CENTER ACTIVITIES
1989 - 1992

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Hazard Reduction & Recovery Center
College of Architecture
Texas A&M University
College Station, Texas 77843-3137
Research, Extension and Staff Activities

1989 - 1992

Hazard Reduction & Recovery Center

The Hazard Reduction & Recovery Center (HRRC) was established within the College of Architecture at Texas A&M University in the fall of 1988. This report chronicles the activities and progress of the Center from that time until the present. In addition to the significant financial and organizational support provided by the College of Architecture, the HRRC also received valuable financial assistance from the Texas Engineering Experiment Station during its first two years.

At the time of its formation, the entire staff of the Center numbered four faculty members and two graduate students. Currently, there are 19 Faculty Fellows on the Texas A&M campus, five Associated Faculty Fellows at other universities, 17 graduate research assistants, and a support staff of four. Over 40 persons are currently associated with the HRRC.

Since 1988 a total of 53 different persons have been on the staff of the Center or in an Associate Faculty Fellow position. The researchers come from a variety of disciplines, including architecture, civil engineering, urban and regional planning, sociology, landscape architecture, geography, journalism, environmental psychology, construction science, environmental design, and policy analysis. The HRRC is now the largest multidisciplinary center studying natural and technological hazards and disasters in the world. Its staff of faculty researchers includes some of the leading experts on hazard mitigation, emergency planning and response, and disaster recovery in the United States. In recognition of these resources, the HRRC became a United Nations (DHA, formerly UNDRR) Collaborating Centre in June of 1990. It is one of only two United Nations Collaborating Centres in the world.

This report lists the accomplishments of the staff. It includes the work of the on-campus faculty and students at Texas A&M University and our Adjunct Faculty Fellows at other universities. However, the overview is limited to only the hazard and disaster related material produced since the Center's inception. In total, researchers associated with the HRRC produced over 120 articles, books and monographs. They undertook research on 43 different research projects that generated over $2 million in external funds. Representatives of the HRRC have attended over 100 conferences and workshops since its founding and have presented over 160 papers and lectures at these events and at other universities. Faculty Fellows served as consultants to about 40 public and private agencies, including the National Academy of Science, National Science Foundation, NASA, Lawrence Livermore Laboratory, National Institute of Building Sciences, the Federal Emergency Management Agency, and the States of Alabama and Texas. Representatives of the HRRC served on about 30 advisory panels and committees, including the American Institute of Architects, National Academy of Sciences, National Earthquake Hazards Reduction Program, National Science Foundation, United States Geological Survey, and the National Fire Academy. Personnel from the Center served as publication and proposal reviewers for about 80 different professional journals, publishers and funding agencies. Faculty researchers undertook research at 60 different domestic and foreign sites.

In addition to these research accomplishments, this report also discusses some other important activities of the HRRC, including its library, publication list, extension activities, and mass media contacts. All of the people associated with the Center wish to thank the College of Architecture, Texas Engineering Experiment Station, Texas Agricultural Extension Service, and Texas A&M University for their support and financial assistance in establishing the Center.

Published Articles, Books and Monographs

During the first four years of its existence, researchers associated with the HRRC produced over 125 articles, books and monographs.
• A Study of Long-term Recovery of Three Communities in the Aftermath of Hurricane Hugo, Ph.D. Dissertation, Texas A&M University, College Station, Texas, Swaroop Reddy, 1992.
• "Caney Under Gilbert: Preliminary Observations," International Journal of


- "Linking Hurricane Disaster Recovery to Sustainable Development Strategies:


• *Public Opinion and Attitudes Regarding Hazardous Waste in Alabama: Results from Three 1988 Surveys*, (with Conner Bailey, Susan Holland), Rural Sociology Series #14, Auburn, Alabama: Alabama Agricultural Experiment Station, Charles Faupel, 1989.


- "Title I Wind/Tornado Design Guidelines for New Production Reactors," Document No. NPR 91-615 DSN, Wind/Tornado
Concession Leases to Develop a Deforestation Sedimentation Model, Indonesia National Aeronautical and Space Administration, 1992.
• "New Material for Improving the Teaching of Geography and Geosciences in High Schools and Colleges," NASA.

Research Proposals Submitted

• Constructing a Record of Tropical Deforestation Using LANDSAT AVHRR, Shuttle Photography and Forest-Lobbying

1992 HRRC Report
Research Proposals Funded

Faculty Fellows associated with the HRRC have received funding for over forty projects since 1989. Thirteen of these projects were funded by the National Science Foundation. Additional sources of major funding have been received from the Governor's Division, Texas Emergency Management. As can be seen below, a wide variety of sources have funded HRRC research. The total volume of research undertaken at the Center since 1989 that has produced direct and indirect funds to Texas A&M University is in excess of $2 million. The list of funded projects includes the following:

- "Economics of Expertise: Factors Promoting Comprehensive Local Hazards Management," National Science Foundation, 1952.
- "Examination of the South Carolina Beachfront Management Act Following Hurricane Hugo," National Science Foundation, 1990.
- "Impacts of Global Climate Change on Forest Ecosystems," Environmental Protection Agency, first year of a three year project, 1990.
- "Perceived Risk and Response to Emergency Events: A Chemical Fire in Odessa, Texas," National Science Foundation.
- "Preliminary Computer-Simulated Hurricane Studies in the Houston-Galveston Area," Research Division,

- "Public Involvement in Hazardous Material Management," Fourth year of a five year project funded by the Alabama Agricultural Experiment Station, 1989.
- Quick Response Research Grant for the October 17, 1985 Loma Prieta Earthquake, administered by the National Hazard Research and Applications Information Center at the University of Colorado, National Science Foundation, 1989, 1990.
- Quick-response grant to study rebuilding in South Carolina, Natural Hazards Research and Applications Information Center, University of Colorado, 1990.


Conference/Workshop Attendance

- American Geophysical Union, 1990.
- American Geophysical Union, Front Range Branch, 1990.
- American Sociological Association Annual Meeting, Research Committee on Disaster, 1989.
- Assessment of Research and Applications for Natural Hazards Workshop, 1992.*
- Association of Collegiate Schools of Planning Conference, 1992.*
• Connections (Career Opportunities) Workshop, 1991.
• Disaster Education Workshop, Red Cross and FEMA, 1991.
• Disaster Research and Planning Seminar, National Center for Earthquake Engineering Research, 1990.
• Fifth Annual Workshop on Earthquake Hazards and Risk Along the Wasatch Front, Salt Lake City, Utah, 1989.
• Florida Shore and Beach Preservation Association, 1989.*
• German Humboldt Foundation Workshop on Novel Approaches to Citizen Participation, 1992.
• Health Consequences of Earthquakes: Implications for Medical Care and Emergency Search and Rescue, 1991.*
• Ho‘olulea 5-Western Roundup of the Western States Conference, 1991.
• Implications for Medical Care and Search and Rescue Conference, 1990.*
• International Congress of Building Officials, Colorado Chapter, 1990.
• International Sociological Association, Research Committee on Disasters, 1992.*
• International Sociological Association, XXII World Congress, 1990.*
• International Wildfire Conference, 1989
• International Workshop on Earthquake Injury Epidemiology, Johns Hopkins University, Baltimore, Maryland, 1989.
• Investment Priorities for Natural Hazards Mitigation in the Shelter Sector, Center for Development Policy, 1992.
• Mid-Southern Rural Sociological Association, 1992.
• National Association of State Title III Program Officials, 1991.
• National Association of State Universities and Land-Grant Colleges, 1992.
• National Center for Earthquake Engineering Research Conference, 1989.*
• National Earthquake Hazard Mitigation Workshop, 1991.
• National Emergency Training Center, 1992.
• National Science Foundation Mexico-US Workshop, Mexico City, Mexico, 1989.
• Oak Ridge National Laboratory, 1989.
• Partners of the Americas Urban Infrastructure Renewal Program, 1992.
• Quantitative Risk Assesment Workshop, 1989.*
• Regional Disaster Institute, 1992.
• Rural Sociology Society, 1990.
• Seismological Society of America, 1990.
• Society of Computer Simulation, 1989.*
• Sooner Disaster College, 1992.
• Special Seminar on Nondestructive Testing for Aircraft Structures, Minority Research Center of Excellence in Materials Science, 1990.
• Summit Conference on Earthquake and Natural Disaster Countermeasures, 1991
• Symposium on Race and Environmental Quality, 1990.
• Tenth World Conference on Earthquake Engineering, 1992.
• United Nation's Department of Humanitarian Affairs, 1992.*
• University of Colorado School of Law, 1989.
• University of Texas Growth Management Forum, 1992.
• Western Social Science Association Annual Meeting, 1989.
• World Congress on Natural Hazard Reduction, 1992.*
• XIV Reunion de Estudios Cubanos, 1992.

*Denotes multiple attendance

Presentations, Conferences, Conventions Workshops, other Universities

The Faculty Fellows and Graduate Research Assistants have presented more than 160 papers, lectures and presentations at conferences, conventions, workshops and other universities. The HRRC presentations were made in 28 states, Puerto Rico and the District of Columbia. In addition, presentations were made in the following countries: Australia, Brazil, Canada, England, India, Jamaica, Japan, Mexico, Spain, and Switzerland.

• "Assessing Pre- and Post-Earthquake Vulnerability in the Marina District of San Francisco," Department of Earth and Space Sciences, University of California at Los Angeles, Los Angeles, California, 1991.
• "Disaster Education in the Community," Sooner Disaster College, Norman, Oklahoma, 1991.
• "Earthquake Damage, Building Vulnerability, and Reconstruction in the


- "Evaluation of Interventions in Las Colonias to Improve Service Delivery," College of Architecture, Texas A&M University, College Station, Texas, 1992.


- "Fire Safety at the Construction Site," Brigham Young University, Provo, Utah, 1989.

- "Fire Safety at the Construction Site," Brigham Young University, Provo, Utah, 1990.


• "Instructor Candidate Training for Disaster Education," 1992 Regional Disaster Institute, San Antonio, Texas, 1992.


• "Instructor Specialty Workshop for Disaster Education, at the Sooner Disaster College, Norman, Oklahoma, 1992.


• "Life Safety," National Council of Architectural Registration Boards Workshop (NCARB) on Uniform


• "Long-Term Disaster Housing Recovery in Developing Countries: An Assessment of the Jamaica Experience," National Hurricane Conference, Houston, Texas, 1990.

• "Managing Reconstruction Along the South Carolina Coast Following Hurricane Hugo," 51st National Conference of the American Society for Public Administration, Los Angeles, California, 1990.


• "Managing the Global Commons," Oak Ridge National Laboratory, Knoxville, Tennessee, 1989.


• "Natural Hazards Reduction: Developed and Developing World Contexts," University of West Indies, Jamaica, 1990.


• "Planning and LEPC Effectiveness in Hazard Management," Annual Meeting of
the National Association of State Title III Program Officials, Seattle, Washington, 1991.


- "Potential Impacts of Global Climate Change on Tropical Forests," special meeting, Intergovernmental Panel on Climate Change, Sao Paulo, Brazil, 1990.


- "Role Conflict and Disaster," Mid-South Sociological Conference, Jackson, Mississippi, 1991.


"Technological Emergencies Resulting from Natural Disasters: How Likely Are They, And Are We Prepared To Deal With Them?" Natural Hazards Research and Applications Workshop, Boulder, Colorado, 1991.


"The Application of Statistical Quality Control Techniques to Human Errors in Concrete Structures," American Concrete Institute Annual Convention, Toronto, Canada, 1989.


"The Organizational and Public Response to the 1985 Mexico City Earthquake," Third National Science Foundation Mexico Workshop, Mexico, City, Mexico, 1989.


"The Study of Volunteer and Emergent Organizational Response: Approaches and


• "Vulnerability in the Marina District of San Francisco, California: Environmental and Societal Issues," Department of Geography, University of California at Los Angeles, Los Angeles, California, 1991.


Consulting Activities


• Board of Directors, Brazos Valley Chapter of the American Red Cross, 1992.


• City of Galveston, Texas, 1989.

• City of Hilton Head, South Carolina, 1990.

• City of Los Angeles, 1992.

• City of Oakland, California, 1990.

• Committee on Natural Disasters, National Academy of Science, 1990.

• County of Sacramento, Sacramento, California, 1992.

• Dames and Moore, 1989.


• Environmental Studies Institute, School of Public Health, University of North Carolina, 1990.


• Griggs and Harrison, Houston, Texas, 1990.


• Howard University, Washington, DC, 1990.

• John Wylie & Sons, 1990.

• Lawrence Livermore National Laboratory, 1991.

• Mitchell Southwest Development, 1990.


• National Aeronautics and Space Administration, 1990.

• National Institute of Building Sciences, Centers for Building Technology and Fire Research at the National Institute of Standards and Technology, 1990.


• One Allen Center, Houston, Texas, 1990.

• Prentice Hall, 1990.

• Rinehart and Winston, 1990


• Robert Young Consulting Engineers, Sacramento, California, 1992.
• State of Texas, 1991.
• Texas Agricultural Safety and Health Initiative Team, 1992
• United Nations, UNDRO, 1992
• Wire Reinforcement Institute, McLean, Virginia, 1990.

Advisory Panels, Committees

• American Geophysical Union, Science Policy Lecturer, 1989.
• Capitol Hill briefings on the Loma Prieta earthquake, 1990.
• City of Oakland and East Bay AIA Standards Committee, City of Oakland and East Bay, California, 1990.
• Earthquake Engineering Research Institute, Policy Committee, 1989.
• Environmental Health and Safety Committee, Texas A&M University, 1990.
• Laboratory for the Analyses of Polar Processes (LAPP), CIRES, University of Colorado, Boulder, Colorado, Executive Board Member, 1989.
• National Academy of Sciences, Research team studying the tornado in Huntsville, Alabama, 1989.
• National Fire Academy, Fire Safe Building Design Committee, 1990.
• National Science Foundation, 1992.
• National Science Foundation, Advisory Board Member, NSF grant "Earthquake Insurance in California: The Impacts of a Mandated Offer of Insurance on Residential Earthquake Insurance Purchase", 1989.
• National Science Foundation, Biological and Critical Systems, Advisory Member, 1989.
• National Science Foundation, Natural and Man-Made Hazards Program, Program Auditor, 1989.
• Natural Hazards Advisory Group, South Carolina Sea Grant Consortium, 1989.
• Public Affairs Committee of the American Geophysical Union, Member, 1989.
• Publications Committee, Engineering Geology Section, Geological Society of America, 1990.

Journal, Publisher or Funding Agency Reviews

• Allyn and Bacon, Inc., 1990, 1991
• American Society of Civil Engineers, 1990.
• American Sociological Review, Associate Editor, 1991.
• Arctic and Alpine Research, 1990.
• Canadian National Research Council, 1990.
• Coastal Zone Management Journal, 1990.
• Community Disaster Education Guide, 1992.
• Deviant Behavior, 1992.
• Earthquake Spectra, 1990.
• Editor, Agricultural Communications
  Texas A&M University, 1992.
• Editorial Board, Journal of the American
• Federal Emergency Management Agency,
• Florida Sea Grant Publications, 1990.
• Geological Society of America Bulletin,
  1990.
• International Journal of Mass Emergencies
• Journal of the American Planning
• Journal of the Engineering Mechanics
  Division (ASCE), 1990.
• Journal of the Structural Division
  (ASCE), 1990.
• Latin American Research Review, 1990,
• National Academy of Science, 1989,
• National Academy of Sciences Panel on
• National Coastal Resources Research and
  Development Institute, 1989.
• National Endowment for the Humanities,
• National Institute of Building Sciences,
  1989.
• National Science Foundation, 1989, 1990,
• New Mexico Geology, 1990.
• Nuclear Safety, 1990, 1991
• Oak Ridge National Laboratory, 1991.
• Professional Geographer, 1990.
• Random House Publishing Company,
• Rural Sociology, 1990, 1991
• Social Science Quarterly, 1990, 1991
• Sociological Focus, 1990.
• Sociological Inquiry, 1992.
• Transactions, Nebraska Academy of
• U. S. Geological Survey Professional
  Papers, 1989.
• United States-Israel Binational Science
• Wadsworth Publishing Company, 1990,

Domestic/Foreign Research Trips

Research has been undertaken at approximately 50 different research sites by HRRC faculty and graduate students.

• Antigua, 1990.
• Austin, Texas, 1991.
• Brenham, Texas, 1992.
• Brownsville, Texas, 1991.
• Camden, South Carolina, 1991.
• Chambers County, Texas, 1991.
• Clute, Texas, 1991
• Corpus Christi, Texas, 1992.
• Dickinson, Texas, 1991.
• Edna, Texas, 1991.
• Engleside, Texas, 1991.
• Freeport, Texas, 1991.
• Guadalajara, Mexico, 1992.
• Hardin County, Texas, 1991.
• Henderson, Texas, 1992.
• Houston, Texas, 1991.
• Huntsville, Alabama, 1989.
• Indianapolis, Indiana, 1992.
• Jamaica, 1990
• Jasper County, Texas, 1991.
• Jefferson County, Texas, 1991.
• Kerrville, Texas, 1991.
• Killeen, Texas, 1991.
• Kingston, Jamaica, 1989.
• Kingsville, Texas, 1991.
• La Porte, Texas, 1992.
• Lake Jackson, Texas, 1991.
• Los Fresnos, Texas, 1991.
• Montego Bay, Jamaica, 1989.
• National Hurricane Center, Miami,
Newton County, Texas, 1991.
Odessa, Texas, 1992.
Orange County, Texas, 1991.
Palacios, Texas, 1991.
San Francisco and Oakland, California, 1989.
Santo Domingo, Chile, 1992.
Saragosa, Texas, 1989.
South Carolina, 1990.
Webster, Texas, 1991.
Wichita Falls, Texas, 1989.
Yucatan Peninsula, Mexico, 1989.

HRRC Library Development

The HRRC’s library has expanded with regard both to space and holdings since 1989. In that year there were approximately 3000 items in the Center’s holdings. The library lacked adequate shelf and work space. During 1991 the HRRC library was renovated and enlarged. The new facilities doubled the space within the Center. New shelving, furniture, work space and computer facilities were added. There are now approximately 13,000 items in the Center’s holdings. Of these, about 3500 are catalogued electronically using the Sci-Mate software package. Also, the Center has access to a data bank of over 13,000 additional bibliographic sources. A complete set of United Nations publications is available.

HRRC Publication List

The HRRC established a Publication List in 1989. The original list included approximately 100 books, monographs, reports, articles and preliminary papers. The list currently includes 8 books and research monographs, 33 research reports, 104 published articles, and 28 preliminary papers. The material is available at minimal cost to interested members of the public, officials and other researchers. The Publication List has been widely distributed throughout the world. Also, complete sets of HRRC publications are exchanged with the Disaster Research Center at the University of Delaware, the Natural Hazards Research and Applications Information Center at the University of Colorado, and the Department of Humanitarian Affairs of the United Nations in Geneva, Switzerland.

HRRC Extension Activities

In collaboration with the Texas Agricultural Extension Service (TAEX), the HRRC has developed an extension or information transfer program. This outreach program is unique among all disaster and hazard research centers in the United States. The program is under the direction of Dr. David Bilbo. The purpose of the program is to disseminate disaster and hazard research findings to individuals and organizations who can utilize the information.

During the past few years a number of workshops have been presented by the HRRC, including a workshop for Marine Extension Agents of TAEX in Houston, three workshops at the 1991 and 1992 Sooner Disaster College, a workshop at the National Emergency Training Center in Emmitsburg, Maryland, and presentations at the 1992 Regional Disaster Institute in San Antonio, Texas, the North Carolina Interagency Task Force on Family Protection, and the Natural Hazards Workshop in Boulder, Colorado. Dr. Bilbo has been appointed as an Adjunct Faculty member of the National Emergency Training Center in Maryland.

In addition, the USDA-HRRC-TAEX Joint Project entitled “Emergency Preparedness and Response Workbook for Extension Agents” was funded by the United State Department of Agriculture.

United Nations Department of Humanitarian Affairs Activities

In June of 1990 the HRRC became a United Nations (UNDRO) Collaborating Centre. As such, the HRRC became only the second UNDRO Collaborating Centre in the world, and the first in the western hemisphere. As part of this collaboration, the HRRC undertook extensive research in the Caribbean for UNDRO as it examined hurricane preparedness and response in the Leeward Islands. In addition, the HRRC held an international workshop on the
International Decade for Natural Disaster Reduction (IDNDR) at Texas A&M University. Furthermore, the HRRC has provided general consultation to the New York and Geneva offices of UNDRO and participated in UNIENET. With the reorganization of UNDRO into the Department of Humanitarian Affairs, discussions were held in Geneva on extending collaborative arrangements.

**HRRC Visitors Since 1989**

- Auburn University
- Harvard University
- Japanese Research Team
- Massachusetts Institute of Technology
- Natural Hazards Resource and Applications Information Center, Boulder Colorado
- Oak Ridge National Laboratory
- Olgilvy, Adams & Rhinehart, Los Angeles, California
- Oregon Emergency Management
- Philippine Islands
- Rutgers University
- St. Johns Antigua, West Indies
- St. Lawrence University
- Texas Tech University
- The Ohio State University
- United Nations, New York, NY and Geneva, Switzerland
- University of California-Berkeley
- University of Colorado
- University of Delaware
- University of Denver
- University of Kansas
- University of North Carolina at Chapel Hill
- University of Pennsylvania
- University of Texas
- University of the West Indies
- University of Virginia
- University of Washington
- Washington University
- Yale University

**Mass Media Contacts**

- KBTX-TV, Bryan-College Station, Texas, 1989.
- KORA-Bryan/College Station, 1990.
Associated Personnel
Hazard Reduction & Recovery Center
1989 - 1992

Director
Dennis E. Wenger

Associate Director
Philip R. Berke

Senior Research Fellow
Carlton E. Ruch

Extension Division
David Bilbo, Coordinator
David Ruesink

Administrative Secretaries
Ruth Bostic
Jacqueline Henderson

Senior Faculty Fellows
Benigno E. Aguirre
Julius Becton
Jack Kartez
Dale Perry
George Rogers
Norris Stubbs

Faculty Fellows
Michael M. McCarthy
M. Jana Percau
Jon Rodiek
Paul Woods

Associate Faculty Fellows
Timothy Beatley, University of Virginia
Charles Faupel, Auburn University
Thomas Glass, Yale University
Randolph Langenbach, University of California-Berkeley
Sherry Oaks, University of California-Los Angeles and Colorado State University
Rocky Lopes, American Red Cross National Headquarters

Graduate and Research Assistants
J. Ethan Reeson
Travis Black
Stephen Chambers
Ellen Dressen
David Ellis
Clarence Feagin
Margaret Hall
Jim Molirelli
Steve Hardy
Paul Johnston
Aakash Kanath
Nabil Kameh
Young Kim
Mark Lam
Sean Michael
Stephanie Dougan

Carla Prater
Swaroop Reddy
Jay Todd
Jan Townes
Gabriela Vigo
Patricia Voller
Suzanne Wilhite
Trent Perkins

National Advisory Panel
Raymond Burby, University of New Orleans
Thomas E. Drabek, University of Denver
David Gillespie, Washington University
Myra Lee, Oregon Emergency Management
Franklin MacDonald, Office of Disaster Preparedness, Kingston, Jamaica
Peter May, University of Washington
Kishor Mehta, Texas Tech University
Joanne Nigg, University of Delaware
William E. Riebsame, University of Colorado
Patrick L. Lavalla, The Emergency Response Institute, Inc.
Mary Fran Myers, University of Colorado