to increase understanding of the region's evolutionary landscape through panel discussions, roundtable sessions, and exhibitions. The conference will include sessions on disasters and extreme events, including drought. A call for papers has been issued, and the deadline for submission is April 1, 1996. For more information, contact the *Southern California Environment and History Conference, c/o Department of Geography, California State University, Northridge, CA 91330-8249, attn: Lorna Fenenbock--Conference Coordinator; (818) 885-3532; fax: (818) 885-2723; e-mail: environmental.history@csun.edu.***

ERES 96: First International Symposium on Earthquake Resistant Engineering Structures. Sponsors: Aristotle University of Thessaloniki and Wessex Institute of Technology. Thessaloniki, Greece: October 30-November 1, 1996. **This symposium will provide a forum for discussion of both basic and applied research in the various fields of engineering relevant to earthquake-resistant analysis and design. Abstracts are due March 31. For details, contact *Sue Owen, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton SO40 7AA, U.K.; tel: (44)(1703) 293 223; fax: (44)(1703) 292 853; e-mail: wit@wessex.witcmi.ac.uk; World Wide Web: http://www.witcmi.ac.uk/.***

Third U.S.-Japan Conference on Corporate Earthquake Programs. Sponsor: College of Engineering, San Jose State University. San Jose, California: November 5-7, 1996. **The primary objective of this conference is to improve corporate earthquake preparedness by bringing together risk managers, earthquake mitigation specialists, and researchers from both the private and public sectors. The meeting will include special sessions**

devoted to lessons from the Northridge and Kobe earthquakes and exhibits of technical products that promote earthquake hazard reduction. Papers are currently being solicited in four areas: development of hazard reduction technologies, education and training of employees in earthquake safety and mitigation, emergency preparedness and planning, and the private sector and community earthquake safety. One-page abstracts are due April 29. For more information contact *Steven Vukazich, San Jose State University, Department of Civil Engineering, One Washington Square, San Jose, CA 95192-0083; (408) 924-3858; fax: (408) 924-4004; e-mail: vukazich@isc.sjsu.edu.*

Recent Publications

A more comprehensive list of recent books and other publications on hazards and disasters can be found on our Home Page under Other New Publications.

All Hazards

Global Disasters: Inquiries into Management Ethics. Robert E. Allinson. 1993. 280 pp. $34.95, plus $6.29 shipping. Order from Prentice Hall, Order Processing Center, P.O. Box 11071, Des Moines, IA 50336-1071; (800) 374-1200; fax: (515) 284-2607.

This book examines the ethical foundations of global disaster prevention. Allinson theorizes that a conceptual problem underlies many, if not most, global disasters--a problem that cannot be corrected unless the concepts that are being used are revised or removed and replaced with new and more solid ones. In particular, Allinson posits that all global disasters are functions of mismanagement or a reflection of a dysfunctional management that results from thinking about hazards in the wrong way, such as believing that disasters are inevitable and that there is nothing an organization can do to prevent them. He stresses the importance of a moral, responsible corporate ethos, and he describes useful lessons from the Japanese management system and four major disasters: the Challenger explosion, the King's Cross train tunnel fire, the Herald of Free Enterprise disaster, and the crash of a DC10 into the side of the active

volcano, Mt. Erebus.

Raging Forces: Earth in Upheaval. 1995. 200 pp. $12.95, plus $4.95 shipping. Copies are available from the National Geographic Society, Box 1640, Washington, DC 20013-1640; (800) 647-5463; fax: (301) 921-1347.
This volume describes, in well-illustrated National Geographic fashion, the many natural hazards that exist on earth. The multitude of spectacular photographs, colorful maps, and satellite photos depict both geologic and climatic events from around the world, albeit emphasizing events in the U. S. *Raging Forces* includes information on the Kobe earthquake, wildfires in California, volcanoes, tornadoes, floods and landslides, tsunamis, and severe storms and hurricanes. The final chapter provides information on how to prepare for and cope with such events.

Risk Communication for Industry Practitioners: An Annotated Bibliography. Ann Fisher, Srinivas Emani, and Michaela Zint. 1995. Free. Written requests should be sent to the Society for Risk Analysis, 1313 Dolley Madison Boulevard, Suite 402, McLean, VA 22102; (703) 790-1745; fax: (703) 790-2672; e-mail: burkmgmt@aol.com.
This bibliography was prepared by the Risk Communication Specialty Group of the Society for Risk Analysis (SRA), through a grant from the Chemical Manufacturers Association. It begins with a short "must read" catalog of documents that every industry practitioner should obtain, then lists additional background material for practitioners who want to learn more. Topics in the second list include case studies, credibility and trust, and risk comparisons.

Enforcing Sound Construction: Opinions of Building Code Officials on Administrating and Enforcing Building Codes. 1995. 28 pp. $10.00. Available from the Insurance Institute for Property Loss Reduction (IIPLR), 73 Tremont Street, Suite 510, Boston, MA 02108-3910; (617) 722-0200; fax: (617) 722-0202.
This summary describes key findings from a February 1995 survey of building department administrators who are members of the Southern Building Code Congress International (SBCCI), Inc., a model building code organization that serves primarily southern and southeastern states. The survey, conducted by IIPLR with the assistance of SBCCI, evaluated

officials' perceptions of the adequacy of resources to administer and enforce building codes in their jurisdictions. Nearly half felt they were not sufficiently staffed to complete all necessary inspections or to review plans adequately. In addition, 53% indicated their overall budget was insufficient to enforce codes and provide other necessary services. Those who indicated they were understaffed felt that inspection and enforcement of building codes was not a priority of their local government.

Land Use and Society: Geography, Law, and Public Policy. Rutherford H. Platt. 1996. 528 pp. $30.00. Available from Island Press, Box 7, Department 2PR, Covelo, CA 95428; (800) 828-1302; World Wide Web: http://www.islandpress.com.

Expanding urban and rural development in the U.S. is creating a greater need for more responsible land-use planning and regulation. At the same time, public institutions are increasingly challenged by property owners who view regulation of their land as an infringement on their constitutional right to own property. In *Land Use and Society*, Platt examines the history of land-use regulation and planning in the U.S. Using case studies of environmental programs in the 1980s, Platt discusses contemporary land-use programs and the legal issues that have evolved from them, including the "takings issue," the Endangered Species Act, and urban greenways planning. He also discusses the interaction of geography and law in land use; techniques used by state and local governments to encourage responsible development practices; and the protection of wetlands, floodplains, coastal zones, and agricultural areas. Platt also argues that effective land-use practices are hindered by the fragmented jurisdiction of federal, state, and local regulatory bodies.

Natural Disaster Experiences: How to Prepare Environmental Facilities for the Worst. 1995. 88 pp. $29.95, plus $4.75 shipping. Orders should be sent to the Environmental Engineering Bookstore, c/o the American Academy of Environmental Engineers, 130 Holiday Court, Suite 100, Annapolis, MD 21401; credit card orders can be faxed to (410) 266-7653. Maryland residents should add 5% sales tax.

Environmental facilities--water supply systems, wastewater collection and treatment systems, industrial emission and waste control facilities, and solid waste management facilities--can be damaged by natural disasters

just like any other structures. However, damage to these facilities may threaten public health and safety and the environment. This book draws upon the experiences of environmental facilities managers who had first-hand involvement with floods and earthquakes. Their insights cover preparing for, dealing with, and restoring facilities following such events. Part I covers earthquakes, including the 1994 Northridge quake, and the potential environmental impacts of a quake along the New Madrid fault in the central U.S. Part II describes the impacts of flooding in the Midwest in 1993 on the metropolitan St. Louis water system, a Monsanto chemical plant, the Des Moines water system, and the Columbia, Missouri, wetlands project. Part III summarizes the lessons from these experiences and provides guidance for disaster preparedness planning.

Critical Incident Stress Debriefing: An Operations Manual for the Prevention of Traumatic Stress Among Emergency Services and Disaster Workers. Jeffrey T. Mitchell and George S. Everly, Jr. Second Edition, Revised. 1996. 308 pp. $32.00, plus $5.00 shipping. Order from Chevron Publishing Corporation, 5018 Dorsey Hall Drive, Suite 104, Ellicott City, MD 21042; (410) 740-0065; fax: (410) 730-4313.

Emergency service personnel, public safety personnel, nurses, physicians, disaster workers, and many other professionals routinely face working conditions that are uniquely stressful and potentially traumatic. The Critical Incident Stress Debriefing (CISD) process was developed to prevent or mitigate post-traumatic stress among such individuals. In this text, the authors discuss CISD and other useful interventions, the nature of human stress, the theory of psychotraumatology, a comprehensive management approach to CISD, the reduction of potentially harmful emotional impacts from an event, demobilization, on-scene support, mass disaster interventions, community response teams, and training standards.

Options for Reducing Public Assistance Program Costs. Inspection Report No. I-02-95. 1995. 26 pp. Free.

Audit of the Enforcement of Flood Insurance Purchase Requirements for Disaster Aid Recipients. Report No. H-14-95. 1995. 29 pp. Free.

Both reports are available from Rita Rios, Federal Emergency Management Agency, Office of Inspector General, Audit Division, Room 506, 500 C Street, S.W., Washington, DC 20472; (202) 646-3911; fax: (202) 646-3901.

The FEMA Inspector General's Office recently looked at its Public Assistance Program to determine ways to cut federal spending. The first report, *Options for Reducing Public Assistance Program Costs*, examines options and impacts in four primary areas: building codes and standards, repair versus replacement of damaged public facilities, assistance eligibility of private nonprofit organizations, and alternate projects. It discusses amending the Stafford Act to limit funding to return facilities to predisaster condition; revising FEMA regulations to raise the replacement threshold; and other options relating to public assistance grants, appeals, relocation costs, and building contents.

The second report presents the results of the Inspector General's audit of FEMA's enforcement of flood insurance purchase and maintenance requirements for those who receive disaster aid. The audit discovered that compliance in the two regions studied was low and that some states are doing a better job than others. The audit determined that FEMA does not have clear, consistent policies on how to identify and enforce the purchase requirement, leaving states and regions unsure about procedures. This report includes recommendations for improved implementation as well as comments from FEMA's Response and Recovery Directorate to those recommendations.

Climate Change and Drought

The Probability of Sea Level Rise. James G. Titus and Vijay K. Narayanan. 1995. 186 pp. Free. Obtain from the Environmental Protection Agency, Ordering Department, P.O. Box 42419; Cincinnati, OH 45242-2419; (513) 489-8190; fax: (513) 489-8695.

Many climatologists believe that increasing atmospheric concentrations of carbon dioxide and other gases are warming the earth by the mechanism commonly referred to as the greenhouse effect. In fact, the earth's average surface temperature has risen approximately 1 F in the last century, and the nine warmest years have all occurred since 1980. These phenomena are generally believed to contribute to sea-level rise. This report develops probability-based projections of future sea level at particular locations. The authors determine that global warming is most likely to raise sea level by 15 cm by the year 2050, that there is a 1% chance that sea level will rise 1 m in the next 100 years, that stabilizing global emissions will likely

reduce the rate of sea level rise, and that along most coasts, factors other than human-caused climate changes will cause the sea to rise more than the increase due to climate change alone.

Climate Change and the Insurance Industry: Uncertainty Among the Risk Community*. *Joel N. Gordes. 1996. 45 pp. $10.00. Order from Environmental Energy Solutions, P.O. Box 101, Riverton, CT 06065, (203) 379-2430; e-mail: Jgordes@aol.com.

Gordes asserts that, for the increased number of weather-related catastrophic losses over the past eight years, global climate change may be partly responsible and that increased research, discussion, and possibly early response among those in the property-casualty insurance industry is warranted. Although insurance companies in Europe have already taken positions on this issue, few in the United States have supported researching the impacts, even though a storm of similar size and intensity to Hurricane Andrew could cause damage in excess of $110 million, wiping out a number of national insurance firms and severely limiting the industry's ability to take on further exposure. Gordes suggests that discussions should take place in the U.S. to examine both the short- and long-term policy implications of a federal safety net for insurers.

Water Resources Bulletin. October 1995. Single issue: $17.00, domestic; $19.00, foreign; plus $10.00 shipping. Subscriptions for this bimonthly publication: $115.00, domestic; $135, international. To order, contact the American Water Resources Association, 950 Herndon Parkway, Suite 300, Herndon, VA 22070-5528; (703) 904-1225; fax: (703) 904-1228.

This special issue of *Water Resources Bulletin* examines severe sustained drought in the southwestern United States and contains papers that report on the second phase of a study of the impacts of and responses to a potential severe sustained drought in the Colorado River Basin. The analyses were performed by a consortium of university and private-sector researchers in the basin. They provide information on the tree-ring record in the region, which indicates that droughts of duration and magnitude much more serious than any experienced in modern times probably occurred in the basin in earlier centuries. The papers also present hydrologic scenarios of drought and discuss impacts on water resources, the legal aspects of coping with severe drought, institutional options for

the Colorado River, social implications, environmental effects, valuation of drought damage, economic impacts, mitigation, and drought management.

Earthquakes and Other Geologic Hazards

Land Subsidence. Frans B.J. Barends, Frits J.J. Brouwer, and Frans H. Schröder, Editors. 1995. 512 pp. $80.00. Order from the International Association of Hydrological Sciences (IAHS) Press, Institute of Hydrology, Wallingford, Oxfordshire OX10 8BB, U.K.; tel: +44 1491 692442; fax: +44 1491 692448/692424; telex: 849365 hydrol g.
Subsidence (land surface sinking) occurs in many parts of the world, particularly in densely populated deltaic regions, causing costly damage. It results from both human causes, such as groundwater withdrawal and extraction of minerals and fuels, as well as natural causes, such as tectonic motion and sea level rise. The Fifth International Symposium on Land Subsidence (FISOLS 95) was convened to examine issues regarding this phenomenon. This volume contains the proceedings of that meeting and includes papers that discuss subsidence by fluid withdrawal; subsidence by soil extraction such as mining, tunneling, and quarrying; theory and modeling; and environmental effects and remedial measures.

Earthquake Basics: Earthquake Information Sources. Earthquake Basics Brief No. 2. 1995. 20 pp. Free (single copies only). Available from the Earthquake Engineering Research Institute, 499 14th Street, Suite 320, Oakland, CA 94612-1934; (510) 451-0905; fax: (510) 451-5411; e-mail: susant@eerc.berkeley.edu.
This booklet presents information on a number of organizations that distribute earthquake information, including each organi-zation's mission statement, strengths, products and services, and Internet resources. Complete contact information is also provided.

Earthquakes in Nevada and How to Survive Them. Craig dePolo, Alan Ramelli, and Diane dePolo. 1992. 8 pp. Free.
Planning Scenario for a Major Earthquake, Reno-Carson City Urban Corridor, Western Nevada. Craig dePolo, Gary L. Johnson, Steven G. Rigby, John Anderson, and Thomas J. Wythes. 1995. 36 pp. $15.00, plus $3.00 shipping.
Both items, as well as a catalog of publications, are available from the

Nevada Bureau of Mines and Geology, University of Nevada-Reno, Mail Stop 178, Reno, NV 89557-0088; (702) 784-4415; fax: (702) 784-1709; e-mail: info@nbmg.unr.edu. Telephone, fax, and e-mail orders must be charged to MasterCard or Visa, and checks should be payable to the "Board of Regents."

Nevada lies within one of the most seismically active regions of the U.S., ranking third behind California and Alaska in the occurrence of large earthquakes over the last 150 years. *Earthquakes in Nevada* describes the earthquake threat and suggests simple, inexpensive steps that can be taken before, during, and after an earthquake to minimize personal injury and property damage.

The *Planning Scenario* examines what might happen if a magnitude 7.1 earthquake occurred along the northern Carson Range of Nevada. It describes potential effects from surface faulting, liquefaction, and mass wasting (rockfalls and snow avalanches); uses and limitations of the scenario; the geology and seismology of the Carson Range; historic major earthquakes in western Nevada; and others hazards posed by such a quake. The second phase of the project that produced this scenario will determine the impacts of the scenario quake; the third phase will involve planning to respond to such an event.

Assessment of Earthquake Engineering Research and Testing Capabilities in the United States. Publication No. WP-01. 1995. 46 pp. Free. Copies can be obtained from the Earthquake Engineering Research Institute (EERI), 499 14th Street, Suite 320, Oakland, CA 94612-1934; (510) 451-0905; fax: (510) 451-5411; e-mail: susant@eerc.berkeley.edu.

On October 20, 1994, President Clinton authorized appropriations for the Earthquake Hazards Reduction Act for fiscal years 1994, 1995, and 1996. This legislation, Public Law 103-374, describes the need for a national assessment of earthquake engineering research and testing capabilities in the U.S. EERI was chosen to undertake this activity, and this document contains the results of that effort. It describes the background and purpose of this project, past assessment efforts, the assessment procedure, the evaluation of existing facilities and capabilities, the need for new testing facilities, the development of a comprehensive national research program, projections of future research capabilities, options for international cooperation, and the operation of new national facilities.

Participants who attended a workshop on this issue recommended that a comprehensive plan be developed for using existing laboratories and personnel, upgrading facilities and equipment, and integrating new and innovative testing approaches into existing research programs. In addition, they recommended that experimental research programs be pursued at an accelerated rate in order to enhance public safety and reduce economic losses from future earthquakes.

Just the Facts, Ma'am

Reducing Earthquake Losses Throughout the United States. 1996. Fact sheets. Free. These sheets are available by mail from the Earthquake Information Hotline, U.S. Geological Survey, MS 977, 345 Middlefield Road, Menlo Park, CA 94025; via fax (without illustrations) from Earthfax (the USGS fax-on-demand system) by dialing (703) 648-4888, pressing button 4, and requesting individual sheets by their fax document numbers (see below); and via the World Wide Web from http://quake.wr.usgs.gov.
The U.S. Geological Survey (USGS) produced this series of fact sheets to document how National Earthquake Hazards Reduction Program (NEHRP) activities supported by the USGS contribute to reduction of earthquake losses. The color-illustrated fact sheets highlight a wide range of loss mitigation actions that have resulted from NEHRP work.

The series includes:

Title	Earthfax Doc. Number
"The Los Angeles Dam Story"	7180
"Speeding Earthquake Disaster Relief"	7181
"Averting Surprises in the Pacific Northwest"	7182
"The Mississippi Valley-- Whole Lotta Shakin' Goin' On"	7183
"Utah Braces for the Future"	7184
"Pay a Little Now, or a Lot Later"	7185
"Seismic Maps Foster Landmark Legislation"	7186
"Building Safer Structures"	7187
"Saving Lives Through Better Design Standards"	7188

Look Before You Build: Geologic Studies for Safer Land Development in the San Francisco Bay Area. Martha Blair Tyler. U.S. Geological Survey (USGS) Circular 1130. 1995. 60 pp. Free. Written requests should be sent to the USGS, Map Distribution, Box 25286, MS 306, Building 810, Denver Federal Center, Denver, CO 80225.

When geologic disasters occur, the resulting devastation is not distributed uniformly across the landscape; certain locations suffer more than others due to their susceptibility to geologic hazards. Communities in the San Francisco Bay Area have had to address issues of suitable land use and structure design because of the ever-present threats posed by earthquakes, landslides, and subsidence. This circular was developed to assist local officials in making better land-use decisions by informing them of the geologic conditions of proposed development sites and what those conditions mean for future safety. It provides information on hazards geology in general, the necessity of geologic studies, the use of geologic information in project review, and sources of additional information. It also includes five case studies in which geologic information was used in project review.

Public Policy and Building Safety. 1996. 60 pp. $5.00. Order from the Earthquake Engineering Research Institute (EERI), 499 14th Street, Suite 320, Oakland, CA 94612-1934; (510) 451-0905; fax: (510) 451-5411; e-mail: susant@eerc.berkeley.edu.

This "white paper" is written for building officials and engineers to help them incorporate social, economic, and political considerations into building safety decisions. It grew out of a concern that engineering design requirements often do not realistically reflect the issues related to their adoption. Divided into four sections, the paper presents a case study of passing an inspection and repair ordinance for damaged steel-frame buildings in Los Angeles, a general discussion of the policy-making process, a checklist of recommendations, and suggestions for further reading.

Hurricanes

The Macro-Economic Effects and Reconstruction Requirements Following Hurricane Luis in the Island of Anguilla. 1995. 40 pp. Free.
The Macro-Economic Effects and Reconstruction Requirements Following Hurricanes Luis and Marilyn in Sint Maarten, Netherlands Antilles. 1995. 40 pp. Free.
Both reports are available from J. Roberto Jovel, Programme Planning and Operations Division, United Nations Economic Commission for Latin America and the Caribbean, Casilla 179-D, Santiago, Chile; tel: (562) 2102000; fax: (562) 2081946, 562 2080252; telex: 340295, 441054, 240077; e-mail: Rjovel@eclac.cl.
On September 5, 1995, the island of Anguilla in the British West Indies was struck by Hurricane Luis, with very strong winds and a 20-foot storm surge. The storm severely undermined the island's primary source of income--tourism--just as the main tourist season was about to begin. The first report describes the storm and the resultant damage to housing, health, education, infrastructure, the production and service sectors of the economy, and the environment. It also examines economic impacts on the island's economy and proposes a number of projects and activities to rehabilitate and reconstruct the island, some of which will require technical and financial cooperation from the international community.
The West Indies island of Sint Maarten/Saint Martin was struck by Hurricanes Luis and Marilyn in September 1995 and suffered significant losses in tourism and thus in the expected gross domestic product for the island. The second report provides background information on the island; describes the storms' impacts on housing, education, health, and employment; discusses damage to basic services, utilities, and infrastructure; and examines the economic impacts on the island as well as the national economy of the Netherlands Antilles. Like the first document, this report also presents possible projects and activities for reconstruction.

Academic Task Force on Hurricane Catastrophe Insurance: "Restoring Florida's Paradise." Collins Center for Public Policy. 1995. 93 pp. Free. A limited number of copies are available from Jean Swanson, The Collins Center for Public Policy, P.O. Box 1658, Tallahassee, FL 32302-1658; (904) 644-1441; fax: (904) 644-1442; e-mail: tilynch@garnet.acns.fsu.edu.
If Florida experiences another Hurricane Andrew, or a series of

catastrophes that equal or exceed Andrew's impacts, how are Florida's homeowners going to pay for the damage? This question was posed to a blue ribbon panel of educators, economists, and insurance experts by the 1995 Florida state legislature. This report contains the recommendations of that task force, which rejects the call by some for a state-sponsored insurer and instead calls on private homeowner insurance companies to continue to pay for catastrophic damage. However, the task force also recommends capping insurance industry losses, permitting more flexible rates and products for homeowner insurance, strengthening the Florida Hurricane Catastrophe Fund, diversifying geographic risk concen-trations, actively involving mortgage bankers, and aggressively promoting incentives for mitigation programs.

Floods and Severe Weather

Community Flood Mitigation Planning Guidebook. 1995. 168 pp. Free. A limited number of single copies can be obtained from Tim McClain, Wisconsin Department of Natural Resources, Box 7921, Madison, WI 53707; (608) 266-0161; fax: (608) 264-9200; e-mail: mcclat@dnr.state.wi.us. **This guidebook is being provided to communities in Wisconsin to help them reduce the perils to life and property from flooding. It presents, for a broad range of local government "customers," seven steps that simplify the flood mitigation planning process. By breaking flood mitigation down into steps, the process allows more flexibility for local involvement. The guidebook includes sections on the planning process, identifying flood risks, determining goals and objectives, collecting and analyzing information, preparing a draft plan, finalizing a plan, and implementing and monitoring a plan. Appendices provide information on mitigation agencies and other resources, a model flood mitigation plan, public participation strategies and techniques, compliance and other regulatory require-ments, and worksheets.**

How to Use a Flood Map to Determine Flood Risk for a Property: A Guide for Interested Private Citizens, Property Owners, Community Officials, Lending Institutions, and Insurance Agents. Publication No. FEMA 258. 1995. 24 pp. Free. Order from the Federal Emergency Management Agency (FEMA), Distribution Center, P.O. Box 2012, Jessup, MD 20794; (800) 480-

2520; fax: (301) 497-6378.
This guide was developed by FEMA's Mitigation Directorate to help citizens determine whether a specific property is in danger of being flooded and whether structures on that property should be insured against flood loss. Maps used in the National Flood Insurance Program (NFIP) to identify flood hazards are a critical tool for determining who should be required to carry flood insurance. These maps provide information on common physical features in an area, Special Flood Hazard Areas, base flood elevations or depths, flood insurance risk zones, and areas subject to inundation due to a 500-year flood. This guide describes what information is available on a flood map, the key map elements, how to read a map index, how to read map panels, and how to obtain a FEMA flood map. In addition, FEMA has launched an effort to make flood maps available via the Internet and hopes to have 800 maps on-line by July. For more information, call up the FEMA World Wide Web site at *http://www.fema.gov* and look under "What's New."

The Weather Almanac. Richard A. Wood, Editor. 1996. 735 pp. $130.00. Order Document #M89035 from Gale Research, P.O. Box 33477, Detroit, MI 48232-5477; (800) 414-5043; e-mail: galeord@gale.com; World Wide Web: http://www.gale.com/gale.html.
The 7th edition of *The Weather Almanac* is full of details and data about the weather. It provides current and historical statistics, descriptions of weather phenomena, general weather information, and hundreds of weather facts. The *Almanac* includes maps, charts, and safety rules, and separate sections on tornadoes, hurricanes, thunderstorms and lightning, flash floods, winter storms, and other weather phenomena. Official records and statistics are provided for over 100 U.S. cities and nearly 550 other cities worldwide. *The Almanac* also has sections on weather and health, wind chill, the summer comfort index, livestock safety, the NOAA weather radio warning network, and marine weather advisories, as well as a glossary and index. The *Almanac* is available for licensing on magnetic tape or diskette, and either the complete database or a custom selection of entries may be ordered.

National Weather Service Emergency Management Forum: Building Better Warning Partnerships. 1995. 70 pp. Free. Single copies are available from

Chris Adams, National Weather Service, Customer Service Corporation (W/OM11), 1325 East-West Highway, Silver Spring, MD 20910; (301) 713-0090; e-mail: cadams@smtpgate.ssmc.noaa.gov.

This forum, held in Arlington, Virginia, March 1-3, 1995, was convened to improve National Weather Service short-term warning by strengthening partnerships with users of warning information. It brought together members of the emergency management community to identify areas of concern and suggest actions to improve weather and flood warnings in the U.S. This report contains summaries of group reports and action plans that addressed four main areas: warning coordination and decision making, communications technologies and formats, critical information needs, and warning dissemination to the public.

Videos, Slides, and Other Media

Kobe I: Overview. $90.00, Earthquake Engineering Research Institute (EERI) members; $105, nonmembers.
Kobe II: Liquefaction. $30, members, $35, nonmembers.
Kobe III: Performance of Steel Bridges. $80, members; $95.00, nonmembers.
Kobe IV: Engineered Buildings. $75.00, members; $90.00, nonmembers.
All four slide sets can be obtained from EERI, 499 14th Street, Suite 320, Oakland, CA 94612-1934; (510) 451-0905; fax: (510) 451-5411. All orders from California must include 8.25% sales tax. Orders outside the U.S. require an additional 10% for shipping.
The seismic aspects of the Kobe quake are significant for the U.S. because of the similarity of structures built in the U.S. and Japan since World War II. The quake provided a wealth of information on how U.S. communities may be affected by a comparable temblor. The four slides sets provide vivid pictorial evidence of damage caused by the quake.

Supply Management Project in the Aftermath of Disasters (SUMA). Version 4.2 DOS-based software--two 3" diskettes.
SUMA Terminal User's Manual. 1994. 26 pp.
SUMA Central User's Manual. 1994. 45 pp.
All three items are free and can be obtained in Spanish, English, or French from Elizabeth Pluut, Pan American Health Organization (PAHO),

Emergency Preparedness and Disaster Relief Coordination Program, 525 Twenty-third Street, N.W., Washington, DC 20037; (202) 861-4326; fax: (202) 785-1468; e-mail: disaster@paho.org.

Many national authorities face serious problems when identifying and tracking the supplies they receive in response to an emergency. The SUMA program was designed to provide a systematic solution to this problem through a training program and software to manage the receipt and sorting of supplies during disaster response. The materials listed above contain the software, which comes in two modules: the terminal version for sorting and registering supplies at the point of entry, and the central version for data consolidation and report generation at a higher administrative level. The modules can provide information on types of medication, food products, clothing, and other supplies, as well as how these items are to be handled (e.g., whether they require refrigeration, etc.), how the items were shipped, and where they were sent. In addition, the central module can provide information on overall assistance received and distributed as well as currency exchange rates.

St. Helens: Out of the Ash. 1995. VHS. 59 minutes. $24.95, plus $4.00 shipping. Order from KSPS Public Television, 3911 South Regal Street, Spokane, WA 99223; (800) 735-2377.

This video documents the Mt. St. Helens volcanic eruption of May 18, 1980, and its subsequent impacts. In all, volcanic ash spewed over 22,000 square miles, and eventually was carried, through the atmosphere, around the globe. Out of the Ash includes news footage, filmed prior to the eruption, of residents who stated they did not believe there was any danger, as well as eyewitness accounts of those who narrowly escaped the eruption and dangerous lahar that occurred when the mountain wall collapsed. The video also contains interviews with those who worked to rescue 200 survivors, officials who dealt with the impacts on wildlife and surrounding ecosystems, a Weyerhauser official who describes the loss of 68,000 acres of timber and the company's salvage and recovery efforts, property owners who suffered flooding and property losses, and government officials who are even today coping with the environmental impacts of the eruption and who discuss the current state of the area's flora and fauna and the geological aspects of the volcano.

Earthquake Information On-Line

The National Information Service for Earthquake Engineering (NISEE), located at the University of California at Berkeley, has completed conversion of the 1971 to 1983 issues of the Abstract Journal in Earthquake Engineering to machine-readable form. The result is an updated and comprehensive archive of literature on earthquake engineering, structural dynamics, and related disciplines from 1971 to the present. Approximately 20,000 records have been loaded into the NISEE database and can be searched through a variety of systems. It can be accessed:

- ***through the World Wide Web at***
- ***http://www.eerc.berkeley.edu***
- ***by telnetting to the University of California online catalog, Melvyl, at melvyl.berkeley.edu. Once in Melvyl, one should type use eea to enter the Earthquake Engineering Abstracts. For more information on how to access this database, contact Katie A. Frohmberg, Earthquake Engineering Research Center, 1301 South 46th Street, Richmond, CA 94804-4698; (510) 231-9401; e-mail: katie@eerc.berkeley.edu.***
- ***on a collaborative CD-ROM, Earthquakes and the Built Environment Index, which includes three databases: the NISEE database, the Quakeline Database from the National Center for Earthquake Engineering Research in Buffalo, New York, and the Newcastle Earthquake Database produced in Newcastle, Australia. This index provides nearly 90,000 citations that can be searched in both English and Spanish. An annual subscription for this CD-ROM index costs $295 and includes at least one update. For information, contact Patricia Coty, NCEER Information Service, 304 Capen Hall, State University of New York at Buffalo, Buffalo, NY 14260-2200; (716) 645-3377; fax: (716) 645-3379; e-mail: nercoty@ubvms.cc.buffalo.edu or Katie Frohmberg, NISEE, at the address above.***

THE HAZARDS CENTER

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The Hazards Center also publishes Disaster Research, an electronic newsletter, and maintains a World Wide Web site:

Home.html

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