SOCIAL IMPACTS OF THE RED RIVER VALLEY FLOOD:

A LITERATURE REVIEW

submitted to the

International Red River Basin Task Force
International Joint Commission

Ottawa Washington

by

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under the direction of the
Natural Hazards Center
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EXECUTIVE SUMMARY

In the aftermath of the 1997 Red River Valley flooding, research studies and reports have surfaced regarding the preparation, evacuation, and recovery of the social fabric of the Red River Valley communities: their government agencies, their businesses, their homes and social worlds, and their social service agencies. To attempt to retrieve these studies on recovery, a call for research was put out through the Natural Hazards Center's "Disaster Research" electronic newsletter. Additionally, I have searched the ERIC, GeoRef, PsycLIT, Expanded Academic ASAP, Sociological Abstracts, and Social Work Abstracts databases; have contacted 38 universities and colleges throughout Manitoba, North Dakota, Minnesota, and South Dakota; and have contacted individuals known to have researched or published on the topic. Journal articles from special flood issues of the Applied Behavioral Science Review (forthcoming) and The North Dakota Journal of Human Services (September 1997) have been included. All of the Applied Behavioral Science Review articles consist of social science research studies. All of The North Dakota Journal of Human Services articles consist of reports on evacuation and recovery of the Grand Forks human services system.

Among these various studies, some are currently ongoing and their conclusions were not available at this time. In those cases, I have included abstracts (supplied by the author) about their ongoing research. In some cases, I only received abstracts, in some cases abstracts and articles, and in other cases only articles. If I am submitting an author's abstract as given to me I will indicate that it is the "author's abstract." In many cases I utilized an author's abstract, but enlarged it with additional information about the author's methodology and findings in order to make it a more informative summary of the research. In other cases, lacking an abstract, I summarized the article. In all cases, I include as much of the author's wording as possible in order to remain true to the original intent of the work. Throughout I frequently use the following acronyms: FEMA, Federal Emergency Management Agency; SBA, Small Business Administration; and HUD, U.S. Department of Housing and Urban Development.

I have grouped the research articles and reports by topic rather than by author affiliation according to Governmental Responsibility and Overall Recovery, Economic and Business Recovery, Sociological Studies of Recovery, Psychological Studies of Recovery, Domestic Violence Studies, Social Work Studies of Recovery, and Social Service Reports of the

Recuperation of the Human Services System. Within this order, I begin with Governmental Responsibility and Overall Recovery. Paul Todhunter's article, "Flood Hazard in the Red River Valley: A Case Study of the Grand Forks Flood of 1997," presents an overview of the Grand Forks flood disaster within the context of a flood-hazard system conceptual model which consists of four separate components: (1) Flood Risk, (2) Flood Exposure, (3) Response to Flood Hazard, and (4) Flood Damages. Political responses have the opportunity to mitigate and minimize future disasters, however these decisions occur within brief, temporary policy windows that soon close and fade from memory. In Roger A. Pielke Jr.'s study on "Who Decides? Forecasts and Responsibilities in the 1997 Red River Flood," he identifies increased responsibilities that both the National Weather Service and the local governments/communities could take in dealing with forecasting, so that forecasts are not misused. Tricia Wachtendorf, "A River Runs Through It: Cross Border Interaction During the 1997 Red River Flood," reports on her ongoing research (findings unavailable) about governmental and organizational cross-border interactions in dealing with the 1997 flood disaster. In "After the Disaster: The Intergovernmental Context of Disaster Recovery," Mary Grisez Kweit and Robert W. Kweit provide their assessment that the "uncoordinated" intergovernmental interactions surrounding the recovery of Grand Forks/East Grand Forks could have been better managed if the role of FEMA were strengthened in catastrophic disasters. Ronald Pynn and Greta M. Ljung, in "Flood Insurance: A Survey of Grand Forks, North Dakota, Homeowners," report among other findings that 80% of the people in Grand Forks did not buy flood insurance primarily because they didn't think they would need it (National Weather Service reports, diking, etc.), that mortgage lenders didn't require it, or that insurance agents convinced them that they wouldn't need it or it wouldn't cover much. Kimberly K. Porter's ND Museum of Art Oral History Project, while not a research study, contains the raw data of interviews with Grand Forks' city government officials as well as many other individuals.

In terms of Economic and Business Recovery, F. Larry Leistritz, Dean A. Bangsund, and Randall S. Sell, in "Economic and Demographic Outlook for the Grand Forks Area," (May 1997) find (from using baseline projection models and studying previous disasters) that small and marginal businesses and low income households may have the most difficulty in reestablishing themselves, that predisaster trends of growth or decline tend to continue after disasters (with the Grand Forks area indicating a potential for economic growth although the outlying population is

in decline), that a critical factor affecting recovery is the magnitude of loss relative to the community's resources, and that timely and adequate assistance can facilitate and speed recovery. From Clifford L. Staples' and Kristi L. Stubbings' "Grand Forks Business Emergency Census" project (1997) come four papers, which indicate among other findings the intent by over half of the Grand Forks' businesses to reopen, the shortage of labor, and the fact that the flood created "winners" (such as unaffected businesses or types of businesses that increased their business volume) and "losers" (such as downtown businesses or female owned or operated businesses). James W. Bronson, James B. Faircloth, and Clifford L. Staples (with Brenda L. Lee, Jonathan W. Bolonchuk, Katheryne M. Larsgaard, and Kenneth W. Williment), in "The 1998 Grand Forks Business Climate Surveys"--Phase I (Mail Survey) and Phase II (Personal Interview Survey) present numerous data tables about business recovery one year after the flood, but these lack any kind of summary analysis. James W. Bronson and James B. Faircloth contend, in another paper, that "Using a Measure of Dispositional Optimism to Identify At Risk Businesses Following A Natural Disaster" could be of more use than physical damage in identifying those businesses most at risk and in need of assistance following a disaster.

In terms of Sociological Studies of Recovery, Clifford Staples' Sociology 102 class surveyed "Student Concerns about Returning to UND after the Flood of April 1997," and found, among other things, that 58.2% of all returning students were concerned about the possibility of another flood before they graduated; and those students with the most concerns were: students who had received the most flood damage, undergraduates by increasing grade, and females (vs. male) students. Students in residence halls expressed the least concerns (compared with students in all other housing). Elaine Enarson's "Women and Housing Issues in Two U.S. Disasters: Case Studies from Hurricane Andrew and the Red River Valley Flood," identifies how gender-specific housing knowledge can pinpoint disaster vulnerabilities and be used as a mitigation strategy toward building more disaster-resilient households and communities. Enarson indicates some additional findings from her interviews in the Grand Forks/East Grand Forks area in "Women, Work, and Family in the 1997 Red River Valley Flood: Ten Lessons Learned." These two reports, dealing with United States recovery, compliment and can be compared to her work in Canada with Joseph Scanlon on "Gender Patterns in a Flood Evacuation: A Case Study of Couples in Canada's Red River Valley," which finds that stereotypic gender patterns became more prominent and to varying degrees disproportionately disadvantaged women. The study

asks for emergency management initiatives to address gender power and inequality in order to help mitigate disasters. Other Canadian studies by Karen R. Grant and Nancy C. Higgitt on disaster/relief workers and the social and health impacts of the flood on women are still ongoing (with findings unavailable). Alice Fothergill's research in Grand Forks, "Women in Disasters: Recreating Everyday Lives in Extraordinary Times" is still ongoing (with findings unavailable for the full research), however Fothergill's article "Women's Roles in a Disaster" indicates that despite women's role conflicts between community, family, and work, their successful performance of these expanded roles often led to a new sense of confidence, self-worth, and competence. Morten G. Ender, Carol A. Hagen, Clifford O. Hagen, Jr., Corina A. Morano-Ender, and Kathleen A. Tiemann report that the role of a sociologist in disasters can be that of "The Sociologist as Rubbernecker: Photographing the Aftermath of the Red River Valley Flood of 1997." Carol A. Hagen, Morten G. Ender, Kathleen A. Tiemann, and Clifford O. Hagen, Jr. report that distress might be minimized and community solidarity increased through the use of five different types of graffiti in their "Graffiti on the Great Plains: A Social Reaction to the Red River Valley Flood of 1997." Karen M. Davis and Morten G. Ender, in "The 1997 Red River Valley Flood: The Impact on Marital Relationships," find that there is a disaster impact on marital relationships, which is mediated by the prior relationship and the degree of disaster damage; and they call for counseling services, information, and services from disaster response agencies to address this stress.

In terms of Psychological Studies of Recovery, H. Katherine O'Neill, Blake A. Evans, Michael Bussman, and D. Kimberly Strandberg, in "Psychological Distress During the Red River Flood: Predictive Utility of the Conservation of Resources Model," find that threatened or actual resource loss is a key factor in producing psychological distress, which supports an investment in mitigation efforts or the replacement of lost resources in order to reduce distress. J. D. McDonald, S. J. Caraway, K. S. Vickers, A. N. Pate, H. J. Hegstad, M. Westby, T. Decoteau, and A. Storey, in "The Mental Health Response to the Red River Flood of 1997," report on their experiences with mental health disaster intervention and the Disaster Mental Health Response (DMHR) model at the Grand Forks Air Force Base Evacuation site, where blind over reliance on the DMHR and Disaster Response Network (DRN) models placed the entire response at risk.

Among the Domestic Violence Studies, Elaine Enarson's "Responding to Domestic Violence in Disaster: Guidelines for Women's Services and Disaster Practitioners," finds a low level of disaster preparedness among domestic violence programs with disasters leading to

increased demands for service and declining resources. P. E. Clemens, J. R. Hietala, M. J. Rytter, R. A. Schmidt, and D. J. Reese report increased levels of domestic violence in Grand Forks after the 1997 flood with the strongest effects reported in those with lower social support, the elderly, and those with a prior history of violence. Alice Fothergill, in "An Exploratory Study of Woman Battering in the Grand Forks Flood Disaster: Implications for Community Responses and Policies," deals with two case studies of battered women and asks those in disaster recovery to prepare for an increase in the demand for domestic violence services during disasters.

Two Social Work Studies evaluate the human service system. Thomasine Heitkamp's study, "Human Service Providers' Perceptions of System Response to the 1997 Red River of the North Flood," found that disaster-affected service providers appropriately fulfilled their professional duties during and following evacuation; and those providers reported improved agency relationships and increased and improved client services after the flood. Thomasine Heitkamp's study, "An Evaluation of Grand Forks Area Flood Recovery Services," is still ongoing (with findings unavailable until September).

The following Social Service Reports of the Recuperation of the Human Services System were published in The North Dakota Journal of Human Services. The overview, "Delivering Human Services in a Time of Disaster: The Flood of 1997: An Overview," was written by R. L. Sanderson, D. W. Stennes, and M. J. Veenstra. Various agency reports follow: D. E Braaten reports on the recovery of "Grand Forks County Social Services," R. L. Johnson on "Mental Health Services," S. V. Stennes and N. R. McDonald on "The Developmentally Disabled," M. E. Baumann, N. Andrews, C. J. Brakel, and E. M. Kathman on "Senior Trip: The Flood Evacuation of Grand Forks Senior Citizens," I. M. Dybwad and K. M. Kenna on "Foster Care," D. E. Herbeck on "Juvenile Justice System," B. B. Hansen on "Grand Forks County Corrections," K. M. Kenna and R. L. Slavens on "Child Care: Unity Among the Christians, Lions and Others," D. R. Sturn on the "Ruth Meiers Adolescent Center," H. A. Schimmelpfennig on "Vocational Rehabilitation," and B. M. Kramer, J. G. Regimbal, and D. J. Chaput on "Disaster Outreach: A Unique Private/Public Collaboration." The last few stories give a more personal view of the "helpers'" struggle to assist others, despite being victimized by the flood themselves: S. Brustad "Disaster Recovery: A Student's Perspective" of the recovery at Northeast Human Service Center, R. LaQua Rott "A Client's Story," a psychologist's story in H. Pederson "A River Runs Over It," and T. L. Muhlhauser on "Giving and Receiving: The Lessons of Volunteerism." K. J. Dawes

concludes the journal with "Lessons Learned: A Summary."

II. GOVERNMENTAL RESPONSIBILITY AND OVERALL RECOVERY

TITLE OF ARTICLE: Flood Hazard in the Red River Valley: A Case Study of the Grand Forks Flood of 1997

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CITATION TO A PUBLISHED ARTICLE: Todhunter, P. E. (1998). Flood hazard in the Red River Valley: A case study of the Grand Forks Flood of 1997. North Dakota Quarterly, 65(4), 254-275.

SUMMARY: Natural hazards result from the dynamic interaction between human society and the physical environment. Humans continually adapt and adjust to threats posed by nature in order to maximize resource use and to minimize damages. In this article, the author presents a conceptual model of the flood-hazard system based upon the human ecology of natural hazards (Mitchell et al. 1989, Chan and Parker 1996). This flood-hazard system consists of four separate flood-hazard components ((1) Flood Risk, (2) Flood Exposure, (3) Response to Flood Hazard, (4) Flood Damages) which interact with one another through seven linkages or feedback relationships. (1) Flood Risk is determined by physical flood-producing processes, is measured using concepts of probability, and can be affected by human populations. (2) Flood Exposure is a measure of the human populations, land uses, and economic investments located in flood-hazard areas which are at risk from flooding. If humans perceive that the threat of flood losses exceeds a threshold level of acceptance, they (3) Respond to flood risk by adaptations and adjustments to reduce flood exposure, or to directly modify the flood risk. Flood risk is never entirely eliminated, however, leading to inevitable (4) Flood Damages and may result in modified human exposure or new responses if the losses are deemed unacceptable. A series of flood-hazard contexts also influence each flood-hazard component. These contexts change over time, are geographically unique and are largely independent of the flood-hazard components, and modify the flood-hazard components and linkages (Mitchell et al. 1989, Chan and Parker 1996). Also, the human response is limited to a temporal "policy window."

In the Grand Forks situation, the magnitude of future flood risk is, if anything, likely to be increased due to climate change, and continued urbanization and land use changes, so that a future flood of comparable or greater magnitude than the 1997 flood is probable (Sando 1997). The Red River of the North drains 39,200 sq. miles in the U.S. and includes several characteristics which increase flood risk and make severe flooding a frequent regional problem (Miller & Frink 1984; Harrison & Bluemle 1980). First, the geology of the basin consists of a "flat" glacial lake plain and a main channel which is undersized for the drainage area. Second, topographically, the slope of the tributaries is several times greater than the slope of the main river channel, which causes water to drain from the tributaries faster than it can be transported along the main stem. Third, the climate has an average precipitation (that varies from 16"/yr in the west to 24"/yr in the east) that is random, and several wet years enhance risk; heavy snowfall is the greatest risk (varying from 30"/yr in the west to 60"/yr east); and rapid, late spring snowmelt contributes to the flood hazard. Fourth, the soil is made up of a heavy clay that has a limited capacity to absorb rain and snow and is further reduced in capacity by successive wet years, heavy fall precipitation, and a deep frozen soil layer. Fifth, hydrologically, 85% of peak streamflows are from spring flooding with high-flow years followed by high-flow years. The timing of peak flows from the Red River to the south and the Red Lake River (35-40% of the total) to the east, complicated by ice jams, adds to the potential for flooding. Sixth, these problems are compounded by human action. Conversion of native prairie and forests to other land cover types results in a larger volume of surface runoff and a more rapid removal of surface water, which lead to increased flood peaks. Conversion to urban uses produces even more dramatic changes, and the presence of four bridges in Grand Forks can increase river stages by up to a foot. Additionally, 50% of wetlands have been drained, and agricultural lands

are drained. However, by reversing these trends, Galloway (1995) concluded that extensive restoration of wetlands would probably only impact flood stages in smaller magnitude high-frequency events, such as a 25-year flood and not the high magnitude low-frequency events such as occurred in 1997.

The flood risk and hydrologic factors of 1997 are now legendary with heavy fall precipitation and winter snowfall leading to 10-20 inches of basin-wide water equivalent totals for the 8 months of Sept-April; then late snowmelt disrupted by a major blizzard of 1.5-2.5 inches of water equivalent, followed by a rapid transition from winter to spring. Water from the Fargo main stem and water from the Red Lake River converged upon Grand Forks after an ice jam broke up along the Red Lake River. The peak discharge at Grand Forks of 137,900 cubic feet per second on 18 April 1997 was 62% greater than the next largest flood recorded in 1979, and the peak river stage of 54.35 ft. on 21 April 1997 was 5.47 ft higher than the next largest flood. Once the dikes and levees were topped, floodwaters spread laterally across the flat glacial lake bed. It is sobering to think that an even larger flood could have happened had rainfall fallen during the snowmelt period.

The single most important factor affecting flood exposure is population growth, with Grand Forks growing from 39,008 in 1970 to 49,425 in 1990. Since 1970, development occurred in areas thought to be outside the 100-year floodplain, but new boundaries must now be drawn and essentially the entire city is located within the 500-year floodplain. Further, urban expansion and increased home investment (with substantial remodelling of basements between 1979 and 1997) resulted in a significant increase in the dollar value of structures and contents exposed to flooding.

Responses to flood hazard in the Red River basin included over-reliance on structural measures to control flooding, over-confidence in the role of technology and management in flood mitigation, growing national support for environmental amenities, and limited state and local resources to cover the local cost-share for flood-protection structures. Indeed in the past, the United States emphasized a technocentric approach, which makes primary use of engineering and technology to reduce flood losses through the control of water, mapping of flood-hazard locations, flood forecasting, and emergency defense measures (Jones 1993). Through the early 1960s, especially, many flood control measures such as dams, dikes and levees were built in the Red River Valley region. In Grand Forks, in the 1950s-1970s, levees and floodwalls were built piecemeal along the river, mostly by the U.S. Army Corps of Engineers. Levees built in this fashion are less stable and provide uneven protection; and like all levee structures, narrow and disassociate the river channel from the floodplain, thus constricting and producing a higher river stage. A more permanent levee was never built because the local cost share could not be guaranteed. The passage of the Flood control Act of 1960 initiated a second phase of flood mitigation approaches, which emphasized nonstructural methods to reduce flood losses. These methods focus upon a "technological and management fix" by stressing the use of flood-hazard information; and the primary nonstructural measures that have been employed include flood forecasting and emergency preparedness planning, flood-proofing of structures, land-use control, flood insurance, and flood relief and rehabilitation. A major component of this phase, consisted of the passage of the National Flood Insurance Act of 1968 and the formation of the National Flood Insurance Program (NFIP). Flood insurance rate maps delineate the 100-year floodplain and flood insurance is required on all property secured by a federally guaranteed loan within the 100-year floodplain with the goal to decrease future flood losses by regulating future floodplain development and to have property owners assume a greater share of future flood losses by purchasing insurance. Grand Forks elected to participate in the NFIP in the mid-1970s. The 1997 Grand Forks flood was a spectacular example of the failure of flood forecasting systems and emergency preparedness plans to reduce flood damages as ever rising forecasts failed to prepare the city. The public, many of them believing in diking and forecasts, failed to purchase flood insurance.

Flood damages in the Red River basin are estimated at nearly $3.6 billion; and in Grand Forks, $800 million for residential and commercial property, $300 million for personal property, and $200 million for infrastructure and institutions. A final loss estimation which considers all losses has not been completed, but a total of 75,000 North Dakotans evacuated during the regional flood, including nearly 50,000 in Greater Grand Forks (IRRBTF 1997).

The conceptual model presented is a dynamic process, and during the recovery of Grand Forks, the city is given a chance to respond to the flood conditions. To mitigate flood risk, exposure, and damage, structural flood-control works will, first, have to be improved to provide protection for existing structures and, second, future urban growth will need to be directed toward less hazardous locations. Flood risk, exposure, and damage was mitigated by the federal flood recovery package and by the National Flood Insurance Plan, which required that homes and other structures in the 100-year floodplain with over 50% damage cannot be repaired or rebuilt at existing locations, and at least 800 homes must be demolished or relocated to sites outside the 100-year floodplain.

Several fortuitous circumstances have worked toward expediting the flood recovery: television's stunning visual images of the flood and fire helped create support for the federal flood-recovery economic package, and by good fortune, the most available land happens to be in on the least flood-prone land (where retail along 32nd Ave. S., the Aurora in the southwest, and a relocated middle school and golf course along 47th will promote urban growth).

Floodplain management has a difficult time capturing political attention. Only during low-probability-high-consequence events, such as flooding, does the topic capture the attention of the public and local officials, and then there are brief, temporary periods, "policy windows," during which the disasters become the focus of political discussion and during which innovative hazard-management policies may be formulated and implemented before such policy windows again close and fade from memory. In Grand Forks the involvement of the Corps of Engineers provides a unique opportunity for the Greater Grand Forks community to replace the present system with a comprehensive, carefully designed, high-quality construction flood-control system and greenway. Much of the postdisaster policy window was spent, however, investigating a combined diversion and levee system which fell well below federal benefit-cost requirements. The subsequent setback levee system proposed by the Corps of Engineers met considerable local opposition once citizens realized how many places would need to be razed to accommodate the higher dike and wider river channel (Glassheim 1997). The salience of flood protection and hazard management as a policy issue has rapidly declined and been replaced by other policy issues of lesser magnitude but more immediate concern, such as retaining the city's tax base, providing housing, supporting small businesses, maintaining a strong downtown, preserving historical buildings, increasing the size of the work force, and economic development (Glassheim 1997).

As Grand Forks recovers, a third phase of floodplain management is being advocated, which accommodates the many and varied natural functions of flood-plains (Kusler and Larson 1993). Rather than emphasizing engineering and management methods, this approach, sometimes called multiobjective river corridor management, takes an ecological approach and views rivers and floodplains as parts of an integrated natural system. Grand Forks, a city founded at the forks of two great rivers (Les Grandes Forches) and whose citizens are imbued with a "flood culture," has a unique opportunity to become a national leader in adopting a new floodplain management paradigm. An alternative possibility, however, is that we will maintain the status quo by discounting the possibility of a future devastating flood and continue to rely upon the same set of structural and non-structural measures. Politics is "the process by which a society makes authoritative decisions about the allocation of value" (Changnon 1985). Hydrologic considerations are merely one of a mix of social, political, and economic factors considered in the management of floodplains (Tobin 1995). Our national program of federally-funded flood-control structures, subsidized insurance, and disaster relief and recovery assistance has removed many of the economic incentives which would limit human exposure to floods. The strong land-use controls necessary to reduce flood losses may simply rub too hard against basic American values for the implementation of more effective plans. The popular support of structural measures, flawed perception of flood risk, the emergence of a broad federal disaster relief and assistance bureaucracy, unprecedented national economic prosperity, and the willingness of elected officials to demonstrate their concern by dispensing federal largesse all provide tremendous incentives for maintaining the status quo with regard to the management of our national floodplains. Although economically inefficient, our national flood mitigation policy "works" in a peculiarly American way by balancing an often conflicting array of diverse interests.

TITLE OF RESEARCH STUDY: Who Decides? Forecasts and Responsibilities in the 1997 Red River Flood

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CITATION TO A PUBLISHED ARTICLE: Pielke, Jr., R. A. (1999). Who decides? Forecasts and responsibilities in the 1997 Red River Flood. Forthcoming in Applied Behavioral Science Review, 35 pp.

SUMMARY: The interviews on which this research is based were conducted by the author as part of the National Weather Service (NWS) Survey Assessment Team which evaluated the agency's performance leading up to and during the flood, but the findings are those of the author and not of the Survey Team. After the 1997 Red River of North flood, many individuals blamed the NWS for poor forecasting, however this responsibility must be shared with local officials and residents who misunderstood the uncertainty of forecasts and misused the information in the forecasts by basing their preparedness solely on NWS figures. While the NWS intended to send the message to expect unprecedented flooding, many individuals mistakenly viewed the NWS predictions for Grand Forks-East Grand Forks of 47.5 (for average temperatures and no precipitation) and 49 feet (for average temperatures with precipitation) as a range or as maximum flood stage readings rather than as predictions. Individuals misused this information to such an extent that while 95% of Grand Forks respondents to a survey announced that they were aware of flood insurance, 79.6% reported that the forecasts led them to conclude that flood insurance was unnecessary. In reality, an analysis of crest stage outlooks issued from 1982-1997 indicates that there is considerable uncertainty in the outlooks, with the average error at East Grand Forks being about 3.5 feet and the average outlook percentage error being 11.5%. To further compound the problem, hydrological modelling is based on experience; and at record flood stages, uncertainty is compounded by a lack of relevant experience. While the NWS ought to have known more about the effects of the bridges on the flood stage, and an enhanced communication with the U.S. Army Corps of Engineers might have given the NWS a more accurate rating curve, this still would not have saved the cities. A more appropriate forecasting process would have provided local decision makers and the public with probabilities of different levels of inundation and information about the limits of predictability. This would have shifted the responsibility to the local decision makers where it should be.

The author cites four bodies of experience that might contribute to effective implementation of probabilistic flood forecasts: (1) the 1997 flood response in Fargo, where a higher than observed crest was forecast and sensitivity analyses were run by Fargo officials to largely save that city, (2) an analysis of the Advanced Hydrological Prediction System (AHPS) that was used in the Des Moines River basin for flood forecasting and which is expected to have the capability to generate probabilistic predictions of river stage levels up to several months in advance, (3) the use of probabilistic forecasting by the U.S. National Hurricane Center, and (4) the use of probabilistic rainfall forecasting by the Australian RAINMAN software package.

The author concludes that while flood forecasting has an important role to play in the nation's efforts to reduce its vulnerability to damaging floods, he believes that more attention must be paid to the use and misuse of forecast products along five lines: (1) The NWS needs to better understand the uncertainty inherent in its own outlooks and forecasts. Information about uncertainty and predictability has potential value to decision makers. (2) The NWS needs to explore how to better communicate uncertainty to decision makers. Misuse of predictions can lead to greater costs than if no prediction were provided. (3) Local decision makers need to explore ways to become more forecast-independent. Less

reliance on forecasts will reduce the effects of uncertainty. (4) Responsibility for flood flight decision making belongs at the local level. The NWS should not place itself in the position of determining how much risk a community should face. (5) The policy research community needs to focus more attention on understanding the actual use and misuse of predictions. As the forecast community develops a greater range of more sophisticated products, more attention will have to be paid to their appropriate use. Misuse of predictions can result in large costs and loss of support for NWS activities.

TITLE OF RESEARCH STUDY: A River Runs Through It: Cross Border Interaction During the 1997 Red River Flood

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DURATION OF STUDY: April 1997-December 1998

AUTHOR'S ABSTRACT (findings unavailable): Research on intergovernmental organization traditionally concentrates on interrelations between different levels of government. Disaster research literature is consistent in this approach to the study of intergovernmental organization, and generally explores relationships between federal, state, and local levels of government during an emergency. Effective disaster management often involves the coordination of multi-agency, intergovernmental response, the complexity of which escalates when two autonomous systems of emergency management must work together. Systems of emergency response typically organize according to political jurisdiction, while the impact of a major disaster rarely respects political boundaries. Despite the prevalence of transnational disasters, there is a lack of systematic research that studies how governmental systems interact and coordinate during cross-border emergency response.

Focusing on the 1997 Red River Flood in Canada and the United States, this paper examines structural aspects of transnational organization which arise during the warning and response phases of an international cross-border disaster. Findings are based on interviews with sixty two government officials and non-governmental organization representatives from both sides of the international border, as well as an analysis of government reports and cross-border agreements. A grounded theory framework allowed for an examination of the interaction structures, including their degree of informational and response implementation dependency; whether or not the countries utilize formal and informal processes in their decision making and communications; the extent to which standardization inconsistencies affect the disaster response; and finally, whether cross-border interaction occurs primarily between centralized emergency organizations or decentralized agencies involved in flood-fighting efforts. A full report is yet to come.

TITLE OF ARTICLE: After the Disaster: The Intergovernmental Context of Disaster Recovery, 1998, 28 pp.

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SUMMARY: The authors use the Grand Forks 1997 flood disaster as a case study to evaluate the effectiveness of governmental disaster management in helping a city deal with major destruction by comparing the goals cited within governmental disaster management literature to the Grand Forks Herald newspaper reporting of the response and rebuilding of Grand Forks. Federal disaster policy emphasizes the primacy of local government initiative, with higher levels of government becoming involved only if the disaster creates challenges beyond the ability of the local level. With the severity of the Grand Forks/East Grand Forks disaster, two states and the federal government became involved immediately. The authors contend that the intergovernmental involvement led to a "disconnected, uncoordinated, underfunded, and discredited" recovery for Grand Forks around three crucial aspects of intergovernmental relations: (1) capacity, (2) communications, and (3) control.

First, disaster policy relies initially on capacity at the local level, when in reality local administrative authority frequently is ill-designed to deal with major challenges. Local authority is usually highly fragmented, with no one administrative office possessing the authority to exercise coordination. Local leaders are usually part time (as in Grand Forks) and lack the time and training to oversee major policy initiatives. Finally, financial capacity is limited. In the case of Grand Forks, planning for the flood fight was done locally, but it became quite clear that Grand Forks and even the state of North Dakota did not have the capacity for planning, programs, or financial backing to deal with the disaster; and all three levels of government became involved before the flood occurred. The federal government became involved through its presence at the Grand Forks Air Force Base (in sandbagging and then housing evacuees). Secondly, the federal government is supposed to wait for the state to ask for a declaration of a natural disaster, but that had already occurred for the whole state of North Dakota on April 6 in the aftermath of the last winter blizzard. National Guard units were mobilized on April 10 to join the fight against the flood. Finally, the severity of the floods and fire generated such media attention that the President appeared in Grand Forks on April 22, three days after the evacuation. Since the local government of Grand Forks lacked plans for recovery, other agencies stepped in. The Army Corps of Engineers distributed future dike plans. HUD supplied one million dollars for planning consultants.

The intergovernmental context became much more complicated. At this point communications must flow smoothly, when in reality the establishment of clear channels of communication within and between organizations is a common management problem. Even before the flood, this problem occurred when the U.S. Army Corps of Engineers predicted the Red River crest would reach 54 feet, but this information was not shared with the National Weather Service, the agency predicting much lower flood crests for the cities.

An even larger problem consists of who is in control? The current policy assumes a smooth progression of action from the local level to the states and from the states to the national government, when in reality the actual process does not function smoothly. Each level of government and each unit of government tends to view the situation from differing perspectives and FEMA does not have the power to impose coordination on those involved. In the case of Grand Forks, the federal government was already involved, so the city looked primarily to it for assistance. The North Dakota governor, feeling left out, expressed criticism of the slow action of Grand Forks when the city was waiting for Housing and Urban Development (HUD) funding tied up in federal government politics (with legislative riders, Presidential vetoes, and other delays). The governor believed the city should come to the state of North Dakota first, but when Grand Forks turned to him he was unable to deliver funding as he hoped. At the time, two major projects (the dike and a consolidated county office building) were held up in the state legislature under great controversy. Grand Forks did receive some other state funding. As of January 1998, the state had provided $9,041,785 or 2.96% of the assistance. It did provide a $25 million line of credit to the city through the North Dakota State Bank. It offered to provide the 10% local share of federally funded projects. The governor promised that the state would pay half of the city's dike costs (although this was still undetermined and held up by legislative approval), and the governor approved Grand Forks' request for $14 million of Division of Emergency Management monies (which was in reality Federal Emergency Management Agency or FEMA funding). Overall, the federal government

was supplying the greater share of funding. In total by that date, FEMA had provided $59,453,566 (19.44%) and HUD or Community Development Block Grant monies provided $171 million (55.92%) of all of the funding. These agencies were joined by the Small Business Administration (SBA) in the city's Urban Development headquarters.

This central location did help to facilitate coordination, however, it was unable to consolidate the proliferation of variant plans for the city's recovery. At the local level, the city of Grand Forks was struggling with the requirement that it be the architect of plans for its own redevelopment. It became clear at the city council meeting on May 13, 1997 that the council was too cumbersome to wrestle with the problems. The mayor streamlined the process by designating three city employees to be co-chairs of rebuilding: the city engineer, the director of community development, and the city auditor. She also established a Task Force on Business Redevelopment composed of fifteen of the community's major "movers and shakers." This Task Force created seven subcommittees and appointed chairs. One subcommittee, the Permanent Flood Protection Subcommittee contested the Corps of Engineers dike plan, took a group of 45 residents to view the Winnipeg diversion, and hired its own consultants to contest the Corps' estimates of the cost of building a diversion. Eventually this group had to relinquish its goals for diversion when the Grand Forks City Council opted for the revised Corps' dike plan, citing the financial costs. Further, the subcommittee had not coordinated its efforts with East Grand Forks, and East Grand Forks (with the financial backing of the state of Minnesota) had already approved the Corps' plan. If East Grand Forks were to build dikes and Grand Forks did not, Grand Forks would be obliterated.

A second Task Force subcommittee, the Re-imagining Downtown Subcommittee did sponsor a charette or brainstorming session and presented a downtown plan based on the charette on August 12, 1997. However, other plans were being suggested by HUD consultants (the Camiros Group and the Sedway Group for Real Estate and Urban Economics), the Urban Land Institute (ULI), the Downtown Development Commission, the Grand Forks Planning Department, EQE International of San Francisco (hired by the city to construct a community plan), the Metropolitan Planning Organization (comprised of Grand Forks and East Grand Forks city and county members), and the River Forks Commission (a group of citizens that had formed before the flood to try to revitalize the downtowns of the two cities). The result was a number of uncoordinated and conflicting plans, whereby a bi-state Red River Park was planned without consulting the local and state park districts, and whereby one group placed a parking lot or buildings where another group planned green space, etc.

Clearly a major problem was the multiplicity of plans being produced to rebuild Grand Forks. Different agencies and different levels of government were hiring their own consultants to produce plans. Unfortunately, those agencies and levels of government were not always consulting with each other. This situation is the inevitable result of disaster policy that assures that following a major disaster multiple agencies of all three levels of government will be involved. The bi-state nature of the situation aggravates the confusion. Different regional offices of the Corps and FEMA are responsible for Grand Forks and East Grand Forks. That means that the actions of the same federal agency may be different on the two sides of the river. While FEMA is supposed to coordinate disaster relief, it does not have authority to control others who might be involved, such as the Army Corps of Engineers, the SBA, or the state government. All must try to find informal ways of cooperating. National disaster policy is designed to assume that local governments should be primarily responsible and should successively involve other levels of government if local capacity is determined to be inadequate. The policy makes sense for most disasters and for those disasters that are localized. But for major disasters and those that are not localized, it means that it is inevitable that there will be multiple government units involved with no one in control. The authors' recommendations (citing Saundra Schneider) include making a distinction between "catastrophic" and "major" disasters. While current disaster policy is appropriate for major disasters, the federal government should be given "first response" capability in catastrophic disasters. Further, (as according to Schneider) the role of FEMA must be strengthened if it is to provide effective leadership in catastrophes. The case of Grand Forks would lend support to those recommendations.

TITLE OF RESEARCH STUDY: Flood Insurance: A Survey of Grand Forks, North Dakota, Homeowners

PRINCIPAL INVESTIGATOR: Ronald Pynn. Bureau of Governmental Affairs, University of North Dakota, PO Box 7167, Grand Forks, ND 58202-7167. Tel: (701) 777-3540. E-mail: pynn@badlands.nodak.edu

CO-INVESTIGATOR: Greta M. Ljung, Institute for Business and Home Safety

FUNDING AGENCY: North Dakota Insurance Department and the Institute for Business and Home Safety (IBHS). The survey was administered by the Bureau of Governmental Affairs, University of North Dakota.

CITATION TO A PUBLISHED ARTICLE: Pynn, R., & Ljung, G. M. (1999). Flood insurance: A survey of Grand Forks, North Dakota, homeowners. Forthcoming in Applied Behavioral Science Review, 10 pp.

SUMMARY: This report presents the results of a survey designed to assess how much Grand Forks homeowners knew about flood insurance and to determine what factors influenced their decision to purchase or not purchase flood insurance. Questionnaires were mailed to 50% (or 3,832) of the 7,664 listed homeowner households in the Grand Forks city directory. The results are based on the 1,861 responses received from the mailing.

INSURED: The survey results indicate that only 20% of the homeowners had flood insurance at the time of the 1997 flood (even after extensive advertising by FEMA about the National Flood Insurance Program). Among those who were insured, 20% were required to buy the insurance by their mortgage lender, which was only 4% of all of the survey respondents. The survey shows that most people (94%) knew about flood insurance, with the most common sources of information being an insurance company or agent, television, newspaper/magazine, or "word of mouth." Those who purchased flood insurance (20%) did so because (1) of record snowfalls, (2) they worried that a flood might destroy or cause damage to their home, (3) most of their family assets were tied up in the home's equity, (4) they believed federal and state assistance would be insufficient for the repairs, and (5) the cost of insurance was considered affordable, with roughly 75% reporting the cost to be less than $301.

UNINSURED: Those who did not purchase insurance (80%) cited (1) the National Weather Service's conservative crest predictions, (2) the belief that dikes and flood control devices would provide adequate protection, and (3) the belief that the flood would not damage the home. Less influential, but still important, was (4) the lack of awareness of flood potential and (5) the fact that they were told that flood insurance would not cover basement losses. (6) Nearly 20% indicated that insurance agents specifically had convinced them that flood insurance was not necessary or worth the cost (with the two most common reasons being that the "residence was not located in the floodplain/didn't think we'd flood" and "the policy would not cover enough"). Others indicate (7) that lenders did not require it. Over one-third (39.7%) of the uninsured respondents had inquired about flood insurance and then decided against it.

DEMOGRAPHICS: Long-term residents were less likely to have flood insurance, with only 13.9% of those who had resided at the same address for 16 years or more having flood insurance, compared to 24% of those who had been at the same address for 15 years or less. Only 12% of respondents aged 60 or over were insured compared to 23% of respondents under 60 years of age. In homes with no children, which included 61% of the sample, 17.7% had flood insurance compared to 23.3% of the households with children living at home. Homes at the two extremes of the assessed

valuation scale, i.e. below $51,000 or above $101,000, were more likely to have insurance, while moderately valued homes in the $51,000-$101,000 range were less likely to be insured. Eleven percent of the respondents reported having experienced a previous natural disaster and 5.4% reported that their present house had suffered damage from a flood. Of those who had been through a prior flood, 30% had a separate policy for flood insurance, although 15% of these were required to have this insurance by their mortgage lender. Of those who had been through a prior flood, only 26% bought the flood insurance voluntarily; however, 78% took action to minimize the damage (moving furniture to higher ground, moving belongings, sandbagging the house, or purchasing a sump pump). Sixty nine percent of all respondents reported taking some pre-flood mitigation measures with the highest level of mitigation occurring in the wealthier precinct west of Columbia (which borders the English Coulee) where many homes are in the $101,000-201,000 range. The second highest level of mitigation occurred along the Red River where a higher proportion of homes are assessed in the lower $76,000 to $101,000 range. In precincts bordering the Red River, 27.2% of the residents were insured; and in precincts west of Columbia (English Coulee), 25% of the residents were insured. These were higher rates than among those residents in other areas of the city.

In an earlier draft of this paper the following was reported:
The results of the first 1,200 responses to this survey were presented at a flood summit held in Grand Forks on August 12-13, 1997, hosted by the North Dakota Insurance Department and co-sponsored by FEMA, the Federal Insurance Administration, and the Institute for Business and Home Safety (IBHS) in Boston. The purpose of the Summit was to examine ways to increase participation in the National Flood Insurance Program, and the recommendations of the Summit were to provide better training for insurance agents, lenders, local officials, and citizens; improvements of flood maps; continued emphasis on lender compliance with flood insurance requirements; and increased emphasis on advertising and public outreach by the Federal Insurance Administration.

TITLE OF PROJECT: ND Museum of Art 1997 Oral History Project:
(1) General Oral History Project outlined in the following paper by Kimberly Porter: "Flooded Memories: Preserving the Pain of the Nation's Worst Natural Disaster," 18 pp. (Paper presented at the Southwest Oral History Association Conference, Albuquerque, New Mexico, April 25, 1998)
(2) Grand Forks City Government Oral History Project
(3) A Narrative Outline of the Flood

PRINCIPAL INVESTIGATOR: Kimberly K. Porter, Assistant Professor, Department of History, PO Box 8096, University of North Dakota, Grand Forks, ND 58202. Tel: 701-777-6230 E-mail: kporter@badlands.nodak.edu (Or contact the ND Museum of Art, University of North Dakota campus, Grand Forks, ND 58202. Tel: 701-777-4195).

FUNDING AGENCIES:
(1) The first project was sponsored by the ND Museum of Art. They provided tapes and transcription.
(2) The second project was sponsored by the Grand Forks City Government. They paid expenses: stipends for her and her assistant, postage/stamps, tapes, transcription, office supplies, telephone calls, etc.
(3) The third project is sponsored by the Grand Forks City Government. They are paying for expenses: stipend, tapes, transcription, administrative fee, etc.

GRANT AMOUNTS: (1) Costs unknown.
(2) The second project may have cost close to $15,000.
(3) $35,000 has been designated for the third project.

DURATION OF STUDIES:
(1) May/June - September 1997
(2) October 1997 - Summer 1998
(3) Spring 1999 - ongoing

CITATIONS OF BOOKS TO APPEAR FROM THE ORAL HISTORY PROJECTS:
(1) Forthcoming for the first project: Glassheim, Eliot (Ed.). (1999). Voices from the Flood. Grand Forks, ND: North Dakota Museum of Art.
(2) Forthcoming for the second project (working title): Glassheim, Eliot (Ed.). Behind the Scenes. Grand Forks, ND: North Dakota Museum of Art.

ABSTRACT: (1) The general oral history project consists of approximately 400 individual recordings on nearly 550 hours of tape recorded by 40 volunteer interviewers. The two goals of the oral history project were: first, the creation of an archive of raw material detailing the flood for students and scholars--historians, sociologists, anthropologists, psychologists, economists, linguists, etc.--to examine, reflect on and use as primary sources for articles and essays; and second, to make sense of the flood personally and for the disciplines, while simultaneously offering a commemoration of sorts to the community. They attempted to gather the stories of people from all walks of life--city officials and workers who had conducted the most courageous of battles, residents whose homes were totally destroyed, business people who lost a lifetime of work, young people who helped build the dikes, elderly who were carried from their homes on payloaders, the residents of neighboring towns who provided refuge to exiles, inmates from the county jail who suddenly found themselves housed in Lutheran churches, financially strapped individuals, the national guard, the Red Cross, clergy, firefighters, newspaper editors, police officers, etc. As the summer wore on they worked specifically on gathering the stories of those individuals who would soon disappear from the community. They also collected a room full of documentation--approximately 700 hours of local radio coverage, photographs, video, city memorands, Red Cross hand-outs, Salvation Army pamphlets, and FEMA brochures. The interviews, which provided a therapeutic role for the community, also provide a treasure trove of material illustrating the economics, leadership and communications channels of a natural disaster, insight on gender relations and generational responses, our bright and shining moments, as well as commentary on our darker side: domestic violence, child neglect, truancy, alcoholism, suicide and drug abuse.
(2) Another 60 or so people were interviewed from the Grand Forks city government.
(3) Presently Kimberly Porter is writing a narrative outline of the Grand Forks flood of 1997.

III. ECONOMIC AND BUSINESS RECOVERY

TITLE OF ARTICLE: Economic and Demographic Outlook for the Grand Forks Area, 22 pp.

PRINCIPAL AUTHOR: F. Larry Leistritz

CO-AUTHORS: Dean A. Bangsund, and Randall S. Sell

FUNDING AGENCY: Prepared for First National Bank, North Dakota, May 1997

AUTHOR'S ABSTRACT/FINDINGS: The purpose of this study was to assess the economic and demographic outlook for the Grand Forks area. The specific objectives of this report were to: (1) assess the long-term economic and demographic potential of the Grand Forks area in the absence of the 1997 flood (baseline projection) and (2) examine the experience of communities that have suffered similar disasters, focusing on the extent of economic and population recovery achieved and the time frame for post-disaster adjustment.

In North Dakota, the five major activities in the economic base consist of: agriculture, federal government outlays, manufacturing, tourism, and energy (although energy is not a significant factor in the Grand Forks area). While the economic base (or sales for final demand) for State Region 4, which encompasses Grand Forks, Nelson, Pembina, and Walsh counties, increased 11.4% in real (inflation adjusted) terms from 1990 to 1995 after the stagnant period in the 1980s, the composition has shifted. In 1980, the region's sales were broken down by agriculture (48%), federal activities (35%), manufacturing (13%), and tourism (3%). By 1995, federal activities (46%) had become the largest component followed by agriculture (34%), manufacturing (12%), and tourism (7%). The large role of federal activities reflects (1) the important role of the Grand Forks Air Force Base (GFAFB), (2) the federally-funded research conducted at the University of North Dakota (UND) and affiliated research laboratories, and (3) the growing importance of federal transfer payments as the area's population ages.

The total employment in State Region 4 increased steadily from 1980 to 1995, with a growth of 25.8%. All sectors except agriculture and construction experienced employment growth during the period. The three sectors with the highest employment levels in 1995 were government (GFAFB & UND), services, and retail trade, while manufacturing employment increased by 46% from 1985 to 1995. Unemployment rates were low at 3.1% in State Region 4 and 2.4% in Grand Forks County.

In terms of population, Grand Forks County and the cities of Grand Forks-East Grand Forks have been areas of growth with decline in most of the outlying area (of six surrounding counties), with an overall seven-county area population gain of 5.5% during the 1970s, a decrease of 2.8% during the 1980s, and a further decrease of 1.4% since 1990 due to outmigration.

Baseline projections of the economic and demographic potential of the Grand Forks area in the absence of the flood were developed using the North Dakota Input-Output Economic Projection Model (Coon and Leistritz 1989) and the companion North Dakota Demographic Projection Model (Coon et al. 1988). The economic projections for four of the five major activities follow. For agriculture, crop prices were projected to continue relatively strong in 1997 and crop sales for final demand were projected to increase substantially (21%) from 1995 to 1997, more slowly (about 2.4% annually) to the year 2000, and then much slower (about 0.5% annually) to the year 2010. For federal outlays, transfer payments have been growing rapidly (about 25%) over the past decade, but it appears that future growth will be at somewhat lower rates. Federal budget pressures are also expected to constrain future growth in federal research expenditures to rates somewhat lower than historic rates. The Grand Forks Air Force Base (GFAFB), which recently employed between 5,000 and 6,000 persons with Department of Defense expenditures in Grand Forks totalling about $204 million in 1995, is losing the 150 Minuteman III missiles of the 321 Missile Wing because of the Base Realignment and Closure process completed in 1995. The result will be a loss of 1,925 jobs (1850 military and 75 civilian) at the base and a reduction of expenditures to the local economy of about $84 million annually. The projections for manufacturing are

for continued growth at a rate of about 1% per year to the year 2000 and a slightly lower rate (about 0.9% per year) through 2010. Tourism expenditures in the Grand Forks area are projected to grow slowly (about 0.6% per year) throughout the period from 1995 through 2010.

The projections for employment show total employment decreasing between 1995 and 1997 and growing slowly thereafter. The decrease is attributable to the realignment at GFAFB, which results in a loss of 1,925 jobs directly and an estimated 3,400 indirectly (because of reduced expenditures by the base and base personnel). Employment does not return to its 1995 level until about 2001.

The population projections show modest growth in Grand Forks County, offset by population decreases in the outlying counties. Grand Forks County is projected to add about 443 residents by the year 2000 and 1,742 more by 2010. The four-county region would lose about 710 residents from 1996 to 2000 and 1,323 more by 2010.

Overall, the baseline projections indicate the potential for continued economic growth in the Grand Forks area, although future growth is expected to be somewhat slower than during the early part of the 1990s. The realignment at the GFAFB will have a substantial negative economic impact on the Grand Forks area during the latter part of the 1990s, resulting in a loss of about 1,925 jobs directly and another 3,400 indirectly. While the impacts of realignment are projected to be partially offset by strong performance of the agricultural sector, total employment in State Region 4 (SR 4) is projected to decrease by 0.8% from 1995 to 2000, compared to an increase of 8.2% from 1990 to 1995. After the impacts of the realignment have been absorbed, total employment in SR 4 is projected to increase 3.7% from 2000 to 2005 and 2.2% from 2005 to 2010. Total population in SR 4 is projected to decrease by 0.7% from 1996 to 2000, compared to a decrease of 1.3% from 1990 to 1996. From 2000 to 2010, a decrease of 1.4% is projected. The population projections for individual counties indicate that the population patterns observed over the past 15 years will continue, with modest growth in Grand Forks County offset by population decreases in the outlying counties.

In examining the experiences of other communities affected by disasters, (including Yuba City, CA flood 1955, Galveston TX hurricane 1961, Conway AR tornado 1965, Topeka KS tornado 1966, Rapid City SD flood 1972, Anchorage AK earthquake 1964, San Francisco earthquake and fire 1906, Managua Nicaragua earthquake 1972, Midwest Floods 1993, Hurricane Andrew 1992, and Hurricane Hugo 1989) we learned that (1) few communities have had experiences analogous to the Grand Forks situation, and (2) few studies have developed rigorous, quantitative analyses of the socioeconomic impacts of disaster events. Nevertheless, a number of useful insights can be gained from the experiences of other communities: (1) Predisaster trends of growth or decline tend to continue after disaster. Rapidly growing cities tend to recover quickly. (2) Small and marginal businesses and low income households may have the most difficulty reestablishing themselves after a disaster. (3) A critical factor affecting the difficulty of recovery is the magnitude of losses relative to the community's resources. (4) Timely and adequate external assistance can facilitate and speed the recovery process.

TITLE OF RESEARCH STUDY: 1) Grand Forks Business Emergency Census: Methodology and Findings, 21 pp.
2) Grand Forks Business Emergency Census: Summary of Results, 2 pp. (presented to the Mayor's Task Force on Business Redevelopment)
3) Grand Forks Emergency Business Census Preliminary Results, 9 pp. (presented to the Mayor's Task Force on Business Redevelopment)
4) Gender Inequality in Business Recovery Following the Grand Forks Flood, 4 pp. (presented at the Annual Meetings of the Midwest Sociological Society, Kansas City, Missouri, 1998)

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FUNDING AGENCIES: Job Service North Dakota, UND Social Science Research Institute, Small Business Development Center, Service Corp of Retired Executives, Grand Forks Chamber of Commerce, UND Division of Continuing Education, US Department of Labor

GRANT AMOUNT: Approximately $50,000 total from the various funding agencies for: mailing, photocopying, Job Service salary monies, and US Department of Labor monies that were funneled to the state and then the city of Grand Forks for survey interviewer salaries. The Service Corp of Retired Executives provided volunteer labor.

SUMMARY: of "Grand Forks Business Emergency Census: Methodology and Findings," 21 pp. Using telephone interviewing between June 11, 1997- September 26, 1997, the authors attempted to contact all employers (profit and non-profit) or sole-proprietorships that were "open for business" in the week prior to the flood (1) to determine the short term impact of the disaster on employers and businesses, (2) to find out what these businesses needed to recover from the disaster, (3) to provide assistance (via referral) whenever possible, and (4) to gather baseline data in order to track the recovery process in the months and years to come. Of the 1,868 organizations in the Grand Forks target population, 1,746 or 93.5% were interviewed. Of the 122 employers with whom they were unsuccessful, 61 refused to be interviewed and 61 were unable to be tracked down or interviewed. Of the 355 "downtown businesses" within the 1,746 population, 335 completed surveys, 6 refused to be interviewed, and 14 were unable to be tracked down or interviewed. The data totals for these 335 "downtown businesses" were extracted from the 1,746 data totals in order to determine the particular problems and needs of the downtown area, which was the hardest hit by the flood and a major concern in the recovery and redevelopment process. The rest of the report consists of the data tables, which are summarized or interpreted in the following three abstracted reports. A few highlights, as told to me by the principal author, are: (1) that the "downtown" businesses sustained more damage (80.0%) compared to the total number of businesses that reported damage (55.6%), (2) the downtown stayed closed longer than the other businesses with it taking 61 days for 90.2% of the downtown businesses to re-open and only 43 days for 89.7% of the total number of businesses to re-open, (3) while 91.2% of the total businesses reported being open at the point of interview, only 77.6% of the downtown businesses were open at that time, (3) over half of the businesses planned to reopen in Grand Forks (54.7% of the total and 57.5% of the downtown) and most of these planned to reopen in their same location (75.3% of the total and 59.5% of the downtown), (4) there was a shortage of labor in the early days and months after the flood, (5) and the flood created "winners" (such as unaffected businesses or types of businesses that increased their business volume) and "losers," (such as downtown businesses or female-owned or operated businesses). (See the last report on gender).

SUMMARY: as listed in "Grand Forks Business Emergency Census: Summary of Results," 2 pp. (presented to the Mayor's Task Force on Business Redevelopment)
Of the 1,746 business (and non-profit organizations) included in the survey,
1) 51% of the businesses own the property where their business was located; 49% rent.
2) 55.6% of the businesses reported sustaining physical damage as a result of the flood.
3) Business property owners were slightly more likely to report experiencing physical damage to their businesses than were business property renters as a result of the flood.
4) 43.7% of the businesses were re-opened within two weeks of the flood (April 19th); 62.2% were re-opened within three weeks of the flood; and 90% were re-opened within 43 days of the flood. 15.3% reported having never closed during the flood.
5) 8.8% of the businesses that were operating the week prior to the flood were not open as of the day we conducted the interview over the summer. Obviously, far more businesses were closed in the early

weeks of our study than in the later weeks of our study, so 8.8% should be considered an average over the course of the summer.
6) 54.7% of the businesses that were closed when we did the interview said they planned to re-open in Grand Forks. The comparable figure was 57.5% for "downtown" businesses. Not surprisingly, 23.3% of the "downtown" businesses said they "didn't know" if they would re-open while the comparable figure for the entire population was 16.7%.
7) Of those businesses that planned to re-open in Grand Forks, 75.3% said they intended to re-open in the same location, but again, not surprisingly for "downtown" businesses the comparable figure was 59.5%, with a higher percentage of uncertainty for the "downtown" businesses than for the entire population.
8) "Financial burden" was the reason given by 55.8% of those who indicated they would not be re-opening their business in Grand Forks; another 16.3% indicated they had "relocated or moved."
9) Of those businesses that had re-opened during the summer, 14.7% indicated when we interviewed them that they were operating from a different location than they had occupied prior to the flood. 75% of these indicated their location was temporary, but some 20.3% indicted that the move was permanent.
10) 17.6% of employers indicated they were offering some kind of incentives to employees to encourage them to return to work as soon as possible. Specifically, 39% were offering some kind of wage or benefit incentives; 20.8% were offering some kind of bonus; and 16.7% indicated they were offering some "flextime" options.
11) 28.4% of employers indicated that the flood had affected their wage rates, with 87.9% of these stating that wages had increased.
12) 55.7% of the businesses reported $45,000 or less in economic losses as of the date of our interview with them, while another 19.2% lost between $45,000 and $150,000. 9.4% said their economic losses were over $150,000.
13) In contrast, 40.5% of the businesses indicated they had experienced an increase in business volume as a result of the flood, with 54.6% of these earning under $45,000, 10.6% earning between $45,000 and $150,000, and 6.0% earning over $150,000.
14) 25.7% of the businesses indicated that upgrading or adopting new technologies was a part of their recovery plan, with 50.4% of these looking to buy new computer hardware or software; 20.6% indicating they were planning to install some new type of manufacturing or processing equipment; 15.1% looking to upgrade their facility; and 7.0% buying new office equipment other than computers.
15) 33.8% of the businesses were planning employee training; 88.4% of this training was to be done "in house" while 6.3% planned to use outside consultants.
16) 34.5% of those we interviewed said they were looking for workers at the present time; with "Services" in greatest demand (21.3%) followed by "Professional/Technical" (19.0%), "Sales" (16.9%), "Operators/Laborers" (11.8%), "Construction/Maintenance" (11.4%), "Managers/Administrators (7.7%), "Clerical" (6.9%) and "Production" (5.3%).

SUMMARY: of "Grand Forks Emergency Business Census Preliminary Results," 9 pp. (presented to the Mayor's Task Force on Business Redevelopment

This presentation, with information compiled for 899 for-profit businesses through July 3rd, presents an early view of recovery with a few interesting results that are not included in the final summary above:
A) An UNEQUAL DISTRIBUTION OF LOSSES AND GAINS across businesses:
1) 431 (48.0%) reported no physical damage to their business as a result of the flood, while 467 (52%) reported damage.
2) Physical damage was recorded in a classic "bi-modal" distribution, with the greatest percentage of firms (33.2%) reporting the least amount of damage (under $10,000) with an almost equal number (28.7%) reporting the highest amount of damage (over $50,000).
3) 342 (39.6%) reported an increase in business, while 499 (57.8%) did not.
4) The largest percent (26.6%) of the 323 businesses who responded reported an increase in the range of

$5,001 to $25,000.
5) Businesses that indicated they had experienced an increase in business volume were concentrated among those businesses that also indicated they had relatively lower levels of loss as a result of the spring's disasters, with the majority (59.4%) of those indicating an increase in volume being concentrated among those business that had not experienced any physical damage. Conversely, those businesses that lost most due to the disasters of the spring were least likely to experience a gain, with 59.6% of all those who did not experience an increase in business being concentrated among those who indicated they had experienced physical damage.
6) Among those businesses in operation, those businesses that had no physical damage indicated that they were operating at an average capacity of 96.64% with relatively little variation in capacity across these businesses (s.d. 32.42%) compared to an average of 83.95% for those who had sustained physical damage, with twice the variation.
7) Those firms that experienced an increase in volume were operating at 108.27% capacity while those businesses that indicated no increase in business volume were operating, on average, at a much lower capacity of 77.10%.
B) OPERATION/LOCATION OF BUSINESS on the day of interview is similarly but more completely answered above in the full summary.
C) A SHORTAGE IN THE LABOR FORCE:
1) The average number of both full-time workers (30+ hours per week) (890 workers dropped to 833 workers) and part-time workers (less than 30 hours per week) (877 workers dropped to 812 workers) had decreased since the flood.
2) Of all the businesses, 63.5% experienced no change in their number of full-time workers, while 22.5% indicated they had fewer full-time workers, and 14.0% indicated they had more full-time workers. Of all the businesses, 66.1% experienced no change in their number of part-time workers, 24.5% indicated they had fewer part-time workers, and 9.4% indicated they had more part-time workers.
3) 315 of 865 (36.4%) reported they were looking for workers at the time.
4) The categories of workers they were seeking consisted of 22.2% service, 21.0% sales, 15.2% professional/technical, 11.4% construction/maintenance, 8.6% operators/laborers, 7.9% production, 7.3% clerical administration, and 6.3% managers/administrators.
5) 724 employers (83.2%) reported that none of their employees were receiving Unemployment Insurance benefits, while 106 employers (12.2%) reported that some of their employees were receiving such benefits, despite the fact that 71 (or 76.3%) of these 106 employers had tried to contact these workers about returning to work.
6) To explore the possibility of hiring non-U.S. Citizens (possibly from Winnipeg) to fill the labor shortage, 336 (40.9%) of the 822 employers who responded, indicated they would be willing to hire non-U.S. citizens.
7) 250 of these 335 employers (74.6%) said they would be willing to participate in the labor certification process that would authorize these individuals to work.
D) WAGE ISSUES is similarly but more completely addressed above.
E) ASSISTANCE FOR BUSINESSES:
1) Of 869 of the businesses, 473 (54.4%) requested a FEMA application packet.
2) Of the 454 businesses that sustained physical damage, 320 (70.5%) had requested a FEMA application, and 111 (24.4%) had not requested a FEMA application.

SUMMARY: of "Gender Inequality in Business Recovery Following the Grand Forks Flood," 4 pp. Populations within a community are differently vulnerable to disasters. In an analysis of the 1,498 (out of the total 1,544) for-profit businesses that could be identified as having a male versus a female owner/manager, 71.9% had a male owner or manager, while 28.1% had a female owner or manager. In a similar ratio, of all those businesses that sustained damage, 72.7% had a male owner or manager and 27.3% had a female owner or manager. Although both genders were interviewed fairly evenly after the disaster, with male owned or managed businesses being interviewed on average 77.24 days after the

flood and female owned or managed businesses being interviewed on average 77.14 days after the flood, they were not evenly open for business. Of all of the 115 businesses that were not doing business on the interview date, only 56.5% were owned or managed by men and 43.5% were owned or managed by women. Thus the female owned or managed businesses were twice as likely to remain closed as the male owned or managed businesses in the early months after the flood.

TITLE OF RESEARCH STUDY: 1998 Grand Forks Business Climate Survey--Phase I--Methodology and Basic Findings of Mail Survey, 15 pp.

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FUNDING AGENCY: Ewing Marion Kauffman Foundation--Center for Entrepreneurial Leadership, Inc.

GRANT AMOUNT: $24,000 for all of their studies

SUMMARY: The reasons for this study were: (1) to measure the economic climate of the business community in Grand Forks, ND as of March/April 1998, (2) to compare the health of the census of for-profit businesses in Grand Forks, ND to the health of those businesses one year previously, (3) to find out how the natural disasters of the winter and spring of 1997 have affected for-profit businesses in Grand Forks, ND. The target population of all for-profit businesses operating in Grand Forks during March 1998 was determined to be 1,576 businesses, using the business census survey list compiled during the spring and summer of 1997 by Clifford L. Staples and Kriti L. Stubbings and a list of new businesses that had applied for licenses since May of 1997. This was further narrowed to 1,519 businesses after all closed and relocated businesses were deleted, and 698 of these businesses completed the survey for a 46.0% response rate. A selective list of findings are as follows:

LABOR FORCE: (1) 60.2% reported no employee shortage, 33.5% reported an employee shortage and 6.3% were missing values. (2) 28.1% reported a lower quality of workers compared to the first three months of 1997, 58.9% reported the same quality, 3.3% reported a higher quality, 9.7% missing values. (3) 10.5% reported a lower employee turnover rate compared to the first three months of 1997, 60.9% reported the same turnover, 18.3% reported a higher turnover, and 10.3% were missing values.

HOUSING: (4a) 7.9% reported that housing availability was a problem for them, 88.2% reported that it was not a problem, and 3.9% were missing values. (4b) 15.2% reported that employees had recently mentioned problems related to housing availability, 74.1% reported no problems, and 10.7% were missing values.

CHILD CARE: (5a) 7.3% reported that the availability of child care was a problem for them, 87.8% reported that it was not a problem, 4.9% were missing values. (5b) 10.8% reported that employees recently mentioned problems related to child care, 75.9% reported no problems, 13.3% were missing values.

BUSINESS: (6) While 8.5% were in business at their address less than a year and 5.9% were in business at their address for only 1 year, 16.7% were in business at their address for 5-9 years, 13.8% for

10-14 years and 27.2% for 20 years or more. The average number of years was 14.68 and the median number of years was 10. (7) While 7.7% businesses had their present owner(s) for a year or less and 7.2% had their present owner(s) for just 2 years, 18.8% had their present owner(s) for 5-9 years, 15.2% for 10-14 years, 28.1% for 20 years or more. The average number of years was 14.04. The median number of years was 10. (8a) 28.2% said the business had more than one physical location, 69.1% said no other locations, 2.7% missing values. (8b) Out of those who replied that they had more than one physical location, 18.3% were franchises, 8.9% were not, 1.0% missing values. (8c) 49 businesses reported their other locations were in Grand Forks County (average number of locations 3.8, median number of locations 1) and 38 businesses reported their other locations were outside of Grand Forks County (average number of locations 22.83, median number of locations 7.5). (9) 60.2% reported the legal status of their business as a corporation, 29.1% as a sole proprietorship, 6.4% as a partnership, 2.7% as other and 1.6% missing values.

EMPLOYEES/WAGE: (10) The average number of full time employees (30 hours/week or more) was 15.4, the median number of full time employees was 4. The average number of part-time employees (less than 30 hours/week) was 9.56, the median number of part time employees was 2. (11) The average hourly wage was $7.43 compared to the average pre-flood hourly wage as $7.11 (change from pre-flood +4.3%). The median hourly wage was $6.63 compared to the median pre-flood hourly wage as $6.00 (change from pre-flood +9.5%). (12) 53.4% reported the same time and effort to schedule the labor force as in March 1997, 33% reported that they devoted more time and effort to scheduling, 3.9% reported less time and effort to scheduling and 9.7% were missing values. (13) Out of 16 business benefits and beneficial policies available in the business, those that were cited the most were: 70.1% time off for family emergencies, 59% two or more weeks of paid vacation, 55.6% time off for personal business, 54.7% health insurance, 42.8% flexible scheduling for full-time pay.

SALES: (14) 36.4% reported higher sales in 1997 compared to 1996, 20.8% reported the same level of sales, 36% reported lower sales in 1997 compared to 1996, and 6.8% were missing values. (15) 47.1% of the businesses believed that their 1998 sales would be higher than in 1997, 27.5% believed their 1998 sales would be the same, 20.7% lower, and 4.7% were missing values.

DEBT/EXPANSIONS: (16) 31.7% said their overall debt level was higher since March 1997, 32.4% said their debt level was the same, 8.1% said their debt level was lower, 17.6% reported no debt, 10.2% were missing values. (17) 19.5% planned to expand their business operations before the end of 1998, 60.4% planned to keep operations the same, 3.9% planned to shrink their business operations, 1.3% planned to close, 11.2% were undecided, and 3.7% were missing values. (18) 20.1% reported that their business would require external sources of equity or debt capital in the next two years, 44.5% said they would not, 28.5% said don't know, 6.9% were missing values.

OPTIMISM: (19a) Respondents were asked how optimistic they were about today's prospects for their business (with -5 being very pessimistic and 5 being very optimistic). The average level of optimism was 2 and the median level of optimism was 3, with the highest number (23.9%) saying 3. (19b) Respondents were asked how optimistic they were about their future prospects for their business (with -5 being very pessimistic and 5 being very optimistic). The average level of optimism was 2 and the median level of optimism was 3, with the highest number (22.1%) saying 3.

OVERVIEW/OUTLOOK: (20) Out of 21 possible choices, most businesses reported the following as their "Biggest" problem to their business: 17.9% finding and retaining workforce (good, dependable help), 5.0% debt load/refinancing, 4.0% uncertainty of future sales and staff needed, 3.5% lack of skilled labor, 3.0% poor agriculture economy, 3.0% competition, 3.0% time and money needed to recover from flood related damage, 3.0% declining population, 2.9% decrease in sales, 2.9% lack of places to expand, 1.9% lack of leadership by elected officials, 1.9% high taxes, 1.4% unfairness of downtown grant program (perceived favoritism). (21) Out of 17 possible choices, most businesses reported the following as the "One" change in Grand Forks they would like to make today: 6.9% develop a better program to attract and retain citizens and businesses, 6.9% scale back or forget about the Aurora, 6.6% improve the city leadership's vision, 5.6% change to a city manager style of government, 4.3% finish flood protection systems, 4.2% reduce focus and money going towards downtown

redevelopment, 3.3% reduce property taxes, 3.0% change attitudes for the better, 2.7% make more affordable housing available, 2.3% repair infrastructure and make road improvements, 1.7% set up community clubs and activities for families and adolescents.

TITLE OF RESEARCH STUDY: 1998 Grand Forks Business Climate Survey--Phase II--Methodology and Basic Findings of Personal Interview Survey, 48 pp.

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FUNDING AGENCY: Ewing Marion Kauffman Foundation--Center for Entrepreneurial Leadership, Inc.

GRANT AMOUNT: $24,000 for all of their studies

SUMMARY: The reasons for this study were: (1) to measure the economic climate of the business community in Grand Forks, ND as of June/July/August 1998, (2) to compare the health of the census of for-profit businesses in Grand Forks, ND to the health of those businesses one year previously, (3) to find out how the natural disasters of the winter and spring of 1997 have affected the mental and economic health of for-profit businesses in Grand Forks, ND. The target population of all for-profit businesses operating in Grand Forks during March 1998 was determined to be 1,576 businesses, using the business census survey list compiled during the spring and summer of 1997 by Clifford L. Staples and Kristi L. Stubbings and a list of new businesses that had applied for licenses since May of 1997. This was narrowed to 1,519 businesses after all closed and relocated businesses were deleted, then to 698 businesses that completed the Phase I mail survey, and then finally to 281 businesses that agreed to participate in this Phase II personal interview survey. For a 75.8% response rate, a total of 213 45-minute interviews were conducted by graduate students between May 26 and August 12. The tables of findings are extensively detailed, so a copy of the full document may be required. A few of the findings are as follows for the 213 respondents:

DEMOGRAPHICS: 97.2% of the respondents had reported being the same person who completed the mail survey in Phase I. Respondent's Sex: 71.8% were male and 28.2% were female. Job Title of Respondent: 42.3% were the Owner, 28.2% were the General Manager, 15.0% were the President. Equity Interest: 67.1% of the respondents had an equity interest in the business with 58.7% of these respondents having a 76% to 100% equity interest in the business. Years in this "Type" of Business: 12.2% for 1-5 years, 18.3% for 6-10 years, 33.3% for 11-20 years & 25.4% for 21-30 years, 8.5% for 31-40 years. Years in Current Business: 25.8% for 1-5 years, 24.4% for 6-10 years, 26.8% for 11-20 years, 12.2% for 21-30 years, 5.2% for 31-40 years. Age: 8.9% up to 30 years, 25.4% 31-40 years, 38.5% 41-50 years, 25.8% over 50 years. Marital Status: 77.0% were married and living with spouse with 82.9% of these having an employed spouse. Number of Persons in Household: 11.7 % reported 1

in the household, 30% reported 2, 15.5% reported 3, 29.1% reported 4 in the household, 10.3% reported 5.

LOSSES: Non-Business: 76.1% (162) reported suffering non-business losses as a result of the 1997 blizzards and flooding with 87.7% (142) of these suffering loss of living space. Of those who lost living space, 48.1% (78) had a habitable home (other than during the evacuation) and 45.7% (74) did not have a habitable home upon returning. Of those 74 respondents, 9.5% did not have a habitable home for 1-14 days, 47.3% did not have a habitable home for 15-30 days, and the rest for even longer periods of time. The mean for their total estimated non-business losses was $47,292, and the mean for their estimated non-business losses that were not reimbursed (by insurance, government programs, or other agencies) was $24,956. Of all 213 respondents, 66.2% (141) reported having personal savings before the flood, while only 51.6% (110) reported having personal savings after repairing the damage.

BUSINESS OPERATION: 95.3% operated under the same name as in March of 1997, 78.4% were in the same location. Of the 44 (20.7%) who had moved, 33 (75%) moved because of the flood and 19 (43.2%) believed the new location was better. Of the 213 respondents, 33.3% had occupied other locations between the present and March 1997 and 61% had not. Of the 213, 67.1% were Corporations, 22.5% Sole Proprietorships, 8.9% Partnerships. Of the 213, 50.2% said their organization does not have different departments or specific sales divisions, 31% reported just a few departments and only one sales division, and 17.8% reported many different departments and sales divisions. Of the 213, 47.4% had lost employees as a result of the disaster. In terms of efficiency, 43.7% believed their labor force was as efficient as in the first three months of 1997, 13.1% less efficient, and about 40% more efficient. Of the 213, 59.2% believed their employee benefits were the same and 35.2% believed they had increased. In the face of low unemployment, only 22.1% were replacing labor with technology automation. Compared to 1997, 30% expected their sales to be lower in 1998, 21.1% expected sales to be the same and 45.5% expected sales to be higher. Immediately prior to the flood 21.1% believed their sales were decreased at the time, 49.8% the same, and 26.7% increased, while after the flood, during the clean-up period, 44.6% believed their sales were decreased, 14.1% the same, and 37% increased. Out of 213 respondents, 144 (67.6%) had cash or other liquid assets in reserve before the 1997 natural disaster, while only 79.9% of these 144 businesses reported to have cash or other liquid assets following the cleanup period. Out of the 213, 5.2% believed their rent or mortgage payment was lower compared to 1997, 65.7% believed it was the same, and 22.5% believed it was higher. Although 48.8% of the 213 respondents did not share their 1997 sales volume, 4.7% reported the volume was up to $50,000, 4.2% $50,001 to $100,000, 2.8% $100,001 to $150,000, .9% $150,001 to $200,000, 1.9% $200,001 to $250,000 and 36.6% over $250,000. Out of the 213, 143 (67.1%) carry accounts receivable (offer credit to buyers), and of these 23.1% believed their average collection period was longer than it was in 1996, 67.1% believed it to be the same, and 9.8% believed it was shorter than it was in 1996. Out of a total of 208 respondents, 135 (55.6%) said a substantial portion of their revenues was tied to the resale of goods and services purchased from suppliers, 54.1% said it was not. Of those 135 respondents, 72 (53.3%) said that their suppliers offered assistance during or following the flood that was of an extraordinary nature, and 46.7% said that they did not. Of those 72 respondents, 48 (66.7%) said yes and 24 (33.3%) said no that the assistance included liberalized credit or payment terms. Of the 72 respondents, 19 (26.4%) said yes and 53 (73.6%) said no that the assistance included favorable pricing. Of the 72 respondents, 42 (58.3%) said yes and 30 (41.7%) said no that other means of assistance had been offered. Out of the 213 businesses, 73.7% said they lacked resources essential to the operation of their business immediately following the flood: 56% lacked employees, 22.9% lacked building/location, 22.9% lacked water, 17.2% lacked equipment, 17.2% lacked cash, 16.6% lacked electricity, 7% lacked customers, 7% lacked capital, 5.1% lacked computers. Of all of these losses, 44% reported that employees were the resources hardest to obtain after the flood, while 9.6% reported building/location was the hardest resource to obtain, and 7.6% reported cash was the hardest resource to obtain.

PROGRAM SUCCESS (ASSISTANCE): Businesses applied for the following assistance after the 1997 disaster: (1) Private Insurance: 51 (23.9%) applied for, 34 (66.7%) % of # applied for received,

and $90,165 was the average $ received. (2) Farmers Home Administration low-interest loans: 1 (.5%) applied for, but nothing was received. (3) SBA Physical Disaster Business Loan (4%): 75 (35.2%) applied for, 44 (58.7%) % of # applied for received, and $118,631 was the average $ received. (4) SBA Economic Injury Disaster Loan (4%): 63 (29.6%) applied for, 43 (68.3%) % of # applied for received, and $61,705 was the average $ received, (5) FEMA (any FEMA program): 20 (9.4%) applied for, 11 (55%) % of # applied for received, and $2,333 was the average $ received. (6) Bank of North Dakota--refinance program (loan consolidation, 6%): 12 (5.6%) applied for, 8 (66.7%) % of # applied for received, and $58,000 was the average $ received. (7) State Development Fund--maximum $200,000 loan to manufacturers: 3 (1.4%) applied for, 3 (100%) % of # applied for received, and $183,333 was the average $ received. (8) Chamber of Commerce Grants--$5,000 max per business, about $200,000: 21 (9.9%) applied for, 19 (90.5%) % of # applied for received, and $1.953 was the average $ received. (9) City Growth Fund--<$20,000 3/4 loan program: 24 (11.3%) applied for, 18 (7.5%) % of # applied for received, and $165,094 was the average $ received. (10) Downtown Grant Program (city)--for rehabilitation, $50 sq. ft. retail, $25 sq. ft. service, $10 sq. ft. manufacturing: 13 (6.1%) applied for, 10 (76.9%) % of # applied for received, and $72,561 was the average $ received.

There are many more detailed tables too numerous to reproduce on the following topics: Physical Well-Being, Life Orientation (optimism vs. pessimism), Coping, Suppliers, Formalization of Business, Opportunities and Threats (Changes in Customers since the Flood, Changes in Competition since the Flood, Changes in Economic Outlook since the Flood, Changes in Technology since the Flood), The Flood and Corporate/Firm Life Cycle Stage, Changes in the Marketing Mix (Product Changes, Price Changes, Promotion Change, Distribution Change), Changes in Strategic Assets since the Flood, Changes in Target Markets since the Flood, Changes in Positioning since the Flood, Changes in the Competitive Advantage since the Flood.

TITLE OF RESEARCH STUDY: Using a Measure of Dispositional Optimism to Identify At Risk Businesses Following A Natural Disaster, 17 pp.

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FUNDING AGENCY: Ewing Marion Kauffman Foundation, Center for Entrepreneurial Leadership, Inc.

GRANT AMOUNT: $24,000 (for all of their research)

SUMMARY: Previous studies on dispositional optimism have demonstrated that an optimistic outlook is associated with superior performance in the face of adversity. This study provides an analysis of optimism in the for-profit Grand Forks business community after the Red River of the North flood in 1997. In Grand Forks, 900 businesses sustained physical damage, and the rest of the business community was impacted by the exodus of the population, the loss of water and sewage treatment plants, and the prevalent loss of power. The authors were interested in the possibility of identifying those businesses most at risk for recovery. Earlier survey results revealed that actual business failure was a limited event and that the severity of physical damage was a precursor to relocation but not failure. Consequently, they elected to pursue another condition that puts businesses at risk under crisis

conditions, the actions of owners and management. Considering the characteristics of owners and managers known to affect their ability to react to adverse situations, they decided to focus on optimism or positive affectivity, coping and stress.

Their business data was collected at three points in time subsequent to the 1997 Red River flood. First by Staples and Stubbings, immediately after the flood, when they did a phone census of Grand Forks employers under the aegis of several local governmental and quasi-governmental agencies with a response rate of 97%. Second, by Bronson and Faircloth, one year after the flood, when they did a mail survey of the census of businesses in Grand Forks with a response rate of 46%. Third by Bronson, Faircloth, and Staples, in July and August 1998, when they did personal interviews with 213 largely self-selected businesspersons with a response rate of 76%. An optimism test, the Life Orientation Test (LOT) (Scheier and Carver, 1985), a twelve-item instrument with a five-point Likert type scale (ranging from strongly agree to strongly disagree), was administered during the personal interviews. Other information that was collected at the time included personal information of a demographic nature, the extent of damage to residences, and changes in business strategies. Business performance/recovery was based upon three variables: (1) the rate of recovery of operations (which was measured by the number of days required after the flood to reopen the business and to reoccupy the owners's residence), (2) the dollar value of physical damage, and (3) the performance of sales trends.

The study found that the control demographic variables (age, gender, marital status, and full time equivalent employees as resources to help with flood recovery) were not significantly correlated with optimism scores, although the last three variables approached significance. (1)The study found that the first hypothesis (the rate of recovery from a natural disaster will be faster when business owners, or managers, are predisposed to be optimistic) was partially supported. Although the total number of days required to reopen a business was not negatively correlated with optimism to the level of significance, the number of days the residence was uninhabitable had a significant negative correlation with optimism. (2) The study found that the second hypothesis (the extent of physical damage will reduce the owner or managers level of optimism) was not supported. The variables measuring the dollar value of damage to the respondents' business and residence, although both were approaching a negative significance with optimism, were not found to be significant. (3)The study found that the third hypothesis (that an owner's or manager's focus on the present or future will be associated with higher levels of optimism) and operationalized as the relative % increase/decrease in sales between 1996/1997; 1997; 1997/1998 received qualified support. The two variables measuring an increase, or decrease, over the prior years sales were significant and positively correlated with optimism. The remaining sales variable, 1997 sales, approached significance.

Overall, the authors conclude that the study found support for a link between optimism and recovery and optimism and business performance, suggesting that this short, twelve question, survey instrument may be of more use than physical damage in identifying those businesses most at risk following a natural disaster. Those respondents scoring low in optimism are significantly more likely to require special forms of assistance than those scoring high in optimism, and those individuals/businesses could be identified if the LOT instrument were piggy-backed on the back of telephone or person-to-person surveys that are a natural part of identifying the recovery needs of a community.

IV. SOCIOLOGICAL STUDIES OF RECOVERY

TITLE OF RESEARCH STUDY: Student Concerns about Returning to UND after the Flood of April 1997: A Preliminary Report, 11 pp.

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STUDENT RESEARCHERS: Heidee Anderson, Melissa Andres, David Barber, Angela Craig-Lipscomb, Heidi Defor, Heather Delgeldere, Shannon Devine, Paris Ehresmann, Paul Fairley, Ryland Fleck, John Lacorte, Trent Litchy, Michelle Tulibaski, and Tracy WinterQuist

FUNDING AGENCY: Office of the President, University of North Dakota paid expenses (photocopying, 800 number, etc.)

SUMMARY: The purpose of this study was to gauge the concerns that current UND students might have returning to campus in the wake of the flood that occurred in Grand Forks in April, 1997, and which prematurely ended the spring, 1997 semester at UND. Between May 27th and May 29th, 14 students from Sociology 102 attempted to call 800 randomly drawn undergraduate and graduate students who were enrolled at UND for the spring 1997 semester. The final sample of 160 students consisted of 96 females (60%), 63 males (39.4%), and 1 student (.6%) whose sex was not recorded. The grade level of 1 student was not recorded, but of the remaining 159, 33 (20.8%) were first year students, 34 (21.3%) were sophomores, 30 (18.8%) were juniors, 40 (25.0%) were seniors, and 22 (13.8%) were graduate students. Within this group, 28 (17.5%) were married, 102 (63.8%) had never been married, and the remaining few were either widowed, separated, or divorced. Of the 136 students who were planning to return to UND, 27 (19.9%) had children living with them, 108 (79.4%) did not, and 1 respondent refused to say.

Out of the 160 student sample, 129 (80.6%) were planning to return to UND, while 25 (15.6%) were not and 6 (3.8%) were unsure. Of the 25 students who were not planning to return, only 1 student indicated that the flood was the reason. Out of the 135 (possibly) returning students (minus 1 who refused to answer these questions), respondents said that the following were concerns for them: The possibility of another flood before you graduate 78 (58.2%), A reduction in campus services 65 (48.5%), The safety of the community 57 (42.5%), Finishing incompletes from spring 52 (38.8%), Faculty members leaving UND 49 (36.6%), The closing of your favorite restaurants/night clubs 48 (35.8%), Finding a place to live 27 (20.1%), Finding a job while you attend school 27 (20.1%), The safety of the campus 24 (17.9%), The availability of day care 14 (10.4%). Students could also list additional concerns.

When asked if they had received damage to personal property from the flood, 100 (74.6%) indicated they had no damage, while 13 (9.7%) had minor damage, 10 (7.5%) had moderate damage, and 11 (8.2%) had severe damage.

When an index of concerns was computed for each student, where 10 was the highest level of concern and 0 was the lowest level of concern, the results on DAMAGE show that the 100 students who reported no damage expressed the least level of concern (mean 3.0400), with increasing levels of concern at each level of increasing damage: minor damage (mean 3.1538), moderate damage (mean 3.9000), severe damage (mean 5.1818), suggesting that those who sustained personal damage were in greatest need of having their concerns addressed. A similar analysis by YEAR IN SCHOOL shows a trend of increasing concern with grade amongst the undergraduates with a drop-off for those in graduate school: First year (mean 2.8966), sophomore (mean 3.3103), junior (mean 3.7667), senior (mean 3.8889), grad (mean 2.2632). BY SEX they found that female students were likely to indicate a greater number of concerns than were male students: Females (mean 3.7250), males (mean 2.6481).

HOUSING: Students were asked where they were living before the flood and where they intended to live upon their return to campus. While there was some variation in the levels of concern by type of housing, students living in the residence halls before the flood (mean 2.8542), and those expecting to live in the residence halls after the flood (mean 2.7500) expressed the least level of concern.

TITLE OF RESEARCH STUDY: Women and Housing Issues in Two U.S. Disasters: Case Studies from Hurricane Andrew and the Red River Valley Flood, 39 pp.

PRINCIPAL INVESTIGATOR: Elaine Enarson (was at the Disaster Preparedness Resources Centre, University of British Columbia, Vancouver, British Columbia. E-mail: enarson@interchange.ubc.ca) New contact information: 33174 Bergen Mountain Road, Evergreen, CO 80439. Tel: 303-670-1834.

MODIFIED ABSTRACT: The author cites international research that suggests that gender relations in housing increases women's vulnerability through the disaster cycle and uses census data and field studies from the United States to argue that women's housing insecurity is a significant factor increasing disaster vulnerability in the developed world. The paper reviews national population patterns increasing the housing insecurity of US women, identifies disaster housing issues in field studies from Miami and North Dakota, and includes action guidelines for gender-sensitive disaster housing planning and response.

SUMMARY: The Miami research (1992-94) includes interviews with 25 service providers; five focus groups involving 25 women; observations in tent cities, service centers, and provider organizations; and extended participant-observation of an emergent community group. The Grand Forks research (which includes East Grand Forks) makes use of oral histories, personal letters, agency documents, informal conversations as well as interviews with 95 impacted women, service providers, and disaster responders during three field visits at 6, 12, and 18 months after the April 1997 flood.

Citing census figures, the author identified the root causes of women's housing vulnerability as an increasing number of: sole-female or female-headed households, low-income female-headed households, women in public housing, senior women living alone, cutbacks in social subsidies for affordable housing, affordable housing in decline, homeless families headed by women, women in domestic violence shelters, and women living with physical or mental disabilities or serious illness in group homes or other public settings. In many cases these women and their children are marginally housed or living in poverty in insecure housing where land is cheap and often hazard-prone. These women often live in rental apartments where landlords may be lax about disaster preparedness or cleanup, and many of these women will need assistance during disasters.

Alongside these vulnerable groups of women, field studies indicated the following key housing patterns in the Miami and North Dakota disasters: (1) Women reported conflicts with men over priorities during household preparation and evacuation, with men often resisting mitigation measures as women's "panic." (2) Highly vulnerable women (women in public housing, widows, etc.) sometimes lacked needed assistance preparing their homes. (3) Women were less likely than men to resist or delay evacuation, and earlier evacuation increased women's caregiving responsibilities. (4) Lack of housing and safe space put some women at higher risk of violence, where they could be tracked to "unsafe" evacuation shelters or because housing shortages brought them back into contact with violent partners. Also safe places remain destroyed for long periods of time, as in Grand Forks where the flooded shelter had not been replaced one year later and crisis workers had physically relocated the crisis intervention center to five different locations. (5) Women's domestic and kin work intensified when living conditions were disrupted, with women reporting increased emotion work, stress, and physical domestic labor. (6) FEMA trailer camps were not designed for the needs of women and children, with many limitations such as few play spaces, insufficient laundry facilities, social isolation, lack of transportation,

lack of privacy, and often lack of child care or elder care to assist women in repairing or searching for new housing or relief services. (7) Women were slow to locate affordable housing and leave temporary accommodations, often because low-income women raising families on their own are especially disadvantaged in the race for affordable housing. One year after the flood, a housing specialist in Grand Forks estimated that 30 to 40 percent of FEMA trailer residents were women, often single mothers with large families, on public assistance, or marginally employed. Disaster relief workers, Unmet Needs Committee Members and others engaged in Grand Forks' recovery process concurred that low-income women rearing families on their own were especially disadvantaged in the post-flood housing market. Also highly-visible Latina women in Grand Forks reported racial bias in searching for relief goods and permanent housing. (8) Gender was a factor in decisions about home repair and rebuilding, with Miami women more than men wanting to use relief funds for home repairs. Landlords in low-income areas often failed to make needed repairs. Also, in Grand Forks many elderly women with special needs or in poor health could not return promptly to clean up and make repairs, while in some other cases overeager men repaired homes too quickly, in either case leaving people vulnerable to unsafe homes. (9) Housing loss had direct economic consequences for some women. Women generally did not benefit from the booming construction and clean-up work, but rather lost work (domestic work in Miami or home-based work, such as day care, hair dressing, bookkeeping, etc. in both cities). In Grand Forks family day care providers reported significant losses, as their earnings ranged from 30 to 100 percent of their family's income. Also day care loss in Grand Forks became one of the key issues for getting people back to work. (10) Emotional impacts of housing loss were gendered. Men more often than women who had built or remodeled their own homes, had emotional difficulty upon returning to their destroyed homes, whereas women more often articulated a more acute loss of relational space and strong ties to place, reflecting the gendered division of labor and the material grounding of women's lives in the domestic realm. (11) Some women took on nontraditional roles in the housing crisis, when women learned new construction skills in repairing their own homes, took on the bureaucratic work of rebuilding their own homes (applying for permits, arranging volunteers, contractors, insurance agents, etc), took on hands-on construction work in building replacement housing for a migrant community agency in Miami, or took on critical roles as board members, construction managers, and volunteers on Habitat homes in Grand Forks. (12) Women organized politically to influence housing policy during the rebuilding phase. In Miami, the multicultural Women Will Rebuild coalition established a committee to investigate women's housing conditions and needs. In Grand Forks, Latina women who had reported racial bias in obtaining relief goods and housing were thinking of forming a group.

Contrary to thinking of disasters as ungendered experiences, gender-specific housing knowledge can pinpoint community disaster vulnerabilities and be utilized as a mitigation strategy. Rebuilding without taking the material conditions of women's lives into account not only fails to mitigate the impact of future disasters but reconstructs significant housing vulnerabilities. Practical action steps, recommended as essential step toward building more disaster-resilient households and communities disasters in order to reduce community vulnerability, include (1) map insecurely housed women (such as women in domestic violence shelters, low-income women, senior and disabled women, public housing residents and home-working women) for assistance with preparedness, evacuation, repair, and rehousing; (2) map group homes, homeless shelters, public housing, non-confidential domestic violence shelters, extended care facilities, and migrant labor camps; (3) administer housing projects that meet women's needs for personal safety, child care, transportation, health care, etc.; (4) develop educational materials to educate senior women and non-English speakers and other vulnerable women about housing issues (safe clean-up, home repair, fraud, exploitation, etc.); (5) develop gender-specific publications responding to male resistance to home preparedness and evacuation, with contact information for caregiver support; (6) provide child care and adult respite during evacuation, clean-up and rebuilding and on-site child care at community meetings; (7) monitor progress of repairs in public housing, migrant housing, women's shelters, and other sites housing vulnerable women through an appointed municipal ombudsperson; (8) develop a community roster of women in construction in order to strive for gender-balanced contracting; (9) mandate consultation with insecurely housed residents

(low-income, single-parent) in the design and location of new housing units; and (10) implement gender audits of new housing initiatives or land use policies on women operating home businesses, low-income single mothers, women with mobility barriers, and other vulnerable women.

TITLE OF RESEARCH STUDY: Women, Work, and Family in the 1997 Red River Valley Flood: Ten Lessons Learned, 8 pp.

PRINCIPAL INVESTIGATOR: Elaine Enarson (Previously at the Disaster Preparedness Resources Centre, University of British Columbia, Vancouver, B.C., E-mail: enarson@interchange.ubc.ca). After July 1, 1999, she may be contacted at: 33174 Bergen Mountain Road, Evergreen, CO 80439. Tel: (303) 670-1834.

SUMMARY: This report presents ten lessons learned and a checklist for Community Disaster Planners that the author has compiled after completing 14 focus groups and individual interviews with 115 residents, predominantly women, of Grand Forks, East Grand Forks, and outlying areas over the course of field visits six, twelve, and eighteen months after the April flood. The ten lessons are: **1. Women listened to emergency communications and sought to prepare their homes, families, and workplaces for the flood.** Although women and men generally shared the feeling that floodwaters would not reach their homes, when they differed, the common gender pattern was for women to take flood warnings more seriously than men in considering flood insurance, moving possessions, and making evacuation plans. Often their voices were not heeded, however, resulting in avoidable flood damage and increased family tension. **2. Older, disabled, and low-income women were hard hit by the flood, as were single mothers, and women in violent relationships.** The interview stories touched on widowed elderly who developed greater problems or died after their losses; low-income women who lost basement-level apartments where the rent was cheaper, and ended up losing everything, even their employment; single mothers who ended up struggling to recover in FEMA trailers; and abused women who did not have a shelter to go to after the flood. Migrant women, rural women, and the homeless were among the others that service providers listed as needing more material and emotional support. The flood-related needs of especially vulnerable women were not anticipated by emergency planners or directly addressed in relief efforts. **3. Women disproportionately applied for emergency assistance and were primary users of emergency shelter and temporary housing.** Women were overrepresented as users of emergency relief systems, both for themselves and for others. The reluctance of men to seek help expanded women's work and often increased tensions and conflict. No consistent provisions were made to support these women, such as drop-in child care at relief centers and distribution points, transportation help, or long-term mental health outreach. **4. Evacuation, hosting evacuees, and resettling households challenged women's resources** Women took on a large burden after the flood, evacuating earlier than men and settling family into uncertain surroundings, remaining away longer and thus delaying their return to jobs, and finally hosting or responding as caregivers to their and other families under stressful conditions. Employed women especially struggled to meet all of the needs. No public support systems were in place for women in outlying areas hosting evacuees or for women sustaining their families through this difficult period. **5. Child care and other family services were essential to household and business recovery.** The flood highlighted the unacknowledged role of child care in the community after about 5,000 licensed child care slots were shut down. Businesses and agencies, employing large number of women, struggled to reopen after child care, foster parenting, home health care for the seriously ill and disabled, and other community-based family services were disrupted. For the most part, disruptions in these informal family support systems were not anticipated by emergency planners or employers. **6. Women were at increased risk of violence after the flood.** Reported violence increased after the flood. Protection orders obtained by women increased by 65% in the first quarter of 1998 over the corresponding period before the 1997 flood. Counseling calls to the

crisis center were 59% higher in July, 1997 than in July, 1996. The temporary relocated crisis center was harder to find, had less space for counseling and support groups, and lost its shelter. Flood relief monies helped the agency rebuild, but the life safety of women endangered by the flood was not identified as a priority in emergency planning. **7. Racial divisions among women along the Red River Valley were exacerbated by the flood.** Most flood victims shared a Northern European heritage, but Native American and Hispanic families were also impacted. Migrant families lost access to low-cost housing and other needed supplies, but were offered little recovery assistance. Hispanic women in East Grand Forks reported racial bias in flood relief projects, as volunteers in some relief projects effectively restricted aid to non-Hispanic residents. Native American women did not report problems, largely because many evacuated to nearby reservations. Relief agencies did not monitor their practices and procedures to guard against racial discrimination when women sought help for their families. **8. Women's workplaces and home-based businesses were heavily impacted.** Though college-educated women found employment in flood recovery projects, and the work hours and income increased after the flood for some women, the flood also swept away the livelihood for many women operating home-based businesses. Older women were forced into retirement, while others had to delay retirement to meet new flood expenses. Women's concentration in service occupations engaged them in stressful recovery work. Work and family conflicts increased. Gender patterns in the economic impacts of the flood were not monitored nor were women-owned businesses and home-based work specifically included in business recovery initiatives. **9. Strong organizational and personal networks helped women through the flood.** Despite the stress, weariness, and increased conflict in family relationships, women were often sustained by their friendships with other women, especially among single women, seniors, and women in the Hispanic community. Women's service and professional organizations across the nation assisted local groups or chapters, providing emotional as well as material support (e.g. money, letters, quilting fabric, care packages, Christmas ornaments). These resources were not identified as community assets during the recovery period. **10. Women demonstrated leadership during the flood in their homes, workplaces, and community.** Women were highly represented among regional elected officials responding to the flood, in such people as Grand Forks Mayor Pat Owens. Many other women were front-line emergency responders, organized emergency relief centers, designed outreach programs, managed organizations assisting flood victims, and helped with flood mitigation recommendations, etc. Still, the media depicted women more as victims and observers than as active responders, and their initiative and informal leadership went largely unrecognized.

A checklist of questions for community disaster planners was attached to these ten lessons to assist officials in other communities and in the Grand Forks region to better anticipate and meet the needs of women in the next "flood of the century."

TITLE OF RESEARCH STUDY: Gender Patterns in a Flood Evacuation: A Case Study of Couples in Canada's Red River Valley

PRINCIPAL INVESTIGATOR: Elaine Enarson. Elaine Enarson was with the Disaster Preparedness Resources Centre, University of British Columbia. Contact information for Elaine Enarson after July 1, 1999: 33174 Bergen Mountain Road, Evergreen, CO 80439 Tel: (303) 670-1834

CO-INVESTIGATOR: Joseph Scanlon, Emergency Communications Research Unit, Carleton University.

CITATION TO A PUBLISHED ARTICLE: Enarson, E., & Scanlon, J. (1999). Gender patterns in a flood evacuation: A case study of couples in Canada's Red River Valley. Forthcoming in Applied Behavioral Science Review, 31 pp.

SUMMARY: The study makes a comparative analysis of gender and disaster on Canadian couples impacted by the 1997 Red River Valley flood in Manitoba. The authors and a research team, of 17 journalism students and their instructor from Red River Community College in Winnipeg, interviewed 41 residents of St. Agathe and St. Adolphe five months after the April 1997 flood. The sample consisted of nine "traditional family" couples in St. Agathe and eight "traditional family" couples in St. Adolphe (N=17 couples, or 34 partners) and seven single-spouse interviewees for a total of 22 residents in St. Agathe and 19 residents in St. Adolphe. Interviewees consisted of 22 women and 19 men. Although only 5 of the 22 women were not employed at the time of the flood, the authors classified the majority of the couples as "main provider" couples dependent on women's domestic labor and men's incomes; and one-third of the couples as "coproviders" in which men shared domestic chores and women's income contributed more than a fifth of total family income. The chosen sample of interviewees had both evacuated and had caregiving responsibilities for others to capture the "his and hers" disaster experience.

The authors report that the flood was a profoundly gendered experience which often disproportionately disadvantaged women. They found that disaster-hit households are not solidary units with uniform interests and equitably distributed resources but gender-stratified sites in which power is asserted and contested. Gender-based conflicts arose around moving household goods, choosing valuable possessions, packing, who to ask for help, and making alternate arrangements. (1) Preparedness: When they disagreed, women took their household flood risk more seriously and tried to mitigate its effects by moving furniture upstairs, etc. "Elders" and predominantly male voices tended to discourage excessive preparation and mitigation. Men often viewed women as panicking, whereas women viewed their efforts as precaution and competence. (2) Disaster work: tended to be sex specific, although gender rules may become more flexible in crisis. While most men, women, and older children reported sandbagging, diking, and helping people pack and move, men 's work focussed on the more socially visible and valorized "flood fighting" and women in general, but especially older women, pregnant women, and mothers of young children, participated in a less visible "flood fight" by cooking, caring for children, and struggling to save their homes. Highly feminized before the flood, domestic labor and childcare in most couples' homes remained segregated or became more highly feminized during this period; and women and men alike tended to minimize women's behind-the-scenes efforts. (3) During Evacuation: women and children left earlier, and eventually the small group of remaining flood fighters became exclusively male. Women more often than men described evacuation emotionally, and many accounts from men confirmed a display of stoicism. (4) For Temporary Locations: women were more involved than men in making relocation decisions, packing memorabilia and belongings, arranging the details of the move, and negotiating with host families. Although some women enjoyed a relief from domestic chores in the temporary location, more often women were responsible for dealing with the difficulties of keeping house in temporary lodgings. Routines were more time-consuming and difficult, and women more than men spoke to interviewers about the emotional work of mediating interpersonal relationships in overcrowded lodgings. In dual-career couples, women, like men, often continued working through evacuation, however fewer women than men were employed, and women were more likely to lose work and have caregiving responsibilities compete with their paid work. Although evacuation did offer new experiences and shared solidarity, the authors add that latent conflict over the conditions and effects of evacuation undermined solidarity in many households. (5) Relocation and Recovery: Upon their return to non-flooded homes, men undertook some initial heavy moving, but wives were primarily responsible for unpacking, cleaning, and reorganizing homes. In flooded homes, employed men and women drew upon gendered skills with an exhausting "double day" of work to make their houses homes again. However, in most households wives were primarily responsible for unpacking, cleaning, and reorganizing flooded homes, and again women's domestic labor increased disproportionately. On balance, women were also more involved than men in the paper flood of the disaster, typically registering the household for assistance. Men engaged more actively than women in the more visible and formal community rebuilding efforts. (6) Like mitigation decisions, flood-recovery decisions provided new grounds for Gender Conflict and Stress. Male dominance in

intimate relationships often gave husbands power in key flood decisions, though this power was contested. Domestic violence, which has been found to increase in some disaster contexts, was not in evidence here, although one resident was asked to counsel a woman whose partner was known to be "hitting on her." Overall, the couples rode out the flood with equanimity, in stable marriages, but it was stressful; and women and men brought different coping skills to the crisis. Women's stories more than men's were told in emotional language emphasizing interpersonal relations, women more than men articulated painful flood-related losses, and women more than men characterized themselves as "stressed out;" however the authors emphasize that both women and men struggled emotionally with flood preparation, relocation, and resettlement.

Overall, the disparate flood experiences of evacuated couples indicated that, under some conditions and to varying degrees, gender relations disproportionately disadvantaged women. Essentialist stereotypes about gender identity, the division of labor, and male power and authority were not challenged but affirmed by this flood: through the dominance of particular men in key protective roles (e.g. RCMP, Army, emergency responders); control by male officials and informal male community leaders over which women would evacuate when; male distribution of significant recovery resources (e.g. EMO, construction work, governmental officials); discounting of women's gendered disaster work and emotions; and the dominance of male priorities in preparedness, relocation, and recovery. The invisibility of women's flood work, male power in disaster decisions, and the expansion of women's domestic work throughout the disaster cycle also suggest change at the interpersonal level toward less egalitarian relationships. At a minimum, deeply rooted gender patterns became more salient when the flood of the century hit St. Agathe and St. Adolphe. To the degree that gender inequalities are found to be root causes of women's greater disaster vulnerability, emergency management initiatives, which address gender power and inequality in public policy, organizational practices, and interpersonal relationships, have a significant part to play in mitigating disasters.

TITLE OF RESEARCH STUDY: The Stories that Women Tell about "The Flood of the Century"

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FUNDING AGENCIES: 1) University of Manitoba Research Grants Committee
2) National Network of Environments and Women's Health, A Centre of Excellence in Women's Health (funded by Health Canada)

GRANT AMOUNTS:
1) $4,608
2) $10,390

DURATION OF STUDY: December 1997 - March 2000

AUTHOR'S ABSTRACT: The Red River flood of 1997 inundated large areas of agricultural and urban land in southern Manitoba. While the total impact has not yet been assessed, losses will amount to hundreds of millions of dollars. The social and psychological impacts on the people in the basin will endure for many years to come. This study focuses on women's experiences during the flood and its

aftermath. Because of women's strategic role as "health guardians" in the family, we are seeking to record their experiences of the recent flood. This work, always vital in the social reproduction of family life, is especially crucial during periods of collective stress such as a flood. Yet, this work that women do is often undervalued. One aim of this study is to explore women's work as health guardians during the recent flood. A further aim of this study is to determine how women's health was affected by both the flood and their caring work before, during and after the flood. This study employs qualitative oral histories as a means of documenting women's experiences of "the Flood of the Century." We will explore the social and health impact of the flood for women in affected areas. The research is significant in that it provides an historical record of individuals' experiences, and also because it will help to contribute to an area of scholarship that is under-researched (women in disasters).

AUTHOR'S SUMMARY OF PROGRESS (findings unavailable): Funding from the University of Manitoba/SSHRC fund made it possible for us to conduct a total of 26 interviews, and we are now in the process of analyzing the data. One paper has been presented at a conference in May, 1998 on Women and Disasters (sponsored by the British Columbia Justice Institute). We have been invited to make several other presentations locally, including one in March, 1998 to residents in Ritchot, another to Westworth United Church (October, 1998), and the Disaster Research Institute at the University of Manitoba (date to be confirmed). Two manuscripts are currently in preparation. A paper on women's health during the flood will be presented in July, 1999 at the Second International Interdisciplinary Conference on Women and Health.

During the summer and fall of 1999, we plan to re-contact the women we have already interviewed, and find out how they and their families are doing now. These follow-up interviews will allow us to gather important and useful information on the transitions and adaptations that the women and their families have experienced over the past year. We plan to ask the women some additional questions about their own health and well-being, as well as that of their family members, a subject that was explored, albeit in a limited fashion, in the first interviews. (In the interviews, we have included a series of questions dealing with a variety of physical and psychological dimensions of health. We also queried the women on their use of health services and medications in connection with their health problems. We asked them to differentiate between health problems they experienced previously and those that they attributed to the flood). These follow-up interviews will allow us to explore with the women the effects of the recent decision of the provincial government to increase the ceilings on compensation and floodproofing expenses (based on the recommendations of the Manitoba Water Commission). When we conducted our original interviews, many of the women spoke at length of the costs and consequences of the losses they had experienced, as well as the effects that these expenses were having on their quality of life, their financial health, and their prospects for the future. (It is also worth noting that several of the women we interviewed in the fall and winter of 1997/98 were still in temporary housing at the time of those interviews. A second round of interviews should find these women (we hope!) resettled in their homes, and in the process of re-establishing their family lives).

We are currently conducting interviews with women residing on the Roseau River First Nation. The Roseau River First Nation was evacuated, with more than 300 members of the community being relocated to the community of Ste. Anne, Manitoba. Upon their return to their community, a number of health and social problems occurred (or recurred). Our interviews with women from Roseau parallel those with the women in Ritchot. We expect to complete these interviews by the end of the summer of 1999.

In the course of interviews with women in and around Ritchot, we came to learn of the strategic role played by individuals working for relief organizations such as The Canadian Red Cross, the Salvation Army, the Mennonite Disaster Service, the Red River Trauma Team, various church and charitable organizations, as well as the Manitoba Emergency Measures Organization. In informal discussions with some of these people, we have come to the conclusion that they were affected by the flood. However, their experience is different from that of persons whose homes and businesses were flooded. It is different from that of persons who volunteered or donated to the flood relief effort. It is

different from that of persons who watched the flood as spectators and those who were evacuated and/or flooded. Relief workers many of whom worked extensively with individuals, families, and communities in the post-flood recovery process, and sometimes for months and months have a fundamentally different experience of this kind of disaster. It is, so to speak, one step removed, but nonetheless a potentially transformative life experience. Curiously, while these individuals are key players in disaster response and recovery, their experiences have seldom been the focus of attention by researchers working in the field of disasters. Accordingly, we are now conducting interviews with disaster responders and relief workers. Because most front-line workers engaged in flood recovery work are women, it is women who worked for or are still working for disaster response and relief organizations who are the focus of our attention. There are two primary foci of these interviews: the nature of their work before, during and/or after the flood, and the effects of it on their personal and professional lives (including well-being/health, work and family conflicts, professional practice, etc.). To date, 11 interviews have been completed. We anticipate conducting several more interviews with this group of individuals during the summer of 1999.

TITLE OF RESEARCH STUDY: Women in Disasters: Recreating Everyday Lives in Extraordinary Times (tentative dissertation title).
Two papers have already been accepted for publication out of her dissertation work:
(1) Women's Roles in a Disaster (Paper presented at the 93rd Annual Meeting of the American Sociological Association, San Francisco, August 23, 1998)
(2) An Exploratory Study of Woman Battering in the Grand Forks Flood Disaster: Implications for Community Responses and Policies

PRINCIPAL INVESTIGATOR: Alice Fothergill, Department of Sociology, Campus Box 327, University of Colorado, Boulder, CO 80309, (303) 492-1031, E-mail: Alice.Fothergill@colorado.edu (under the direction of advisors, Professor Dennis Mileti and Joyce Nielsen)

FUNDING AGENCY: National Science Foundation

GRANT AMOUNT: $5,000

DURATION OF STUDY: 13 months of data collection (June 1997-July 1998), 3 years for total study (June 1997-June 2000)

CITATIONS TO PUBLISHED ARTICLES:
(1) Fothergill, A. (1999). Women's roles in a disaster. Forthcoming in Applied Behavioral Science Review, pp. 30.
(2) Fothergill, A. (1999). An exploratory study of woman battering in the Grand Forks flood disaster: Implications for community responses and policies. International Journal of Mass Emergencies and Disasters, 17(1), 79-98.

AUTHOR'S ABSTRACT for her dissertation (Preliminary): The goal of this research project is to investigate, analyze, and understand women's experiences and vulnerability in a natural disaster from their point of view. Since June 1997, I have conducted a qualitative, longitudinal study in Grand Forks, North Dakota, a community that experienced a flood of historical proportions in the spring of 1997. My research is based on observations and sixty in-depth interviews with forty women of diverse backgrounds. Using this ethnographic data, I have analyzed women's lives, roles, work, and social class status to understand the meaning their experiences have for these women. Several issues that have emerged are: the increased demands in women's work, family, and community roles; how and why

women are more at risk to domestic violence during periods of disasters; how women experienced a stigma in the receiving of charity and public assistance; how some women experienced the flood as a violation of the self; women's efforts to preserve and recreate domestic culture and family rituals; and the ways in which women transformed and reconstructed their identity and sense of self as a result of their experiences in the disaster. I am utilizing the frameworks of symbolic interactionism, grounded theory, and feminist theory to analyze the data for this research project.

EXPANDED ABSTRACT for article (1) Women's Roles in a Disaster:
In this paper the author examines women's roles in the 1997 Grand Forks flood. Based on field research and sixty in-depth interviews conducted during six site visits, each lasting one to two weeks, between June 1997 and July 1998, she explores women's (1) Community, (2) Family, and (3) Work Roles before, during, and after the disaster. The interviewees consisted of forty women, twenty of whom were interviewed twice. The women represented diverse class backgrounds, marital statuses, professions, and ages (eighteen to eighty). However, most of the women were white, and all but one were heterosexual. Nineteen had children under the age of 18 living at home. (1) In the Community Role, women expanded their citizenship role and increased their community identification by sandbagging (usually viewed as a masculine environment), by sandbag/relief support activities (such as food preparation, sorting donated clothes, or staffing evacuation centers), and by providing assistance to neighbors and other non-family members (with assistance consisting of child care, loaning items, giving emotional support, or preparing homes). (2) In the Family Role, women cared for children, packed, prepared the home for the flood (perceiving it as more of a threat and undertaking more precautionary measures than their husbands), gutted and cleaned the home afterwards, and contacted community/repair agencies and services. While family roles followed fairly traditional gender lines, the gutting of the basements encouraged teamwork that had never occurred before in many of their marriages. (3) In the Work Role, women returned to their paid jobs or professions. Some women's positions as nurses, hospital administrators, public employees, and social workers required that they continue working throughout the crisis. Some women found their work role transformed into completely new jobs that emerged with the crisis, such as new management positions at emergency centers. As with community sandbagging and community-support work, women in these temporary leadership positions were satisfied with these work roles. Also many women admitted that it was good to go to work and not deal with flood clean-up for a period of time. In juggling the three roles, women sometimes experienced role conflicts. Women with young children were less able to contribute to the community role, and work roles became more difficult to perform after the flood when child care became more scarce. For example, in June, two months after the evacuation, there were daycare spots for only 495 children, when there had been 4,000 children in daycare prior to the flood. In general, however, the author found that the women in Grand Forks experienced a type of "role accumulation": they were committed to their multiple roles and were able to negotiate, fulfill them, and find them meaningful. This resulted in an expansion of both their roles and their sense of self. By successfully performing the "greedy" family role, the emergent community role, and expanding work roles, the women often discovered a new sense of confidence, self-worth, and competence.

AUTHOR'S ABSTRACT for article (2):
This paper presents an exploratory study of woman battering in the Grand Forks, North Dakota flood of April 1997. Based on my qualitative research of women's experiences in this flood, I present two case studies of battered women to enhance our understanding of what intimate partner violence means to women in the face of a natural disaster. The case studies illustrate how battered women make sense of their situations and how factors such as class and disability play a role in how women experience domestic violence. The case studies also show why services for battered women, such as emergency shelters and crisis counseling, are crucial during a disaster period. Even though we do not know if domestic violence rates increase in a disaster, we do have evidence that the demand for domestic violence services increases during disaster times. In light of this, I argue that there is a need to prepare

for that situation.

TITLE OF ARTICLE: The Sociologist as Rubbernecker: Photographing the Aftermath of the Red River Valley Flood of 1997

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CITATION TO A PUBLISHED ARTICLE: Ender, M. G., Hagen, C. A., Hagen, Jr., C. O., Morano-Ender, C. A., & Tiemann, K. A. (1998). The sociologist as rubbernecker: Photographing the aftermath of the Red River Valley Flood of 1997. North Dakota Quarterly, 65(4), 276-285.

SUMMARY: In the face of disaster, the role of a sociologist can be that of a rubbernecker with a plan. The term rubbernecker can be used to describe people who bear witness to a spectacle, and it is applicable to describe people who drove through the devastated neighborhoods of Grand Forks, North Dakota, and East Grand Forks, Minnesota. Feeling obtrusive at times and aware that disaster victims can feel resentful toward gawkers, the authors wrote this essay to let others know that they were not idle voyeurs during the months when they took photographs. Rather, they wished to make sense of the disaster and return some of the words and sentiments to those who survived the flood. For sociologists do more than witness an event; they also analyze, interpret, put things into perspective and focus on the interrelationships among the phenomena. Because some situations, like the immediacy of a flood, are too pressing to allow for objective social science, at least initially, the authors had to jump into the fray. They needed to capture photographs of graffiti quickly as they anticipated its removal within a few short weeks from the berms and whenever the condemned homes on which it appeared would be demolished. Afterward they made sense of over 150 slides of graffiti by organizing the 290 samples into five categories of data as detailed in the following article.

TITLE OF RESEARCH STUDY: Graffiti on the Great Plains: A Social Reaction to the Red River Valley Flood of 1997 (Paper presented at the Annual Meeting of the American Sociological Association, San Francisco, California, August 21-25, 1998).

PRINCIPAL INVESTIGATOR: Carol A. Hagen. She will be moving soon from the Sociology Department, University of Kentucky, 1523 Patterson Office Tower, Lexington, KY 40506. Tel: (606) 872-3788.

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CITATION TO A PUBLISHED ARTICLE: Hagen, C. A., Ender, M. G., Tiemann, K. A., & Hagen, Jr., C. O. (1999). Graffiti on the Great Plains: A social reaction to the Red River Valley Flood of 1997. Forthcoming in Applied Behavioral Science Review. 29 pp.

EXPANDED ABSTRACT: Superficially, graffiti, a deviance-related activity, and disasters seem unrelated. Nevertheless, following the Red River Valley flood of 1997, a private form of flood-related graffiti emerged in public spaces in the twin cities of Grand Forks, North Dakota and East Grand Forks, Minnesota. The data consists of a total of 290 selections of graffiti, two-thirds from Grand Forks and one third from East Grand Forks. Approximately half of the graffiti in the sample appeared on homes and garages, about 30 percent tagged household items, and the remaining 20 percent appeared on sign-boards placed on the berm, in the yard, on the porch, or leaned against a home. Five thematic categories of graffiti emerged through the analysis of photographed images. These categories included 1. Humor, which was often sarcastic or satirical; 2. Drawings; 3. Frustration; 4. Social and Political Commentary, in which the political commentary was negative with the exception of one sample and the social commentary was two-thirds negative and one-third positive; and 5. "Other," which consisted of billboard graffiti and city-sanctioned, damaged-property graffiti. Initially, graffiti provided a functional symbolic cue and was sanctioned by a directive from city officials to mark flood-damaged property in response to rumors of, and for the deterrence of, possible theft and resale of flood damaged goods to unsuspecting buyers. However, the intended purpose of tagging property evolved into a community discourse that reflected the community experiences of stress, loss, coping with loss, recovery, and hope. Outcomes were the reaffirmation of the ethos of the community and the promotion of some form of community solidarity. The authors label such graffiti--catastroffiti--as a unique typology related to natural disasters. For the Upper Great Plains, their findings suggest that the voicing of emotions through flood-related graffiti contributed to the recovery process and that disaster relief workers should recognize the functional nature of catastroffiti and avoid negative sanctions against it.

TITLE OF RESEARCH STUDY: The 1997 Red River Valley Flood: The Impact on Marital Relationships

PRINCIPAL INVESTIGATOR: Karen M. Davis, Hawai'i Pacific University, Honolulu, Hawai'i. Also at the Cancer Research Center of Hawaii, Honolulu, HI 96860. Tel: (800) 234-7118. E-mail: pandkdavis@aol.com (Previously at the University of North Dakota)

CO-INVESTIGATOR: Morten G. Ender, United States Military Academy, Department of Behavioral Sciences and Leadership, ATTN: MADN-BSL, Building 601, Room 281, West Point, NY 10996-1784, E-mail: morten-ender@usmc.edu (Previously at the University of North Dakota, Sociology Department)

CITATION TO A PUBLISHED ARTICLE: Davis, K. M., & Ender, M. G. The 1997 Red River Valley Flood: The impact on marital relationships. Forthcoming in Applied Behavioral Science Review, 13 pp.

EXPANDED ABSTRACT: This paper explores the deleterious social effects of the 1997 Red River Valley Flood on married couples from the Upper Great Plains cities of Grand Forks, North Dakota and East Grand Forks, Minnesota. The study consists of in-depth separate interviews with husbands and

wives (N=10 couples) at five to eight months after the April 1997 flood. All ten of the couples had been required to evacuate their homes and the community; however, the amount of flood damage differed. Three of the couples suffered no damage, three suffered basement level damage, and four suffered full damage. Two of the couples suffering full damage at the time of the interview were living in a FEMA trailer at the time of the interview. The other two couples with full damage had purchased another home by the time of the interviews.

Using symbolic interactionism as a framework, the study focused on couples' relationships at three different points in time: before, during, and after the flood. The majority of couples (70%) characterized their pre-flood relationship as strong and egalitarian. During the flood and evacuation, more than half of the couples (6 of 10) indicated that they experienced more tension and strain in their marital relationship, and 5 of the 7 couples (71%) who reported that their pre-flood relationship was strong reported more tension and stress in their relationship. Two couples reported that their relationship was stronger during the flood than it was before the flood and another couple that reported a weak relationship prior to the flood experienced a period of marital separation during the flood. After the flood, 6 of the 10 couples who reported that their relationship was stronger prior to the flood also reported that their marital relationship was stronger in the post-flood period. The 7th strong-relationship couple reported that their relationship did not change throughout the time. Two of the three couples (66%), who reported that their relationship was weak, reported that it was also weaker after the flood, and the third weak-relationship couple reported no change.

The two major findings that emerged are that 1) the flood had a noticeable impact on marital relationships and the impact appeared to be mediated by the state of the couples' relationship prior to the flood. Strong pre-flood relationships emerged stronger in the aftermath while weak pre-flood relationships emerged weaker in the aftermath; and 2) at the time of the interview, the relationship of couples with little and total flood-related damage fared somewhat better than couple with moderate levels of flood-damage (e.g., flooded basements).

The authors suggest the following intervention strategies for disaster service providers in order to make disasters less traumatic for families and couples in the future: 1) Mediate flood impacts on marital relationships by providing counseling services during and after disasters (especially for those with moderate or "hidden" levels of damage who may be especially vulnerable to problems like family violence and divorce). 2) Public broadcasting services during times of disasters could inform couples that feelings of tension and strain are normative during the period of physical reconstruction and inform couples that there are effective ways to cope with these feelings. 3) Disaster response organizations, such as FEMA and the American Red Cross, could provide services such as child care or rebuilding support services for couples facing relationship difficulties during and after disasters.

V. PSYCHOLOGICAL STUDIES OF RECOVERY

TITLE OF RESEARCH STUDY: Psychological Distress During the Red River Flood: Predictive Utility of the Conservation of Resources Model

PRINCIPAL INVESTIGATOR: H. Katherine O'Neill, North Dakota State University, Fargo, ND

CO-INVESTIGATORS: Blake A. Evans, Michael Bussman, and D. Kimberly Strandberg, North Dakota State University, Fargo, ND

CITATION TO A PUBLISHED ARTICLE: O'Neill, H. K., Evans, B. A., Bussman, M., & Strandberg, D. K. (1999). Psychological distress during the Red River Flood: Predictive utility of the Conservation of Resources Model. Forthcoming in Applied Behavioral Science Review, 26 pp.

EXPANDED ABSTRACT: Researchers have been interested in identifying factors which predict the level of distress following disaster exposure. Demographic characteristics such as gender and age have been shown to have limited predictive utility, although income and education level have been consistently negatively correlated with post-disaster distress (Gibbs, 1989). Disaster exposure has been shown to predict psychological outcomes (Green & Solomon, 1995). In particular, perceived life threat has been linked to a variety of adverse reactions among disaster victims (Norris & Uhl, 1993; Green et al., 1990).

To take into account the person/environmental interaction in disaster situations, this study examined the predictive utility of the conservation of resources (COR) model (Hobfoll, 1989) in an impending natural disaster, the Red River flood of 1997. The COR model proposes that threatened or actual loss of valued resources, such as one's possessions, social roles/relationships, and financial status, leads to psychological distress. This study tested the hypothesis that *threatened* resource loss would predict distress during the early stages of the flood. Faculty and staff of a Midwestern university were surveyed by mail within the two weeks prior to the predicted crest of the flood. Out of 1732 university employees, there were 377 respondents (61% male and 39% female). Most participants (72%) were married. The median age was 35-44 years, and the median family income was $35,000-$50,000 per year. About half reported having a high school or college education (49%), with the remainder having masters or doctoral degrees (51%). In addition to the demographic characteristics of age, gender, marital status, income, and education level, individuals were surveyed regarding perceived threat to safety, risk of being impacted by the flood, threatened loss of resources, and distress (i.e., negative mood, stress-related physical symptoms, and psychological symptoms). Hierarchical multiple regressions revealed that, across the three measures of distress, demographic characteristics, risk of flooding, and perceived threat to safety explained a small but significant proportion of the variance (R^2s=.06 to .16; ps<.001). Adding resource loss to the equations significantly increased the prediction of distress (R^2 change = .18, .25, and .31, for physical symptoms, psychological symptoms, and negative mood, respectively; ps<.001).

The potential loss of valued resources was a useful predictor of distress for persons living in a community threatened by an impending natural disaster. Anticipated resource loss explained a higher percentage of variance across all outcome measures than traditional predictors of disaster-related distress such as disaster exposure and demographic characteristics. Examination of beta weights for individual predictors suggest that greater perceived threat to safety, lower income, and greater threat to personal resources were the most significant determinants of distress, which is consistent with previous research which has shown income and life threat to be consistently correlated with disaster-related distress. Results indicate that those individuals who anticipate the greatest amount of loss tend to report the most distress.

These findings have implications for policy-makers, disaster response agencies, and communities affected by disaster. If threatened or actual resource loss is a key factor in producing psychological distress, then successful efforts to protect resources against loss may reduce distress and

thus reduce the impact of disaster on a community. This view supports investment in mitigation efforts, both on the individual and community level, to prevent loss of homes and property. The conservation of resources model also proposes that replacement of lost resources can reduce distress (Hobfoll, 1989). Although this prediction has yet to be tested empirically in a disaster situation, the strong relationship between resource loss and psychological outcomes provides indirect support. If this proposition is true, then a major goal of disaster recovery programs should be to assist individuals in restoring lost resources. Furthermore, the COR model suggests that merely replacing one's property and possessions is not sufficient. It is also important to restore lost or damaged social relationships, personal attributes, (e.g., sense of control, self-confidence), and energies (e.g., free time, line of credit).

TITLE OF ARTICLE: The Mental Health Response Following The Red River Flood of 1997

PRINCIPAL INVESTIGATOR: J. D. (Doug) McDonald, Ph.D., Assistant Professor of Psychology in an APA-Accredited Clinical Training Program, University of North Dakota, Grand Forks, ND 58202. Dr. McDonald is a member of the Oglala Lakota tribe from Pine Ridge, SD and grew up in Lame Deer, MT. He is also the Director of the Indian Health Services-funded Indians into Psychology Doctoral Education (INPSYDE) Program. Tel: 701-777-4495.

CO-INVESTIGATORS: S. Jeannie Caraway, Ph.D., Assistant Professor of Psychology, University of South Dakota. (She is a 1997 graduate of the University of North Dakota). Tel: 605-677-5354. Also: Kristin Vickers, M.A., Allison Pate, M.A., Holly Hegstad, M.S., Meg Westby, M.A., Tami Decoteau, Allan Storey, all from the University of North Dakota

CITATION TO A PUBLISHED CHAPTER IN A BOOK: McDonald, J. D., Caraway, S. J., Vickers, K. S., Pate, A. N., Hegstad, H. J., Westby, M, Decoteau, T, & Storey, A. (1998). The mental health response following the Red River Flood of 1997. In VandeCreek, L. & Knapp, S., et al. (Eds.) Innovations in clinical practice: A source book, 16 (pp. 439-454). Sarasota, FL: Professional Resource Press/Professional Resource Exchange, Inc.

MODIFIED ABSTRACT: The Red River Valley of Northeastern North Dakota experienced severe flooding on April 18, 1997. The 60,000 inhabitants of Grand Forks were mandatorily evacuated within 48 hours, with over 12,000 checking into the 3 primary shelters on the nearby Air Force Base. This article reports on the disaster mental health response of a local volunteer team working alongside the American Red Cross (ARC) and Air Force at the Grand Forks Air Force Base during the roughly 12-day Crisis Phase before the majority of evacuated people could return to their homes and the census could drop from over 12,000 people to a low of 120. Benefits and obstacles encountered in working with the existing Disaster Mental Health Response (DMHR) model(s) are discussed. Common personality and behavioral characteristics encountered are presented, as well as practical suggestions should clinicians find themselves in similar circumstances.

SUMMARY: By the early 1990s, models had been developed for immediate mental health disaster intervention by the American Red Cross (ARC) in team work with the American Psychological Association (APA) and state psychological associations, as well as national counseling and social work associations. The overall model consisted of a Disaster Mental Health Services (DMHS) program and a Disaster Response Network (DRN), "a nationwide team of psychologists organized within state chapters under state or provincial psychological associations (SPPAs) dedicated to training in, preparation for, and pro bono service in disaster." The DMHR model was intended to present a structure and process for coordinating disaster mental health response efforts. By most accounts, the model had worked well in subsequent disasters. It did not work well, overall, in the Red River Flood disaster response. Early

ARC reports to the APA and the North Dakota Psychological Association (NDPA) DRN officials gave the impression that the model and DRN staff were in place and the ARC had the situation "under control," needing no more help. Nothing could have been further from the truth, yet psychologists were turned away because the ARC report gave the message that "If you're not part of our team, you can't play." Blind over-reliance on the model placed the entire response at risk and caused the Team a number of 40- to 60-hour sleepless stretches because of the lack of help.

The first author was designated by the regional ARC DMHR (Disaster Mental Health Response) Director as the Clinical Director or Team Leader for the response. The Team Leader was the only clinical psychologist in the shelters during the Crisis Phase, all others either had evacuated, or were working with their agencies and assigned elsewhere. The Team consisted of eight UND graduate and undergraduate students, 22 staff members from the local state human services agencies (Northwest Human Services and Southwest Human Services centers from Grand Forks and Fargo), and two social workers from the Fargo Veterans Administration Medical Center (VAMC). Team members came and went. All were displaced, and at no time during the Crisis Phase did the ARC DMHR force exceed 10 individuals. Although some Team members had achieved varying degrees of ARC disaster mental health response training and the Team Leader had participated in the Flight 232 crash response, none were fully trained and certified members of the ARC or the Disaster Response Network (DRN).

Despite the lack of staff, and the great deal of flexibility required of staff during the disaster, the DMHR efforts of the Team, the Air Force, and the ARC did have positive outcomes. Early identification and support to Distressed Psychiatric Patients certainly contributed to the fact that they didn't have a single involuntary committal. Identification and half-hour rounds/checks for potentially suicidal/homicidal evacuees certainly contributed to there being no suicidal or homicidal attempts. Twice-daily staffing of all identified ND State Human Services Clients directly resulted in medication management and voluntary state hospital transportation to the extent that not a single person went without their medications, and 97% of these individuals were identified, triaged, and transported safely to the State Hospital without incident.

Several clinical evacuee profiles emerged during their work: (1) PSYCHIATRIC PATIENTS: (A) Distressed individuals--were those suffering exacerbation of psychotic, anxiety, or depressed symptomology. The majority were transported to the state hospital in Jamestown. Several were kept on site and closely monitored. (B) Non-Distressed individuals--were those who were medication-compliant and able to handle the stress. They were provided hourly checks. (2) DEVELOPMENTALLY DISABLED (DD): (A) Distressed individuals--were transported to Jamestown or the state developmental center. (B) Non-Distressed--were checked on regularly. (3) ELDERLY (They typically owned less, but lost more because they had been unable to move belongings up out of basements. They underestimated the threat of the flood and overestimated their ability to cope with it. Many had to be rescued by the National Guard because they flatly refused to evacuate when they could have). (A) Distressed individuals--had Alzheimer's or dementia or were combative, hostile, distraught, or hysterical and were checked on with regular or hourly checks. (B) Non-Distressed. After 2-3 days, the majority of the elderly fit this profile. (4) NORMAL (A) Distressed individuals--were those who had lost all they owned or did not purchase flood insurance. A great deal of rage was expressed toward insurance agents who advised their clients not to purchase flood insurance. Clinical intervention ranged from comfort and support to sedation, with crisis intervention skills constantly employed. (B) Non-Distressed. Even those who knew they had lost little and were psychoemotionally stable grappled with shock, disbelief, sadness, or guilt. Towards the end, evacuees were of meager resources (consisting of GF Mission inhabitants, homeless, those of lower SES, those of foreign descent, Non-Distressed DD, elderly, etc.), and the placement challenges were considerable for those who remained far into the Recovery Phase.

General response suggestions were to: (1) Be informed of services within and outside the shelter (2) Be competent in Crisis-Intervention (CI) Services Delivery, which is very different from the typical psychotherapy intervention. (3) Circulate among the evacuees (4) Be Prepared for Personal Hardship, as the shelter may be very cold or hot, insect-infested, noisy and smelly. As was the case at the Three-

Bay Hangar, clean, running water was not available for days and hot showers never were. Privacy was not enjoyed to any great extent.

The article also suggests to: (1) Acquire Essential Tools (a cellular phone, a multi-fold folder, pens, and a flashlight). (2) Identify/recruit all available local mental health volunteers. (3) Develop a structural/procedural plan of the Team's mental health response (designate a Team Leader; identify and network with other agencies institutions and clarify roles/responsibilities; develop a clinical plan of: staffing, involuntary committal procedures, psychiatric visits/medications, communications lines, and achievable goals). (4) Identify psychiatric patients and distressed evacuees. (5) Organize rounds and check-ins. (6) Get psychotic, pedophilic, suicidal, or homicidal individuals out of the shelter. (7) Work toward placement of evacuees).

Finally, although ARC/DRN training and credentialing is strongly encouraged to prepare one to work in a disaster situation, it is not absolutely necessary for one to help in an emergency. Although there have been disasters in which this model worked well, it did not work well in the Red River Flood, at least during the early Crisis phase. The authors encourage any non-ARC/DRN licensed mental health professional with malpractice insurance to help during disasters.

VI. DOMESTIC VIOLENCE STUDIES

TITLE OF RESEARCH STUDY: (1) Responding to Domestic Violence in Disaster: Guidelines for Women's Services and Disaster Practitioners, 27 pp.
(2) Violence Against Women in Disasters: A Study of Domestic Violence Programs in the United States and Canada, 41 pp. (a similar paper with much of the same information)

PRINCIPAL INVESTIGATOR: Elaine Enarson (was a Visiting Scholar at the Disaster Preparedness Resources Centre, University of British Columbia). New contact information: 33174 Bergen Mountain Road, Evergreen, CO 80439. Tel: 303-670-1834.

FUNDING AGENCIES: Received grants from the BC Institute Against Family Violence and the Feminist Research, Education, Development & Action Centre

DURATION OF STUDY: April - November 1997

EXPANDED ABSTRACT: While data are limited, field reports indicate that reported violence against women increases in communities hit by environmental disasters. Seventy-seven Canadian and U.S. domestic violence programs participated in a study of organizational readiness, impact, and response employing a mail survey and open-ended telephone interviewing. The study covered domestic violence shelters, transition houses, and state or provincial coalition offices, including among them 35 surveys completed by members of the British Columbia/Yukon Society of Transition Houses. Most respondents reported no or relatively minor disaster events (e.g., minor flooding, localized toxic spill); however, the survey also included 13 programs severely impacted in the 1990s by major flooding in the US Midwest, Quebec, and the Red River Valley, a southern California earthquake, and Hurricanes Andrew and Iniki. A case study of the April 1997 Red River Valley flood (which affected Grand Forks, ND, East Grand Forks, MN, two rural communities south of Winnipeg, and put Winnipeg on evacuation alert for several weeks) was developed through participant observation with the North Dakota Council on Abused Women's Services and telephone interviews in Manitoba. The study found low levels of in-house emergency preparedness, but also strong interest in increasing disaster readiness. Those programs most severely impacted by disasters reported increased service demands, as long as one year after the event, and decreased organizational resources. Strategies are suggested for more fully engaging women's services in community-based disaster mitigation, planning, and response.

FINDINGS (with the Interwoven Recovery Stories of Domestic Violence Programs in the Red River Valley): The papers outline the emotional landscape of abuse and the vulnerability and inequality that abused women face when making a "second-order evacuation" after a disaster. Evacuation centers may not protect their privacy or ensure their safety. Contact with crisis counselors may be cut off and court-ordered protection may be unavailable. Affordable housing, child care, employment, education, transportation, and health services may be less available and relief funds may be more available to the abuser at home than to women living in shelter. Although some women might find their ties to violent partners loosened by the destruction of their home or by the availability of disaster relief money, many women within abusive relationships or forced to return to such relationships may face increased abuse as a result of the disaster within a context of even greater invisibility (reduced social networks, restricted transportation, less employment opportunities, etc.). The "Violence Against Women in Disasters" paper cites one study that suggests that the degree to which communities identify domestic violence as an issue and are organized to respond to it before a disaster strongly impacts the nature and scale of community response to battered women after the disaster.

The papers share a similar report of the survey findings in regard to disaster preparedness in domestic violence programs. Findings indicate the low salience of disaster in most, though not all, US and Canadian domestic violence shelters and coalitions. Programs with direct hazard experience

indicated a higher awareness of local hazardous conditions or occurrences, but few reported regularly receiving any official information on disaster preparation, depending instead upon mass media; rural programs in Canada and the US were more likely to receive direct communication. Few programs are represented on local, regional, or provincial disaster planning groups. Among programs without experience of regional disasters (n=36), four participate in local emergency networks; the great majority (31 of 36) were either not certain or reported that their facility was not specifically included in local disaster plans. Programs with some regional disaster experience (n=41) were also unlikely to participate in local planning efforts (4 of 41); but more disaster-experienced programs did report being included in local response plans (13 of 41 programs, or 32%), in some cases, developing "stronger relationships with emergency managers" through the disaster (9 of 41, or 22%). Overall, most responding shelters reported their physical facilities to be "relatively safe;" although many are located in older buildings and in hazardous coastal or flood plain areas. Typically, disaster preparedness is not a priority for domestic violence programs working hard at "securing basic needs for women and children, e.g., safety, housing, etc.," and fewer than half reported taking steps internally to protect staff or residents during and immediately after a disaster. Indeed, 6 of 25 disaster-impacted programs (24%) and 19 of 52 non-impacted programs (37%) reported having taken no preparedness action of any kind. Preparedness measures often appeared oriented toward the routine (e.g. minor flooding) or contained accident (e.g. house fire) rather than the catastrophic (major earthquake), though a shelter might be at risk of both. Shelters with very low levels of preparedness were characterized by lack of past disaster experience, low levels of hazard awareness, lack of information about preparedness, and organizational constraints, whereas factors making disaster planning more salient included: a subculture of preparedness, organizational and personal experience, government mandate, coalition leadership, personal networks, and impending threat.

In 1997 in the Red River Valley, critical decisions were made on the run in communities located on a known flood plain but unprepared for protecting battered women and their children in emergencies. In Grand Forks, acting on (inaccurately) predicted flood levels made available to the public, the staff moved files and other supplies higher above the floor, thinking they might get an inch or so of water, and they lost their entire office. In Fargo, they responded proactively to warnings by transporting back-up computer tapes to private homes and moving files and educational materials, damaged once before by flooding. In Winkler, Manitoba they braced for flooding too, and staff rounded up extra bedding and supplies to house displaced clients if necessary and called local emergency managers to "remind them" they needed accurate information for their community hotline. In Winnipeg, shelter staff prepared their facilities as best they could against sewer back up and flooding, but supplies were scarce. In addition to reallocating shelter space to protect equipment and supplies, the two shelters worked to develop plans for rehousing evacuated shelter and transition house clients. Working with the Salvation Army, they located safe space for both clients and staff. However, just before the river crested, their primary funding agency overrode these plans and substituted an out-of-area evacuation plan, bringing conflicting views of client service and autonomy into sharp relief.

In Grand Forks at the time of the disaster, the shelter that housed both domestic violence and homeless clients was full, and the program had placed two families in hotels. All were forced to relocate including the 13 staff and 40-50 volunteers. The program struggled to keep the crisis line open and within a few days had their line forwarded to a cell phone. Upon their return to the destroyed center, center staff had to clean up the mess and 14 women shared one room and two phones for three months in a small office on the University of North Dakota campus. Six months later, they were informed that their newly renovated office space (which the city had advised them to renovate after the flood) must be moved again because the renovated site was located on the wrong side of a planned dike.

After a disaster, programs usually cite increased demands for service. Of all of the surveyed programs, 41 out of 77, reported some disaster experience, usually with contained forest fires or mudslide; disaster-induced service impacts were reported by 25 of these (61%). In 13 cases (32%), respondents indicated that their routine services were significantly disrupted by flood, earthquake, or hurricane. Impacted programs reported a decline in service demand during the impact period, citing

barriers to contact with women or the distraction of the immediate crisis. Nine of the 13 most severely impacted programs reported increased demand (e.g. crisis calls, counseling, shelter) after the disaster. The Grand Forks program, hit by flooding in April 1997, reported that crisis calls rose by 21% and counseling of on-going clients by 59% between July 1996 and July 1997; they processed an additional 18% more protection orders in August, 1997 than in August 1996. Staff also reported more referrals from emergency rooms, suggesting a rise in physical assaults. Downriver in Canada, where two small communities were flooded and Winnipeg sandbagged against the threat, programs did not report any flood-induced increase in service demand six months after the crisis. Upriver in Fargo, where the local domestic violence program provides crisis intervention but not shelter, there was a 15% increase in protection orders processed over the same period the preceding year, reflecting their own community stress and their response to Grand Forks families evacuated to the Fargo area. A second rural North Dakota shelter reported an increase of 15% in domestic violence crisis calls. In general, the surveyed impacted programs reported greatly increased case management with existing clients.

Programs usually cite declining resources after a disaster. The initial donations are usually short-lived. The director of the flooded Grand Forks program predicted that the private and public disaster relief would meet only half of their estimated $100,000 losses. In addition, six months after the crisis, the Grand Forks program was threatened with the loss of $60,000 in community development block grant monies diverted to "flood relief." This potential loss was apparently averted by the director's media appeal for different priorities in the recovery process. The Fargo program also was advised that United Way funds would be redirected to "flood victims," while their own fundraising efforts were cut into by the crisis itself. Survey respondents reported the determined efforts of staff and advocates to return to a stricken shelter and assist residents through hard times, regardless of personal losses, evacuation, and transportation hurdles, but staff overload is a problem. Only one program in Texas reported personnel guidelines in place specifying leave and salary policies for disaster-impacted staff. In large disasters, shelters must respond without the assistance of other local shelters and area resources, (e.g. local motels, safe houses, public transportation, legal and law enforcement assistance, housing and social services); and six months after the Red River flooding in Grand Forks, staff reported it was still a "huge struggle" and a long drive to a different courthouse to get protection orders signed.

After disasters, respondents most often cited that their programs had undertaken more disaster work through increased hotline calls, information and referrals, liaison and collaborative work with other community agencies, and fundraising. Some places reported the formation of support groups, grants, or coalition actions, etc. In North Dakota, the coalition as well as member programs wrote press releases, responded to media requests, and in other ways publicized the resources available to flood-impacted women and their families outside the immediate Grand Forks area. Significantly, the coalition failed in their efforts to be included among "primary agencies" listed in the resource guide to those staffing the state flood hotline, reflecting and reinforcing the invisibility of violence against women. The coalition later added "addressing disaster issues" to their already full annual agenda of goals, identifying emergency management professionals as a target group for domestic violence training. On a personal level, they also collected money, clothing, and other supplies for the five Grand Forks staff members who sustained losses. Flood-affected programs expect that the Manitoba association will also draw on their experience to help increase program readiness and response. Overall, there was a broad range of new "disaster work" undertaken by programs; and survey respondents, particularly in programs with prior experience, suggested that a more proactive role for state or provincial coalitions in this area would be supported (12 of 25, or 48%). Programs also reported consistently high levels of interest in addressing preparedness, but programs struggling to meet existing needs with limited or declining resources cannot move toward disaster readiness. Funding priorities in emergency response organizations as well as in an integrated community response must reflect and support the needs of women at risk of violence in disaster. The author includes a set of planning guidelines for shelters, coalitions, and disaster practitioners in the "Responding to Domestic Violence in Disaster" paper with outlined steps for: Risk Assessment of Shelters, Stockpiling Equipment and Supplies for 72 hours, Identifying Evacuation and Transportation Options, Determining Disaster Management and Personnel,

Establishing Network/Coalition and Area Resources, and Planning Staff Training.

TITLE OF RESEARCH STUDY: Risk of Domestic Violence after Flood Impact: Effects of Social Support, Age, and History of Domestic Violence

PRINCIPAL INVESTIGATOR: P. E. Clemens, Department of Social Work, University of North Dakota

CO-INVESTIGATORS: J. R. Hietala, M. J. Rytter, R. A. Schmidt, and D. J. Reese (all of the Department of Social Work, University of North Dakota)

CITATION TO A PUBLISHED ARTICLE: Clemens, P. E., Hietala, J. R., Rytter, M. J., Schmidt, R. A. & Reese, D. J. (1999). Risk of domestic violence after flood impact: Effects of social support, age, and history of domestic violence. Forthcoming in Applied Behavioral Science Review, 12 pp.

EXPANDED ABSTRACT: Community professionals observed an increase in domestic violence during the aftermath of the 1997 Grand Forks flood, as there was a 24% increase in reported domestic violence between July 1996 and July 1997. In the past, other research has documented emotional symptoms (such as anxiety, depression, hostility and stress) which result from natural disasters, and separate studies have observed domestic violence to result from these same emotional symptoms. No past research was found, however, specifically on the effects of a natural disaster on domestic violence. The purpose of the current study was to test the effects of a model of variables on domestic violence, including flood impact, the emotional symptoms, as well as other intervening variables which might act as a buffer against the effects of flood impact. The results of this cross-sectional survey were compiled from 140 Grand Forks adults (64 males, 73 females, and 3 of unrecorded gender). The average income of respondents was between $20,001-$40,000. The mean length of relationship was 148 months or approximately 12 years, with a standard deviation of 132 months or 11 years. Most respondents were married. The mean domestic violence score was 13.26 (s.d. = 7.77) with possible scores ranging from 0-33. The results indicated that domestic violence was significantly greater among respondents after the flood. Flood impact led to increased levels of anxiety, depression, and hostility. Whether these emotional symptoms subsequently led to increased domestic violence depended on the level of social support, the age of the respondent, and whether he/she had a history of domestic violence before the flood. Those with lower social support, the elderly, and those with a prior history of violence were most affected. The results have implications for work with the elderly (needing increased social support networks), with domestic violence treatment and prevention programs (needing increased funding), and with communities affected by floods (needing increased public service announcements alerting citizens about the dangers of increased violence and detailing the services available).

TITLE OF RESEARCH STUDY: An Exploratory Study of Woman Battering in the Grand Forks Flood Disaster: Implications for Community Responses and Policies (see details of full research under earlier listing for: Women in Disasters: Recreating Everyday Lives in Extraordinary Times (dissertation title))

PRINCIPAL INVESTIGATOR: Alice Fothergill, Department of Sociology, Campus Box 327, University of Colorado, Boulder, CO 80309, (303) 492-1031, E-mail: Alice.Fothergill@Colorado.EDU (under the direction of advisors, Professor Dennis Mileti and Joyce Nielsen)

FUNDING AGENCY: National Science Foundation

GRANT AMOUNT: $5,000

DURATION OF STUDY: 13 months of data collection (June 1997-July 1998), 3 years for total study (June 1997-June 2000)

CITATION TO A PUBLISHED ARTICLE: Fothergill, A. (1999). An exploratory study of woman battering in the Grand Forks flood disaster: Implications for community responses and policies. International Journal of Mass Emergencies and Disasters, 17(1), 79-98.

AUTHOR'S ABSTRACT: This paper presents an exploratory study of woman battering in the Grand Forks, North Dakota flood of April 1997. Based on my qualitative research of women's experiences in this flood, I present two case studies of battered women to enhance our understanding of what intimate partner violence means to women in the face of a natural disaster. The case studies illustrate how battered women make sense of their situations and how factors such as class and disability play a role in how women experience domestic violence. The case studies also show why services for battered women, such as emergency shelters and crisis counseling, are crucial during a disaster period. Even though we do not know if domestic violence rates increase in a disaster, we do have evidence that the demand for domestic violence services increases during disaster times. In light of this, I argue that there is a need to prepare for that situation.

VII. SOCIAL WORK STUDIES OF RECOVERY

TITLE OF RESEARCH STUDY: Human Service Providers' Perceptions of System Response to the 1997 Red River of the North Flood

PRINCIPAL INVESTIGATOR: Thomasine Heitkamp, University of North Dakota, Department of Social Work, PO Box 7135, Grand Forks, ND 58202-7135. Tel: 701-777-4950 or 701-777-2669. Fax: 701-777-4257. E-mail: thomasine_heitkamp@mail.und.nodak.edu

CITATION TO A PUBLISHED ARTICLE: Heitkamp, T. (1999). Human service providers' perceptions of system response to the 1997 Red River of the North Flood. Forthcoming in Applied Behavioral Science Review, 24 pp.

SUMMARY: Disasters of monumental proportions, like the 1997 Red River of the North Flood, can push local human service delivery systems beyond their limits and create untold stress among providers of mental health services. To determine the impact of the 1997 Red River of the North Flood on mental health practitioners and the human service delivery system, an exploratory study of practitioners' perceptions regarding the effectiveness of system response to the needs of clients was conducted one year following the flood. Questionnaires were completed by 81 social workers (for a 30% response rate out of 268 licensed social workers in Grand Forks County (ND) and Polk County (MN)) and 49 disaster outreach workers (in Grand Forks, ND and East Grand Forks, MN) for a total of 130 human service professional respondents. Sixty-seven percent of the respondents were female and 21% were male. The majority of the respondents were between the ages of 23-39. The majority (57%) possessed a Masters (28%) and/or Bachelors (72%) degree in social work. The majority (88%) represented private non-profit or public agencies. The majority (68%) were providing direct services as a case manager, counselor, or therapist; while 32% held administrative or supervisory positions. The primary foci of the respondents' practices were children and family, mental health, and gerontology.

Respondents indicated that the flood had a serious impact upon their clients: 65% of the respondents reported that the flood had a negative effect on their clients, 22% said the effect was neither positive or negative, and 5% reported a positive effect. Qualitative reports indicate that clients with the fewest economic and personal resources prior to the flood were the most negatively affected. Financial and housing problems caused clients more anxiety and depression; and an increase in family violence, abuse of alcohol, and acting-out behaviors among youth were also reported. Loss of personal mementos was a great source of despair.

Findings indicate that although most respondents were considered primary disaster victims themselves, they appropriately fulfilled their professional duties during and following evacuation. A significant number (60%) stated their job responsibilities had changed during evacuation; and 55% stated their responsibilities changed during flood recovery. Duties included establishing and staffing evacuation shelters, providing access to needed disaster relief services (including financial support, temporary housing, food, medications, and clothing), locating and serving vulnerable clients, assisting clients to rebuild their homes, rebuilding agencies, and providing outreach, crisis counseling and case management services. Respondents expressed feelings of satisfaction and enjoyment with the completion of the various tasks and from the increased flexibility gained through the relaxing of "bureaucratic standards" which allowed respondents to become more directly involved in meeting the tangible needs of clients.

To specifically address flood victims, human service professionals opened disaster outreach offices (funded by FEMA) in East Grand Forks and Grand Forks. In East Grand Forks, five local agencies coordinated disaster outreach services with 52 new employees hired. The Grand Forks office was established on May 1, 1997 under the auspices of two existing agencies, one public and one private, and hired over 100 professionals and paraprofessionals. The entire human service system response has been touted as a national model because of the extensive service coordination, and one group, the

Resource Agencies Flood Team (RAFT) is often mentioned as an example of a coordinated disaster response model. RAFT, made up of five secular and non-secular agencies, provided access to financial and case management services for eligible flood victims/survivors.

In regard to agency performance, the findings demonstrate a statistically significant improvement in the respondents' perceptions of agencies relationships following the flood. Using a 1-10 point scale with 10 being "excellent," respondents rated their relationships with human services agencies with a mean score of 7.04 before the flood, a mean score of 7.10 during the evacuation, a mean of 7.96 during flood recovery, and a mean of 8.25 later. Also qualitative and quantitative data indicated that respondents became more involved in networking with other agencies, and referrals were generally handled appropriately, with 70% believing that referrals were handled in a similar or better manner following the flood.

For clients, respondents reported a statistically significant increase in services (according to 70% of the respondents) and an improvement in services after the flood compared to before the flood. Respondents mentioned several new agencies (e.g. Federal Emergency Management Agency, Disaster Outreach, American Red Cross, RAFT) and several expanded agencies (e.g. Salvation Army, Catholic-Disaster Relief, Lutheran Disaster Relief, and several other church related groups). Using a 1-10 point scale, with 10 being "excellent," respondents rated the quality of services for clients as a mean of 5.3 before the flood, a mean of 7.0 during evacuation, a mean of 7.6 during flood recovery, and a mean of 7.5 later.

Respondents underscored learning the following: professionals should stay calm and purchase plenty of cell phones, disaster and animal rescue plans need to be in place, a coordinated response will prevent confusion and duplication of services, priority must be given to those who are medically fragile and where custodial responsibility exists, providers must provide tangible services, services should be advertised, and outreach services should be provided in the community. The author added that local human service professionals can assist with disaster preparedness and recovery even when they have become primary disaster victims if appropriate support is provided and coordination occurs.

TITLE OF RESEARCH STUDY: An Evaluation of Grand Forks Area Flood Recovery Services

PRINCIPAL INVESTIGATOR: Thomasine Heitkamp, University of North Dakota, Department of Social Work, PO Box 7135, Grand Forks, ND 58202-7135. Tel: 701-777-4950 or 701-777-2669. Fax: 701-777-4257. E-mail: thomasine_heitkamp@mail.und.nodak.edu

FUNDING AGENCIES: The Research and Program Development Office at the University of North Dakota and the Department of Social Work at the University of North Dakota are paying for the cost of mailings and survey development.

AUTHOR'S ABSTRACT: The purpose of this research was to determine general perceptions of flood recovery services provided to families in the Grand Forks/East Grand Forks area. Six-hundred and fifty subjects were secured for participation in this study. The subjects were selected at random from a data base that contained 2,820 families who had received Resource Agencies Flood Team (RAFT) services. RAFT was established in the Grand Forks/East Grand Forks area following the 1997 Red River of the North Flood and included the disaster service provided by Lutheran Social Services of North Dakota-Disaster Relief, Catholic Family Services-Disaster Relief, United Methodist Committee on Relief (UMCOR), The Salvation Army, and the United Way of Grand Forks/East Grand Forks and Area. These agencies combined resources to "form a more coordinated response system for disaster victims/survivors."

In May 1999, a five page survey questionnaire was mailed to the 650 individuals selected at random to participate in this study. Approval was secured from RAFT agency coordinators/directors

and the Institutional Review Board at the University of North Dakota prior to mailing the questionnaire. A variety of open and closed-ended questions were included in the questionnaire including respondents' perceptions of the services provided by RAFT agencies. Also requested were respondents' perceptions of the American Red Cross, the Federal Emergency Management Agency, Disaster Outreach, City of Grand Forks, Churches, Labor Unions, and a variety of other resources that were listed in the survey. Respondents were also encouraged to discuss lessons learned in flood recovery and general perceptions of human service response to this disaster. Twenty-five percent (N=161) of the surveys have been returned. Data is currently being tabulated and analysis will occur shortly. A summary report will be available for local human service personnel who provided services listed in this study by September 15, 1999.

TITLE OF ARTICLE: Delivering Human Services in a Time of Disaster: The Flood of 1997.

PRINCIPAL AUTHOR: R. L. Sanderson, LCSW, is the Regional Director of the Northeast Human Service Center in Grand Forks, North Dakota.

CO-AUTHORS: D. W. Stennes is the Quality Assurance Coordinator at Northeast Human Service Center.
M. J. Veenstra, Ph.D., is a clinical psychologist and supervisor of the Family Services Unit at Northeast Human Service Center.

CITATION TO A PUBLISHED ARTICLE: Sanderson, R. L., Stennes, D. W., & Veenstra, M. J. (1997, September). Delivering human services in a time of disaster: The flood of 1997: An overview. The North Dakota Journal of Human Services, 1(4), 7-9.

SUMMARY: One of the worst floods in this nation's history inundated the Red River Valley in April of 1997. Especially hard hit was the entire city of Grand Forks, North Dakota, a city of 50,000 people. In a typical disaster, emergency service providers are able to work within an infrastructure of existing human service organizations, but this flood resulted in the almost complete crippling of established human services agencies. In North Dakota, human services are delivered through an intricate network of private and public providers. The North Dakota Department of Human Services (DHS) in Bismarck is an umbrella agency which develops programs and policy in a broad range of service areas including mental health, alcohol and drug addiction, aging, developmental disabilities, vocational rehabilitation, children's special health, and child protection. These services are contracted out through private providers or are provided through eight regional human service centers, the North Dakota State Hospital in Jamestown, and the Developmental Center in Grafton. In addition, economic assistance programs such as Medicaid, Food Stamps, Public Assistance, Child Support Enforcement and Energy Assistance are state supervised by the Department of Human Services and county administered. The Northeast Human Service Center in Grand Forks, one of the eight regional human service centers, returned to an intact building. Most other places were not so lucky. The Grand Forks County Social Services initially set up operations out of the Methodist Church basement in Larimore. Juvenile Court personnel worked from the hospital. Linkages were formed with disaster agencies that now served the area: Air Force Base personnel, the National Guard, the Salvation Army, the Red Cross, FEMA, religious organizations, and many others. Evacuees included persons representing all populations served by the human services system. Approximately 100 clients with serious mental illness were temporarily housed at the State Hospital in Jamestown, 65 people with developmental disabilities were evacuated to the Developmental Center in Grafton, 10 children from the Ruth Meiers Adolescent Center were placed elsewhere, incarcerated adults and adolescents were transported to secure facilities throughout the region, elderly patients in nursing homes were dispersed to alternative accommodations, and literally hundreds of

clients were helped in their quest for safe environments. After the flood, the immediate objective was to address human needs for shelter, food, clothing, and medical/mental health attention. Decreased paperwork, increased discretion, flexibility, and the cooperative nature of the human service network served the city well in combating the disaster. However, some things might be done differently in a crisis of this magnitude: (1) The key organizations, both public and private, should engage in strategic planning regarding emergency services for various categories of clients, both those in group settings and those in independent living settings. (2) DHS central office units should be included in pre-disaster planning discussions, so they might have a better perspective on what is happening at the local level. (3) The various state institutions such as the Developmental Center and the State Hospital should be prepared for the possibility of an influx of clients on very short notice. (4) Advance planning should occur with other regional human service centers to prepare them to meet the needs of evacuees placed in shelters in their regions or the needs of persons temporarily staying with family or friends within their service areas. (5) More time and effort should be focused on emergency planning for foster children; many foster families were forced to evacuate and took their foster children with them. This created difficulties for some natural families.

VIII. SOCIAL SERVICE REPORTS TO THE RECUPERATION OF THE HUMAN SERVICES SYSTEM

TITLE OF ARTICLE: Grand Forks County Social Services

PRINCIPAL AUTHOR: D. E. Braaten, LSW, is the Director of Grand Forks County Social Services in Grand Fork, North Dakota.

CITATION TO A PUBLISHED ARTICLE: Braaten, D. E. (1997, September). Grand Forks County Social Services. The North Dakota Journal of Human Services, 1(4), 10-11.

SUMMARY: The three-story home of the Grand Forks County Social Services/Regional Child Support Enforcement Unit had 40 inches of the Red River on the first floor. The bottom three drawers of the economic assistance file cabinets with current casefiles were submerged in water. The 40 file cabinets containing closed files that were in the basement were totally lost. The open casefiles and those closed within the past year on the first floor were washed, treated with chemicals, frozen, and shipped off to Texas or elsewhere to complete the freeze-drying process and then returned up to six months after the flood. The building itself proved unusable until one hundred and two days after the flood. In the interim, the 75 employees served their clients from various sites, including other county offices throughout the state, the Northeast Human Service Center, the public health office, the University of North Dakota Social Work Department, and their own homes. The entire economic assistance department and the regional child support enforcement unit (consisting of 46 staff members) worked from the basement of the United Methodist Church in Larimore some 30 miles from home base.

The first task for the county's economic assistance staff was to set up the emergency food stamp program. The Department of Human Services sent computer and communications staff who supplied terminals, phones, and office supplies. The Food Stamp Division of DHS sent staff, forms, and supplies to assist with the emergency food stamp program which was approved for six days and later extended a few days to May 6th. Although food stamp rules were changed for a short time, it did require federal approval and was limited. About 1100 applications were processed and close to a quarter million dollars in benefits were provided in Grand Forks County alone. Across the state, $722,465 in emergency food stamp benefits were issued to 2852 families in 35 counties. The North Dakota DHS computer system proved its worth in its ability to electronically issue emergency Food Stamp benefits through electronic benefit transfer (EBT) for all Food Stamp households with a Grand Forks address. The computer system preserved essential data so clients could be served from anywhere in North Dakota and the lost files were not fatal to the programs. Several other counties sent staff and equipment to assist until displaced Grand Forks staff managed to get back to work. Hundreds of clients were scattered throughout North Dakota, Minnesota, and several other states and local offices dealt with the needs of those persons. On July 28th, the staff returned to their offices in the damaged building. The building can only be used temporarily for about two years while a new county building is built above flood level. Although the first floor proved unusable, the second and third floors could be occupied and two trailers were placed in the parking lot.

TITLE OF ARTICLE: Mental Health Services

PRINCIPAL AUTHOR: R. L. Johnson is the Director of Clinical Services at Northeast Human Service Center in Grand Forks, North Dakota.

CITATION TO A PUBLISHED ARTICLE: Johnson, R. L. (1997, September). Mental health services. The North Dakota Journal of Human Services, 1(4), 12-13.

SUMMARY: Just prior to the flood, preparations were focused on building dikes and attending to the physical needs of those working on the dike; and recovery plans for minor flooding (discussed by local community providers and the American Red Cross) consisted of workshops and outreach activities for community mental health professionals, clergy, and other helpers with information about disaster effects and to outline a means of responding to emerging needs and to make the appropriate referrals. These plans proved to be totally irrelevant for a disaster of this magnitude. Instead, during the evacuation, health and social services employees were asked to help with the staffing of the evacuation center, and persons with special mental health needs were identified and given assistance. An estimated 50 persons with serious mental illness were evacuated to the Air Force Base. Working with mental health staff from the Air Force Base and Red Cross mental health professionals, a room was set aside for persons with a serious mental illness who were having trouble coping with the shelter. It was still difficult, and they were moved to the North Dakota State Hospital. Staff from Prairie Harvest Human Service Foundation and the Northeast Human Service Center accompanied these persons and provided them supervision and support for four weeks. The State Hospital provided medical care, meals, and many other support services. South Central Human Service Center in Jamestown provided invaluable support and resources as well.

The mental health needs of the general population at the various evacuation shelters were primarily served by the local mental health professionals in those communities with some assistance from the American Red Cross and from teams of workers from other Human Service Centers who were deployed to evacuation sites to supplement services provided by local providers. Personnel in each of the evacuation centers developed groups and educational programs to help people understand and cope with the emotional aspects of the disaster. Generally, these were not used extensively. In fact, formal mental health services were used in a very limited way. Services were best received when provided in an informal style. Eventually, the number of persons staying at the evacuation centers began to decline but many of those remaining behind had more extensive psychosocial problems and fewer resources and support to help them. Casework and case management were often more important than psychotherapy and counseling. Mental health professions also provided critical services to emergency services personnel who ran the Grand Forks Emergency Operations Center and provided law enforcement and fire protection throughout the disaster. These were incredibly stressful jobs and debriefing was important during and well after the initial crisis.

The following observations were made: 1) Adequate plans had not been made to evacuate special populations. 2) Given the extent of the flood, it is questionable whether any plan could have been implemented very effectively, because mental health employees were also victims and available responders were there more by luck rather than of planning. 3) Communication was both vital and difficult during the initial stages, and the use of cellular phones was critical to contact staff and give them assignments near their temporary locations. 4) The role of mental health providers in a disaster of this type is very diverse, because only a small portion of the job involved traditional mental health assistance. To be effective one had to be flexible, willing to work in a variety of settings that are far from perfect, and willing to adapt to rapidly changing circumstances. 5) The assistance of local mental health providers at all the evacuation centers was invaluable. 6) The response of the communities throughout North Dakota and Minnesota that were hosts to evacuees was truly unbelievable and did more for mental health than anything else.

TITLE OF ARTICLE: The Developmentally Disabled

PRINCIPAL AUTHOR: S. V. Stennes, MRC, is a Developmental Disabilities Administrator at Northeast Human Service Center in Grand Forks, North Dakota

CO-AUTHOR: N. R. McDonald, M.Ed., LSW, is Executive Director of Development Homes,

Incorporated in Grand Forks, North Dakota

CITATION TO A PUBLISHED ARTICLE: Stennes, S. V., & McDonald, N. R. (1997, September). The developmentally disabled. The North Dakota Journal of Human Services, 1(4), 14-15.

SUMMARY: The service delivery network for the developmentally disabled includes the Northeast Human Service Center (NEHSC), Development Homes, Inc. (DHI), and REM. Over 500 persons with developmental disabilities are served by these agencies through residential facilities such as intermediate care facilities for the mentally retarded and transitional care living facilities. Other individuals with developmental disabilities live independently in Grand Forks and receive the residential services of individualized supportive living arrangements and supported apartments. Many families with children who are developmentally disabled or at risk for developmental disabilities reside in the greater Grand Forks area and are provided family support services, infant development services, and other services through NEHSC. On Wednesday April 16 some clients were moved within the city to group homes and apartments that presumably would stay dry. As the situation became more serious, all provider agencies and managers were put on alert. Cellular phones and beepers were distributed for a quick response to any emergency, and when dikes were breached and sirens blew throughout the city, administrative staff representing all DD provider agencies met and developed a plan for total evacuation. Some clients were transported to the homes of family and close friends while a few accompanied staff to their personal homes out of town. Many residents of Development Homes, Inc. were sheltered at state institutions, such as the Developmental Center on the shores of the Park River, where two EOC chartered bus loads of special needs individuals were transported. Two other buses transported DHI supported individuals from independent-living apartments to the Grand Forks Air Force Base. When this place proved unworkable, these individuals were later moved to the State Hospital in Jamestown. At first half of the REM clients and staff moved to the Grand Forks Air Force Base, some to a motel in Devils Lake, and a few to Grafton, until the Mayville Armory was secured as temporary housing for all REM-Grand Forks clients. Both the State Developmental Center and the State Hospital provided sleeping quarters for as many as 50 staff. It was a relief when other staff were located who were willing to drive to Jamestown, Mayville, or Grafton to assist the staff on site. Job responsibilities/shifts and medication dispensing areas were organized. Determining the medications of individuals who lived independently was particularly challenging because many of these people had arrived with label-less pill bottles or had left them behind when evacuated. Medication records were not easily accessed. Recreational activities, day programs, and/or vocational programs were planned for the clients. Meanwhile, administrative staff and case managers were working hard to prepare for the return home. Staff registered each client for the disaster assistance for which they qualified. Case managers and psychologists provided support, and provider agency staff and Northeast Human Service Center personnel worked side by side. To get everyone back home, group homes were filled to capacity, with some people sharing a room with a friend. Some new apartments were located, some stayed in university dorms, and some were assigned to FEMA trailers. By the third week in June, the last evacuee with developmental disabilities returned home to Grand Forks. While some things could have been done differently, true partnerships were the underpinnings of effective emergency response.

TITLE OF ARTICLE: Senior Trip: The Flood Evacuation of Grand Forks Senior Citizens

PRINCIPAL AUTHOR: M. E. Baumann, LSW, is Director of Social Services for Valley Memorial Homes, a 278-bed nursing facility in Grand Forks, ND.

CO-AUTHORS: N. Andrews, RHPF, is Director of Housing for Tufte Manor, an assisted living facility in Grand Forks, ND.

C. J. Brakel, LSW, is the Regional Aging Services Coordinator at Northeast Human Service Center in Grand Forks, ND.
E. M. Kathman, LSW, is the Outreach Supervisor at the Greater Grand Forks Senior Citizens Center in Grand Forks, ND.

CITATION TO A PUBLISHED ARTICLE: Baumann, M. E., Andrews, N., Brakel, C. J., & Kathman, E. M. (1997, September). Senor trip: The flood evacuation of Grand Forks senior citizens. The North Dakota Journal of Human Services, 1(4), 16-17.

SUMMARY: In a 48-hour period, the individuals who resided in one of Valley Memorial Homes three facilities, the 273 nursing home residents and 67 assisted living residents, were relocated to over 60 nursing homes, family homes, adult foster care and other assisted living facilities in six states. Meanwhile, other senior citizens were evacuated from their apartments and homes. The various systems that serve the elderly joined forces. Department of Health personnel worked all weekend, day and night, to help nursing home staff find temporary placements for all of the nursing home residents. Department of Human Services personnel worked with facility administrators to arrange payroll when daily operations revenues dropped from $35,000/day to zero. Older American Act guidelines were relaxed so that meal sites no longer needed to hold fast to age eligibility requirements. Reimbursement continued for the senior citizen center. Disaster outreach staff were hired to help returning senior citizens clean their homes, receive home-delivered meals, and have escorts to medical appointments. The Division of Aging Services of the Department of Human Services provided funds to hire six temporary outreach workers. It was recognized that, unlike the long-term care system, the community-based services system did not have a safety net in place. There was no master list which could be used to track the temporary locations of evacuated senior citizens. Difficulty was experienced obtaining home care staff to care for those senior citizens who were relocated in the area. In the community agency setting, returned senior citizens were tracked by their contact with agencies such as United Way, the Grand Forks Senior Citizens Center, Grand Forks County Social Services, home health agencies, and other agencies that served older citizens.

As a result of the experiences of the flood, the following plans have been made for future disaster preparedness. The Aging Services Program Administrator from Northeast Human Service Center will chair a planning meeting of all individuals who provide services to the senior citizens of the Grand Forks area with the following anticipated outcomes: to rebuild and re-establish the services network; propose a strategy for the next disaster; develop a forum where caregivers' concerns regarding the needs of the elderly can be discussed (i.e., depression, addiction, victimization); and convey to FEMA that letters to senior citizens should be easier to understand (larger typeface) and allow an easier appeal process.

TITLE OF ARTICLE: Foster Care

PRINCIPAL AUTHOR: I. M. Dybwad, LSW, is the Family Service Supervisor with Grand Forks County Social Services in Grand Forks, ND.

CO-AUTHOR: K. M. Kenna, LCSW, is Regional Supervisor of Child Welfare Programs at Northeast Human Service Center in Grand Forks, ND.

CITATION TO A PUBLISHED ARTICLE: Dybwad, I. M. & Kenna, K. M. (1997, September). Foster Care. The North Dakota Journal of Human Services, 1(4), 18-19.

SUMMARY: At the time of the flood 75 children, ranging in age from 3 months to 18 years, were in

foster care in Grand Forks County. As the crisis unfolded, there were frantic calls from parents and from 10 adolescents, who were in foster care due to their unruly behavior, who wanted to return to their parents and evacuate with them. With the immediate risk behind them, the Grand Forks County staff of 65 individuals moved to a temporary location in Larimore, and with one phone, began finding foster families and biological parents. Fortunately, back-up computer diskettes containing lists of families had been kept outside the agency office. On June 2, Foster Care operations moved to the University of North Dakota. The Social Work Department offered its computer lab which was converted into a temporary office area with computer terminals linked directly to the Department of Human Services (DHS) mainframe computer in Bismarck. Then, in July, Foster Care moved into two FEMA trailers located in the parking lot of the partially destroyed Grand Forks County Social Services office. Staff expect to remain in these trailers for up to two years. From these locations, staff worked with various agencies, the Red Cross, other county social services offices, the state office of DHS, Catholic Family Services, and the Northeast Human Service Center, to locate families and get payment from DHS to foster parents at their temporary locations. Donations made to the county were able to help absorb some of the expenses incurred by foster parents. Case managers contacted every family to assess needs and to provide support for a return to the community. Of the 75 foster children, 12 continue to live with their natural parents, 2 have left the foster care system upon turning 18, and the remaining 61 are still in foster placement.

Some recommendations for another disaster are that: (1) Every agency should have a plan for meeting client needs, with key people identified and mechanisms established to make contact with staff. (2) An interagency strategic plan should be developed which identifies needs, resources, and responsibilities. Agency collaboration is paramount. (3) Emergency numbers for foster parents and biological parents to call should be established at an unaffected location. (4) A disaster fund should be established to buy items such as medications and clothing for foster children.

TITLE OF ARTICLE: Juvenile Justice System

PRINCIPAL AUTHOR: D. E. Herbeck is Director of Juvenile Court Services for the Northeast Central Judicial District of ND.

CITATION TO A PUBLISHED ARTICLE: Herbeck, D. E. (1997, September). Juvenile justice system. The North Dakota Journal of Human Services, 1(4), 20.

SUMMARY: The 11 staff who made up the Juvenile Division evacuated to destinations in Minnesota and North Dakota. There were no court removals of children during the emergency since no need was reported and families were required to take care of their own family issues. It is unclear whether there was any danger to children or families due to the absence of these services. After the evacuation, the Juvenile Court, as part of the District Court, set up operations in Larimore, approximately 30 miles west of the Grand Forks. The presiding judge issued several emergency orders which allowed the current status of court orders to remain in force for up to 60 and 90 days. For Juvenile Court and placement agencies, this meant that active placements could be continued without the necessity of convening the formal court for routine matters. Judges, referees, and probation staff were available to deal with any problems or issues that might arise. Access to communication was critical. Very few placements were made during the emergency. As time went on, detention placements and protection placements for children were accomplished at the home of one of the juvenile supervisors who had beat the flood by diking her back yard. This proved to be a godsend for the Juvenile Court since this juvenile supervisor served as the clearinghouse for any Juvenile Court-related issues. Several detention hearings were held at her home via telephone conference with a judge presiding. Legal work and court hearings were largely accomplished via telephone. A major problem associated with re-establishing the Juvenile Court

after the flood was finding temporary quarters. On May 21, 1997, the Juvenile Court relocated its entire staff to the sixth floor of United Hospital. Attendant Care, a child placement organization, was also temporarily located at United Hospital as part of the post flood recovery. As of mid-July, the Juvenile Court continues its operations at United Hospital (which later will be renamed Altru Hospital).

TITLE OF ARTICLE: Grand Forks County Corrections

PRINCIPAL AUTHOR: B. B. Hansen is the Administrator of the Grand Forks County Juvenile Detention Center and Training Director for Grand Forks County Corrections.

CITATION TO A PUBLISHED ARTICLE: Hansen, B. B. (1997, September). Grand Forks County Corrections. The North Dakota Journal of Human Services, 1(4), 21.

SUMMARY: Grand Forks County Corrections is responsible for the care, custody, and control of persons arrested in Grand Forks and other counties. It is comprised of two separate units one for underage offenders (the Juvenile Detention Center) and one for adult offenders (the Grand Forks County Jail). Both units are located in the same building but on separate floors. On April 18th, four male juveniles were in custody at the Juvenile Detention Center, a 12-bed class II facility. The Administrator of the Grand Forks County Juvenile Detention Center contacted the Juvenile Referee of the Grand Forks County Juvenile Court and requested the release of all the juveniles to their parents. All four wanted to go home and their parents were willing to take them back. This Juvenile Detention Center Administrator remained in Grand Forks and worked in the Emergency Operation Center. While the rest of the city was evacuating, families who were not in a mandatory evacuation area insisted that a youth be removed from their home, even if it was to a placement 80 miles down the road in Cass County.

With the Juvenile Detention Center empty, the adult center began moving inmates into the upper level; however, within only a few hours a full evacuation became necessary and Grand Forks city buses transported inmates from the Correctional Center to a local church. Within four hours two private-company buses were transporting these inmates across the state to the Bismarck State Penitentiary. These 72 inmates, clad in orange uniforms, had criminal histories and pending charges ranging from check offenses to murder. The trip was difficult and dangerous, and one could only begin to speculate what might have happened had the bus broken down. Potentially dangerous situations such as fights were quelled. Under extreme pressure, officers did not overreact and handled each situation as it arose. Since the flood, correctional officers have spent many hours transporting inmates and juveniles between temporary holding sites in Cass, Walsh, Traill, and Ramsey counties. They drive between 2,000 and 2,500 miles a week providing inmates transportation to court appearances, doctors' appointments, and evaluations. As of September 2, both juvenile and adult corrections were fully operational and located in their original building. Delays were caused by the need for extensive facility repairs (i.e., the locking system). Like many other agencies, County Corrections has had damaged records freeze-dried and sent out of state to be recovered. Although Juvenile Detention is in need of a new facility, administrative staff currently have offices on the second floor of the Correction Center. Regaining staff is problematic because in Grand Forks County hourly rates for simple jobs that paid minimum wage before the flood are currently significantly inflated.

TITLE OF ARTICLE: Child Care: Unity Among the Christians, Lions and Others

PRINCIPAL AUTHOR: K. M. Kenna, LCSW, is Regional Supervisor of Child Welfare Programs at

Northeast Human Service Center in Grand Forks, ND.

CO-AUTHOR: R. L. Slavens, LCSW, is Assistant Regional Supervisor of Child Welfare Programs at Northeast Human Service Center.

CITATION TO A PUBLISHED ARTICLE: Kenna, K. M., & Slavens, R. L. (1997, September). Child care: Unity among the Christians, Lions and others. The North Dakota Journal of Human Services, 1(4), 22.

SUMMARY: The Red River crushed many home day cares and the child care system that had been taken for granted by the Grand Forks Community. The agency responsible for licensing early childhood services needed to reconstruct the network, and the first offers of help came from the Christian denominations across the nation. Catholic Disaster Services purchased three double-wide mobile homes as sites for free 24 hour child care for 125 children. The Southern Baptists began operating a temporary center for more than 40 children at an Evangelical Covenant Church. Other volunteers from such denominations as the Methodist, Christian Brethren, and others continued to arrive from as far away as Georgia, Mississippi, and Arizona. The focus was on rebuilding the child care infrastructure, upon which rests the community's ability to work, conduct business, and rebuild. Emergency monies from the North Dakota Department of Human Services were allocated to community child care to reestablish centers in temporary sites. Contributions of toys, equipment, supplies, and food from community, private and fraternal organizations, such as the Lions aided in responding to the crisis. A committee was also established to assess and problem solve. From this committee emerged grants, coordination and distribution of supplies, fund raising, and donations from corporations. In a short period, we were able to provide grant opportunities, a list of child care openings, toys, equipment, and support to licensed providers. A temporary suspension of child care regulations allowed for the immediate reopening of home day care facilities. On April 17, there were 299 licensed facilities; on April 18th, no day care was available in the city of Grand Forks. A month later, there were 45 homes in operation and by mid-July, there were more than 100 homes. The child care crisis is now on its way toward recovery.

TITLE OF ARTICLE: Ruth Meiers Adolescent Center

PRINCIPAL AUTHOR: D. R. Sturn is the Administrative Director of the Ruth Meiers Adolescent Center in Grand Forks, ND

CITATION TO A PUBLISHED ARTICLE: Sturn, D. R. (1997, September). Ruth Meiers Adolescent Center. The North Dakota Journal of Human Services, 1(4), 23.

SUMMARY: The Ruth Meiers Adolescent Center, a residential treatment facility serving 10 emotionally disturbed adolescents, tried to take a proactive approach to the possibility of flooding and made evacuation plans, that not only included to where and to whom the youth would be evacuated but also included packing the facility's van with sleeping bags, non-perishable food and beverages, first-aid kits, flashlights and other emergency equipment. The residents would then only need to pack a bag of clothing and personal hygiene products should evacuation become necessary. On April 19, the director received a telephone call at 3:00 AM saying that the facility had been ordered to be evacuated. Within one hour the majority of the treatment team arrived at the facility and started waking residents and helping them pack for the 6:30 AM evacuation to the Grand Forks Air Force Base. Then arrangements with the parents and legal custodians were finalized. Since the initial expectation was that evacuation would be necessary for only about a week, 7 of the 10 youth returned to their families. The remaining 3 youth were most appropriately placed in facilities in other parts of the state. Currently, the majority of

the 10 former residents are living in other similar adolescent centers. The Ruth Meiers Adolescent Center had its basement flooded and between 4 and 6 inches of water on the main floor. Given the extensive damage to the facility, all of the residents were discharged back to their legal custodians. The Center is expected to re-open by mid to late October 1997. Meanwhile, the staff were reassigned to duties at Northeast Human Service Center.

TITLE OF ARTICLE: Vocational Rehabilitation

PRINCIPAL AUTHOR: H. A. Schimmelpfennig is Program Director of Vocational Rehabilitation Services at Northeast Human Service Center in Grand Forks, ND.

CITATION TO A PUBLISHED ARTICLE: Schimmelpfennig, H. A. (1997, September). Vocational Rehabilitation. The North Dakota Journal of Human Services, 1(4), 28.

SUMMARY: Vocational Rehabilitation (VR), located at Northeast Human Service Center, helps people with disabilities to gain meaningful employment and increase independence through rehabilitation. The Grand Forks VR office manages about 750 active cases at any given time. The unit is comprised of seven counselors, one vision specialist, four support staff, and one administrator. Immediately following the evacuation the staff was reduced to one person answering client calls from the state office in Bismarck, with VR services being provided by the VR Program Director and two counselors temporarily located in VR offices in Fargo, Dickinson, and Grand Forks. Communication with the rest of the staff was initially difficult, but all of them (but one) were later contacted via voice mail, cellular phones, or through a local media announcement encouraging all employees to check in with the Central Office of DHS in Bismarck. Consumers calling the VR office were instructed to contact the DHS Central Office's toll-free number if they needed assistance. Demand for VR services was minimal at the beginning, because people were just trying to get oriented to their situations. Gradually the pace increased. Issues confronting our clients included missing or short supplies of medications, relocation costs for employment, and needing a familiar voice to provide some direction. Counselors provided resource information and acted as a clearinghouse for general flood information. The DHS Central Office made temporary changes to the main frame computer system so that service authorizations could be initiated and issued from any regional VR office. The state office also lifted the financial needs analysis for people affected by the flood and counselors in other regions were able to work without the file at hand by contacting the counselor of origin, when possible. In spite of the disaster, VR Services was able to respond to meet consumer needs. Technology provided the tools needed for immediate and effective crisis response. Also, the Northeast Human Service Center was fortunate that it took water only in the basement and was thus quickly reopened with minimal damage to files and equipment. Since the disaster, emergency communications procedures are being formalized.

TITLE OF ARTICLE: Disaster Outreach: A Unique Private/Public Collaboration

PRINCIPAL AUTHOR: B. M. Kramer, MSW, is a Co-coordinator of the Disaster Outreach Project. Prior to the Disaster, she provided outpatient treatment to the Adult and Family Unit of Northeast Human Service Center in Grand Forks, ND.

CO-AUTHORS: J. G. Regimbal, MA, LPC, is a Co-coordinator of the Disaster Outreach Project. She is Director of Youth and Family Advocacy for Lutheran Social Services of North Dakota.
D. J. Chaput, PBVM, MSW, is currently serving in ministry with her religious congregation, the

Presentation Sisters of Fargo, through rural ministry in Walsh and Pembina counties.

CITATION TO A PUBLISHED ARTICLE: Kramer, B. M, Regimbal, J. G., & Chaput, D. J. (1997, September). Disaster Outreach: A unique private/public collaboration. The North Dakota Journal of Human Services, 1(4), 24-25.

SUMMARY: After the flood, a $713,000 Immediate Services Grant for mental health services was awarded by FEMA; and a group from Northeast Human Services and Lutheran Social Services of North Dakota met on May 1 to plan for the "Disaster Outreach Project." Large areas of the city were still uninhabitable (lacking water, sewage, electricity, and having major disruptions in phone service). The personal experiences of the meeting participants spawned a realization that people needed to be seen in their own homes, that services should be brought to them, and that residents should be helped in anyway possible. The co-directors recruited more than 50 professionals and paraprofessionals in the region during the first weekend of operation. Twelve team leaders were appointed and 6 to 10 team members served under each leader. The teams, which were dispersed to various sections of the city, went door to door assessing the needs of their neighbors and helping in anyway possible. Tasks included making referrals for services, helping with cleanup when time permitted, and generally empathizing about losses. Two members of the Disaster Outreach Project were on staff at the Disaster Relief Center, which housed the central operations of such entities as FEMA and SBA. Since the Disaster Outreach staff members were frequently the only "local" people at the center, they helped FEMA staff and others through their knowledge of local culture, geography, and the typical emotional reactions of upper Midwest citizens. Other special concerns focused on the needs of elderly persons, youth, and individuals who were displaced from their homes and jobs. Teams were assigned to work specifically with these populations. Connecting with Aging Services, Parks and Recreation, Job Service, schools, and the Housing Authority allowed staff to work alongside traditional service providers. Staff also worked on emergency projects such as finding temporary housing, developing temporary day care, and assisting at distribution centers.

Rural outreach teams were sent out, and team members prepared a farm "buy out" letter and distributed donated supplies in their service areas. To seek out families, project staff did neighborhood canvassing, stopped in restaurants and other gathering places, received referrals from concerned agencies and individuals, and consulted county lists, plat maps, and FEMA registration lists. Teams offered not only emotional counseling but also physical assistance and donated items. They provided information for locating and applying for resources from agencies such as the Red Cross, Salvation Army, FEMA, and SBA. Such immediate action helped to alleviate the feeling of being overwhelmed by the disaster and its effects.

Neighborhood canvassing continued for approximately two months, and the Disaster Outreach Project evolved to work within the pre-existing structure of the community. At its peak, the Disaster Outreach Project funded approximately 200 crisis counselors across the state, with the vast majority of these concentrated in the Grand Forks area. As of mid-September, 55 crisis counselors continued to serve this community. As of late August, crisis counselors had made approximately 46,000 contacts statewide. A second Regular Services grant for $3.7 million was approved by FEMA in late August for a nine-month grant to continue to provide support and assistance as disaster survivors transition into normal functioning.

TITLE OF ARTICLE: Disaster Recovery: A Student's Perspective

PRINCIPAL AUTHOR: S. Brustad is a student intern with the Community Services Department at Northeast Human Service Center of Grand Forks, ND.

CITATION TO A PUBLISHED ARTICLE: Brustad, S. (1997, September). Disaster recovery: A

student's perspective. The North Dakota Journal of Human Services, 1(4), 29.

SUMMARY: After the flood closed down the University of North Dakota for the semester, final exams were cancelled; but the 12-week social work field placement began on time. The student reports: "My first day at Northeast Human Service Center was one week after the agency officially re-opened for business. The agency activity was ... chaotic, to say the least. Nearly all of the staff wore jeans, t-shirts, sweatshirts, and tennis shoes. In between work demands, staff members exchanged flood stories, frustrations, and humor to try and make the best out of their situations. Staff in the Community Services Department made arrangements to "muck-out" and power wash each other's basements or to help move washers, dryers, deep freezes, and water heaters to berm for trash pickup. If there was a giveaway of cleaning supplies or clothing, staff would pick up enough for everyone, especially for those who were the hardest hit. During the first few weeks, I heard many staff say, "I'm taking leave, I'm meeting the FEMA/SBA/insurance, etc... person at my house in fifteen minutes." In the midst of disaster recovery, flexibility was a must. It amazed me how staff were able to continue to do their work helping others from 8:00 to 5:00 while trying to get their own lives together from 5:00 to 8:00. Despite all of the chaos and craziness of Northeast Human Service Center, I felt welcomed right from the start. I was put to work doing what no manual or lecture could have prepared me for: helping to establish and staff emergency child care facilities. I helped unload countless shipments of donated toys, organized them, and helped with their distribution to child care centers and home-based providers. I helped coordinate food and shelter for volunteers from all over the United States such as the Southern Baptists and the Christian Brethren. If it had to do with child care, we were involved... [By the end of the placement, with the immediate crisis over,] things have normalized at Northeast. Staff are busy with the "regular" demands of child welfare service delivery. Overall, I was very impressed by the way Northeast Human Service Center pulled together for themselves and for the community."

TITLE OF ARTICLE: A Client's Story

PRINCIPAL AUTHOR: R. LaQua Rott, LICSW, MSW, is a clinical social worker in the Family Preservation Unit of Northeast Human Service Center. She does intensive in-home family therapy with children who are at risk for out-of-home placement.

CITATION TO A PUBLISHED ARTICLE: LaQua Rott, R. (1997, September). A client's story. The North Dakota Journal of Human Services, 1(4), 27.

SUMMARY: The author tells a story about a client she visited on the day the storm sewers were backing into the streets and approaching the clients' garden level apartment. The family consisted of a single disabled parent and his two emotionally disturbed children. Prior to the flood, they were already struggling with poor cash flow, an unreliable vehicle, little outside family support, and a disrupted routine which brought great difficulties for children. Her story of contact with this family is as follows : "I asked them if they had thought of where they would go if evacuated and asked them to make a list of five things they would pack. I further explained that some people put their special things high so the water couldn't reach them. The next time I saw the family was at the Grand Forks Air Force Base. On seeing me there, the ten-year old proclaimed, "I packed everything on my list!" It was such a small thing, but in some minor way this family had been mentally prepared for leaving their home ... Now in the Air Force Base hangar, home had become three aluminum cots on a cement floor. Both boys were reacting to the loss of daily structure, including the loss of their school. For a child with attention deficit hyperactivity disorder (ADHD), the hangar, with 1000 cots lined one after another, was a place of uncontained distractions and the boys' behavior was reflecting the strain. Their father and I agreed that the family needed to move on to a more stable environment. Four days later, to my surprise, neither the

Salvation Army nor the Red Cross would issue them a travel voucher to relocate. Their response had been, "We're sorry but we are now in the shelter phase. Relocation funds are available in the next phase." The family was eventually referred to Southeast Human Service Center in Fargo where wrap-around funds were made available to meet such nontraditional needs. The family headed in that direction. Visiting the family's apartment two weeks later, I was met at the berm with a six-foot high mangled heap of all the family's household possessions. I imagined nothing could have survived the four feet of sewage contaminated river water that washed through the apartment. I was overwhelmed to discover a handful of stuffed animals that had remained unharmed perch[ed] on the drapery rod where the children had placed them. As well I found a baby blanket blackened by river water. That's all that was left. I boxed up and mailed to the family the blanket which I had laundered in my home, a photograph of their cluttered berm, a post-flood photograph of their school, and the stuffed toys. I wanted the children to know that they had played a joke on the river, outfoxed it by keeping these toys safe. This, I thought, was therapy."

TITLE OF ARTICLE: A River Runs Over It

PRINCIPAL AUTHOR: H. Pederson, Ph.D., is a psychologist at Northeast Human Service Center in Grand Forks, North Dakota.

CITATION TO A PUBLISHED ARTICLE: Pederson, H. (1997, September). A river runs over it. The North Dakota Journal of Human Services, 1(4), 30-31.

SUMMARY: The author records his experiences with diking and evacuating the city on April 19, 1997. He reports being awoken at 3:00 a.m. by a colleague who was evacuating the city. He believed he was far beyond reach of the flooding and went back to sleep, only to be awoken again shortly afterwards. He reports, "Part of my job as a psychologist in Grand Forks involves working in a group home for emotionally disturbed adolescents. At 5:00 a.m., the telephone rang again... The order had come to evacuate the group home. We moved most of the adolescents to the Grand Forks Air Force Base 15 miles west of Grand Forks. A shelter was set up in three cargo plane hangers on the base. I remember the rows of military cots, no running water, and little to do but sit and wait. By the end of the day, we had some of our residents back with their families in other parts of the state and some in other group homes in Fargo, 70 miles to the south.

I made it back to Grand Forks about 8:00 p.m. that evening. A mandatory curfew now covered most of the city. Given that this might be the last chance to see my home for some time, I decided to hike in, despite the curfew. I parked about a mile from my residence and tossed on a backpack to carry out a few essentials. The National Guard, out in full force, allowed me to pass after assuring I lived in the area. Water covered the streets, although most houses and many yards were still dry. I walked through patches of dry yards and forded knee-deep water across streets to reach my place. Instead of watching for traffic, I was wary that the current might knock me off balance. I discovered my home was dry for now, although my garage and truck sat in a foot of water. ... The river does not care. It simply follows nature's law and not people's beliefs or desires. ... The scars of the flood of '97 will remain long after the streets and basements are once again dry."

TITLE OF ARTICLE: Giving and Receiving: The Lessons of Volunteerism

PRINCIPAL AUTHOR: T. L. Muhlhauser is the Director of the Children and Family Services Training Center at the University of North Dakota and an Adjunct Assistant Professor in the Department

of Social Work. As a flood volunteer, Ms. Muhlhauser was a supervisor at Sand Bag Central, a volunteer on the sand bag line, a mental health professional at the Evacuation Shelter, and a recovery volunteer mucking and sanitizing.

CITATION TO A PUBLISHED ARTICLE: Muhlhauser, T. L. (1997, September). Giving and receiving: The lessons of volunteerism. The North Dakota Journal of Human Services, 1(4), 26.

SUMMARY: Local volunteers, who struggled to save their city, quickly turned from givers to recipients after the flood. A generous response arose, as corporations like Northwest Airlines flew volunteers from Minneapolis to help clean up; as groups came from all over the country to clean homes and churches; as individuals like the couple from San Angeles, Texas, gathered a trailer truck of toys for the children; and as a very generous donor established the multimillion dollar "Angel Fund." Volunteers were subject to group living conditions, often sleeping in places like Hyslop Sports Center on the campus of the University of North Dakota and dining at Red Cross and Salvation Army facilities. What had started before the flood as our small volunteer force of local community members had turned within the month to a global community which lifted us up and onto the path of recovery. As a community of volunteers and human service professionals, we learned that with good leadership, the human service delivery system can be creative and can quickly adapt to meet a monumental challenge. We learned that there is no distinction between public and private when needs are great and that such partnerships are indeed crucial to effective service delivery. We learned that successful recovery sometimes means that traditional boundaries must be broken and relaxed. We learned that the transition from giver to receiver can spin around quickly. We learned that human service professionals sometimes have to transcend job descriptions to meet the needs of people in their community; we needed to fall back on those early values we learned prior to our professional training and embrace our understanding of dignity, compassion, humor, patience, and faith. In the simplest terms, we gave as volunteers and employees, we learned to receive as community members, and we were graced with an opportunity to see the circle come alive.

TITLE OF ARTICLE: Lessons Learned: A Summary

PRINCIPAL AUTHOR: K. J. Dawes, Ph.D., is a Professor Emeritus and Chester Fritz Distinguished Professor of Social Work at the University of North Dakota. Correspondence and reprint requests should be addressed to Dr. K. J. Dawes at the University of North Dakota, Box 7135, Grand Forks, ND 58202.

CITATION TO A PUBLISHED ARTICLE: Dawes, K. J. (1997, September). Lessons learned: A summary. The North Dakota Journal of Human Services, 1(4), 32-33.

SUMMARY: The author summarizes the lessons learned from the previous articles by identifying the characteristics of the Grand Forks human services delivery system that facilitated the effective and innovative response to the disaster despite the fact that the human services infrastructure had broken down and the service providers were themselves victims of the flood. 1) Cooperation: The previous trust and working relationships between staff members and organizations made it possible for the timely and safe evacuation of special populations and for the teamwork and cooperative ventures between public and private agencies in the midst of the flood. 2) Dedication and Professionalism: Despite the need to protect their own possessions and families, and their own fatigue, many human services professionals opted to serve their clients first; personal issues came second. Without this professionalism, the human services system could not have functioned as effectively as it did. 3) Leadership: Effectively responding to the disaster required immediate decisions on evacuation,

establishment of programs, the relocation of offices, the extension of court orders, and the formulation of new service delivery modes. Although hindsight may reveal that mistakes were made from time to time, the fact is that the system was not paralyzed by inaction and diffuse decision-making. 4) Organizational Structure: The many private and public agencies within the human services system in Grand Forks are frequently tied together through service contracts, funding mechanisms, and interagency agreements. Most of the public components are located within or affiliated with an umbrella agency, the Northeast Human Services Center. This organizational structure, with central leadership and accountability, served well in the crisis. 5) Discretion and Flexibility: The usual modes of service delivery were frequently set aside and new techniques were implemented. The central management of the statewide system did not insert itself into day-to-day decision making regarding the flood; local administrators were provided discretion and support, not micro-management or management from distant locations. 6) Empathy: The fact that many service providers were also service recipients provided an increased understanding of what it is to be a client, and programs such as Disaster Response and Mental Health Services consequently developed service delivery models based on this insight. Focus was placed on meeting the needs of the client as identified by the client. 7) Cohesiveness: The almost universal nature of the flood appears to have brought greater "bonding" to the human services system and to staff of the various agencies. 8) Technology: The availability of cellular telephones, a central computer system, electronic benefit transfers, E-Mail, electronic bulletin boards, and public radio announcements made possible the continuation of operations from remote locations. Finally, the various authors recognized the need for forming formal contingency plans for emergencies. The flood of 1997 is not over, the response is simply in another phase, one of tending to the needs and self-care of the service providers. The human services system is now faced with a dual challenge: meeting the emerging needs of their clients while tending to their own staff. It is also a time of opportunity. The crisis resulted in developing innovative approaches, forging new interagency linkages, and the awarding of discretion in program administration. Finally, the flood demonstrates the basic goodness of people, and this final lesson is probably the most valuable in making Grand Forks whole again.