

## APPENDIX A

Presented below, in abbreviated form, are the community-relevant issues which the research team identified for each of four cities undergoing reconstruction. Respondents interviewed varied in the precise manner in which they described the issue in many cases, so the wording here is our effort at a concise statement of the ideas expressed by the respondents.

### Rapid City

1. Basic plan for reconstruction including changes in land use.
2. Condemnation of property in keeping with changes in land use.
  - a. properties damaged by the flood
  - b. properties not damaged by the flood
3. Annexing additional damaged areas outside of the city.
4. Financing by the city of Rent Supplement housing for elderly disaster victims.
5. Location of temporary housing--land use and utilities.
6. Considerations of social compatibility and solidarity among residents in temporary housing.
7. Emotional problems--mental health program for flood victims.
8. Transportation problems for those residing in new areas of temporary housing.
9. Needs for special modes of communication between citizens and principal decision-makers.
10. Inequities in aid distribution--seeing that minorities get their fair share.
11. Need for early decisions on changed land use, the boundaries thereof and condemnation/compensation actions.
12. Questions of possible mass transit or other transportation for those who have been displaced.
13. Autonomy of city vis-a-vis Federal assistance program constraints.
14. Forced relocation of businesses vs. rebuilding in place with use of special flood-proofing techniques.

15. Changing of eligibility of rules for Urban Renewal acquisition of properties.
16. Use of HUD trailers for low income temporary/permanent housing.
17. Requiring payment of site fees for occupants of HUD trailers.
18. Possible need to establish rent controls.
19. Determining the direction of growth.
20. Possibility of zoning variances of certain businesses located in officially designated floodway.
21. Increased levels of unemployment due to damage and displacement of businesses.
22. Problems of getting cooperation among organizations in the development of reconstruction plans.
23. Planning for community response to future disasters.

Anchorage

1. Consider relocating the central business district.
2. Concern about getting back to normal as quickly as possible.
3. To what extent will building codes be revised, and to what areas shall they apply?
4. Is it appropriate to have the Corps of Engineers serve as the reconstruction coordinating agency?
5. Who will be believed regarding which areas are high risk and which of lesser risk?
6. How best to rapidly match state needs with available Federal programs.
7. How soon can acceptable housing projects be developed to house displaced families?
8. To what extent will the Turnagain Home Owners Association and other similar groups be allowed to influence land use and building code decisions?
9. Will building permits for repair of structures be given prior to final decisions on changed land use and related building code changes?
10. Will Turnagain and other heavily damaged areas be converted to parks and other similar uses?

11. Where will the houses being removed from the Turnagain area be located?
12. How quickly will condemnation action be taken?
13. Will building permit requirements be eased to encourage more rapid rebuilding or shall no permits be granted for new construction until final designations have been made regarding risk zones?
14. Will variances be permitted (officially or unofficially) from the restrictive building permit policy?
15. Will governmental aid be provided to owners of homes who are being forced to move their houses and to businesses in similar situations?
16. How long is it reasonable to wait for the definitive designation of risk zones?
17. How much and what type of development will be permitted in the different hazard zones?
18. How much will the city, state, and Federal governments spend to stabilize certain areas and thus reduce the hazard classification?
19. To what extent will Federal departments and agencies be permitted to stipulate which new (undeveloped) land areas may be used for relocated families and businesses?
20. Will the granting of SBA loans be contingent upon adoption by local government of land use, building code or other hazard mitigation measures?
21. Are financing institutions justified in withholding loans from owners with property in stipulated "high risk" zones?
22. Will certain "high risk" areas be reclassified when new data indicate that the land is more stable than before?
23. How will the city and the state cope with the shortfall of tax revenues?
24. To what extent will Federal agencies "bend the rules" to make their programs better fit the needs or desires of the local community?
25. Will there be any type of forgiveness on mortgages and other loans that are federally insured? Is deferred payment on loans desirable and feasible?
26. If deferred payment, will it be limited to owners who suffered direct property damage?

27. Are temporary housing facilities needed?
28. Will decisions on changes in land use be constrained by the criterion of compatibility of uses on adjacent parcels of land?
29. Will the Port of Anchorage be repaired and enlarged as a permanent facility?

Managua

1. Should there be a master plan for reconstruction?
2. Should there be government-financed temporary housing?
3. How will the temporary housing be financed?
4. Where should temporary housing be placed and how related to available utilities?
5. Will nongovernmental social service agencies be permitted to develop temporary housing facilities?
6. Will there be a special emergency/reconstruction agency to direct all relevant planning and reconstruction efforts?
7. Should the temporary housing be made permanent?
8. Should the subsidized temporary housing be available to all needy or only to those displaced by the disaster?
9. Which group of experts should be responsible for developing the master plan for reconstruction?
10. Should there be an arrangement for the exchange of information among private sector decision-makers?
11. Should governmental thinking and decisions be communicated promptly to all interested parties?
12. Should small and light industries damaged in the earthquake be encouraged/helped to begin again in other areas away from Managua?
13. Should persons needing food for their dependents be required to work on public works projects?
14. Will construction workers be required to continue to work a 60-hour week?
15. Should owners continue to pay taxes on land which has not been condemned and purchased by the government but on which they are forbidden to build (more than 15 months after the disaster)?

16. What will be done with all of the rubble?
17. Should government control exportation of scarce building materials?
18. What should be done about the substandard utilities and services in Las Americas (temporary/permanent low-income housing project)?
19. What should be done about the growth of illegal squatter settlements in Managua?
20. Should Managua families scattered to other areas be discouraged/restricted from returning to Managua?
21. Should simple building materials be provided for all qualifying families?
22. Should small businesses, those with the least resources remaining after the earthquake, be given special assistance to relocate and/or start to operate again?
23. Should the pace of rebuilding be controlled so as to avoid large layoffs of construction workers two to four years hence?
24. Should the government assist the poor displaced in the added transportation costs resulting from the decentralization of the city?
25. Should the rebuilding of school facilities be given high priority in the early reconstruction period?
26. What restrictions, if any, shall there be on the location of new permanent housing?
27. Will any repair or construction be permitted in the core city?
28. Should repair be permitted for damaged houses outside the core city?
29. Will construction loans be available while planning is going on prior to the making of key land use decisions?
30. Should construction be suspended even in areas where damage was light or nonexistent, e.g., along identified fault lines?
31. Should repairable houses have to be brought up to the requirements of the new building code?
32. Will there be a building code? And if so, what should its earthquake-related characteristics be?

33. Should all repairs and construction be suspended until a new building code is enacted?
34. Should the building code apply to all types of structures?
35. Should there be procedures which would assure more rapid processing of proposed construction plans by Urbanismo and the vice-ministry of Urban Planning?
36. To what extent can aid-providing agencies outside of Nicaragua be allowed to specify how the aid will be used?
37. How will illegal repair and construction be controlled?
38. Should the rebuilt city be decentralized/deconcentrated?
39. Should any construction be permitted on/near faults?
40. Which fault map is most valid?
41. Will tax rates be increased to help finance construction?
42. Will interest payments be deferred?
43. How can the costs of public services and structures be financed in the face of tax shortage?
44. Should there be a wage/price/rent freeze?
45. Will public employees be required to donate one month's salary to finance reconstruction?
46. Will the number of building inspectors be increased to cover added workload?
47. How will cash donations for unspecified recipients be dispersed?

San Francisco

1. How long should the Army and National Guard be involved in the recovery effort?
2. Should there be a general evacuation of the unproductive?
3. Will the city rebuild on the same site?
4. Should the major objective of reconstruction be to return to normal as quickly as possible?
5. Will the city, state and national government force insurance companies to pay in full for insured losses?
6. How should lost land titles be restored and verified?

7. Should squatting be permitted and for how long?
8. Should people in unauthorized housing be forced to move into authorized housing camps?
9. Should an early time limit be set on tent dwelling and wooden temporary housing?
10. Should families and businesses be allowed to put up and occupy temporary buildings in the destroyed area for a period of time?
11. Should there be building height regulations?
12. Should the preexisting Burnham plan for reconstruction of a "City Beautiful" be adopted?
13. Should water supply and transit be taken over by the city?
14. Should housing rents be controlled in the postdisaster period?
15. Should the propertied classes be favored in the distribution of relief loans?
16. Should Chinatown be relocated?
17. Should the city have the right to condemn property?
18. Should the city control the location and date of resumption of trade after the disaster by means of permits?
19. Should the city rectify predisaster problems in its physical structure? E.g., bring rail terminals close to the center, street widening and opening, put overhead lines underground, put in larger sewer lines.
20. Should there be a drawback of prices or subsidy of building materials?
21. Is reinforced concrete an acceptable building material for the San Francisco of the future?
22. Should the minorities, particularly Chinese and Japanese, be treated equally in the distribution of aid?
23. Should there be a public employment agency?
24. Should there be an authority to arbitrate wage increases, particularly in the building trades in the period of postdisaster inflation?
25. Should the fire limit, that is, the area of non-wooden buildings, be extended?

26. How should bordering towns be reimbursed for services to refugees?
27. When should disbursement of relief funds be turned over to normal charitable institutions?
28. Can and should outsiders be stopped from coming in to take advantage of free housing and special services?
29. Should the power of disbursement of relief funds be in the hands of city government or an appointed committee?
30. Should there be centralized control of food distribution?
31. Should food and housing aid for the able-bodied in the restoration period be contingent upon municipal work in clearing rubble and restoring streets, etc.?
32. How should temporary housing be distributed after the restoration period?

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## BIBLIOGRAPHY

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- Algermissen, S. T., et al.  
1972 A Study of Earthquake Losses in the San Francisco Bay Area: Data and Analysis. Report prepared for Office of Emergency Preparedness, National Oceanic and Atmospheric Administration. Washington: U.S. Department of Commerce.
- Amato, P. W.  
1970 "Elitism and Settlement Patterns in the Latin American City." Journal of the American Institute of Planners, Vol. 36, No. 2, pp. 96-105.
- Anderson, Clinton P., with Howard Bray  
1970 "The Work of the Federal Reconstruction and Development Planning Commission for Alaska, Views of the Commission Chairman." Pages 156-160 in National Academy of Sciences, The Great Alaska Earthquake of 1964: Human Ecology. Washington: National Academy of Sciences.
- Anuario Estadistico  
1971 Managua Ministerio de Economia.
- Baldassario, L.  
1975 "Sicily's Earthquake Zone: Waiting in the Wreckage; Effects of 1968 Earthquake." Nation 221, pp. 198-201.
- Barton, Allen H.  
1969 Communities in Disaster. New York: Doubleday.
- Bates, F. L., et al.  
1963 The Social and Psychological Consequences of a Natural Disaster: A Longitudinal Study of Hurricane Audrey. National Academy of Sciences, National Research Council Disaster Study #18. Washington: National Academy of Sciences Printing Office.
- Best, Alfred M.  
1907 Best's Special Report Upon San Francisco Losses and Settlements of the Two Hundred Forty-Three Institutions Involved in the Conflagration of April 18-21, 1906. A. M. Best Company.
- Black Hills Area Resource Conservation and Development Project  
1969 Black Hills Area Resource Conservation and Development Project Plan. Rapid City, South Dakota.

- Bolin, Robert C.
- 1976a Familial Recovery from a Natural Disaster: The Case of Rapid City. Unpublished Ph.D. Dissertation. Boulder, Colo.: University of Colorado Department of Sociology.
- 1976b "Family Recovery from Natural Disaster: A Preliminary Model." Mass Emergencies 1 (4).
- Bolin, Robert and Patricia Trainer
- 1976 "Modes of Family Recovery Following Disaster: A Cross-National Study." Chapter 11 in E. L. Quarantelli, ed., Disasters. London: Sage Publications Ltd. (forthcoming).
- Bowden, M. J.
- 1967 The Dynamics of City Growth: An Historical Geography of the San Francisco Central District, 1850-1931. Unpublished Ph.D. dissertation. Berkeley, Calif.: University of California Department of Geography.
- 1970 "Reconstruction Following Catastrophe: The Laissez-Faire Rebuilding of Downtown San Francisco After the Earthquake and Fire of 1906." Proceedings of the Association of American Geographers, Vol. 2, pp. 22-26.
- 1974 "Growth of the Central Districts in Large Cities." In L. Schnore, ed., The New Urban History. Princeton: Princeton University Press.
- Bronson, William
- 1959 The Earth Shook, the Sky Burned. Garden City, N.Y.: Doubleday.
- Burnett, R. G.
- 1972 Letter to Neil J. Erickson. Nebraska: Chief, Engineering Division, Omaha District Corps of Engineers, August 8 and October 11.
- Burnham, Daniel Hudson
- 1905 Report on a Plan for San Francisco. San Francisco: Sunset Press.
- Burton, Ian, Robert W. Kates and Gilbert F. White
- 1976 The Environment as Hazard. New York: Oxford University Press (forthcoming).
- California State Earthquake Investigation Commission
- 1908 The California Earthquake of April 18, 1906. Washington: The Carnegie Institute of Washington.

- Capraro, Giuseppe  
1974 Longarone, 1963-1973: Demographic and Social Reconstruction.  
Unpublished Ph.D. Dissertation. Rome: Pontifical  
Gregorian University School of Social Sciences.
- Chandler, T. and G. Fox  
1974 3000 Years of Urban Growth. New York: Academic Press.
- Ciborowski, Adolf  
1967 "Some Aspects of Town Reconstruction (Warsaw and Skopje)." Impact 17, pp. 31-48.
- 1969 Warsaw, A City Destroyed and Rebuilt. 2nd Edition. Warsaw:  
Interpress.
- City of Rapid City  
1971 Neighborhood Renewal Plan Application. Application to  
U.S. Department of Housing and Urban Development. Rapid  
City, South Dakota.
- Cochrane, Harold C.  
1974 "Predicting the Economic Impact of Earthquakes." In  
Harold C. Cochrane, et al., Social Science Perspectives on  
the Coming San Francisco Earthquake: Economic Impact,  
Prediction and Reconstruction. Natural Hazards Research  
Working Paper #25. Boulder, Colorado: University of  
Colorado Institute of Behavioral Science.
- Committee of Five  
1906 Report of the Committee of Five to the "35" Companies on  
the San Francisco Conflagration, April 18-21, 1906.  
New York: Mail and Express Job Printing.
- Committee on the Alaska Earthquake  
1970 The Great Alaska Earthquake of 1964: Human Ecology.  
National Research Council. Washington: National Academy  
of Sciences.
- Corps of Engineers  
1972a Flood Report: Cheyenne River Basin, South Dakota Black  
Hills Area: Flood of June 9-10, 1972. U.S. Department  
of the Army. Omaha: Corps of Engineers District Office.
- 1972b Flood Proofing Regulations. U.S. Department of the Army.  
Washington: U.S. Government Printing Office.
- Dacy, Douglas C. and Howard Kunreuther  
1969 The Economics of Natural Disasters: Implications for  
Federal Policy. New York: The Free Press.

## Davis, Nancy Yaw

1970 "The Role of the Russian Orthodox Church in Five Pacific Eskimo Villages as Revealed by the Earthquake." Pages 125-148 in National Academy of Sciences, The Great Alaska Earthquake of 1964: Human Ecology. Washington: National Academy of Sciences.

Directorio Comercial y Servicio

1970 Comite Nacional y Ferias. Managua, Nicaragua.

Directorio de la Industria de Centro America y Panama

1973 El Salvador. SATIA, SA.

Directorio Telefonico Nicarguense

1972 Managua: Telcor.

1974

## Douty, C. M.

1969 The Economics of Localized Disasters: An Empirical Analysis of the 1906 Earthquake and Fire in San Francisco. Unpublished Ph.D. Dissertation. Stanford, California: Stanford University Department of Economics.

## Drabek, Thomas E. and William H. Key

1976 "The Impact of Disaster on Primary Group Linkages." Mass Emergencies 1 (2), pp. 89-105.

## Drabek, Thomas E., et al.

1975 "The Impact of Disaster on Kin Relationships." Journal of Marriage and the Family 37, pp. 481-494.

## Dworkin, Judith

1974 Global Trends in Natural Disasters, 1947-1973. Natural Hazards Research Working Paper #26. Boulder, Colorado: University of Colorado Institute of Behavioral Science.

## Eckel, Edwin B. and William E. Schaem

1970 "The Work of the Scientific and Engineering Task Force." Pages 168-182 in National Academy of Sciences, The Great Alaska Earthquake of 1964: Human Ecology. Washington: National Academy of Sciences.

## Erickson, Neil J.

1975a "A Tale of Two Cities: Flood History and the Prophetic Past of Rapid City, South Dakota." Economic Geography 51, pp. 305-320.

1975b Scenario Methodology in Natural Hazards Research.

Monograph #NSF-RA-E-75-010. Boulder, Colorado: University of Colorado Institute of Behavioral Sciences.

- Erickson, P. E., et al.  
1976 "Families in Disaster: Patterns of Recovery." Mass Emergencies 1 (3), pp. 203-216.
- Federal Reconstruction and Development Planning Commission for Alaska  
1964 Response to Disaster: Alaska Earthquake, March 27, 1964. Washington.
- Freeman, John Ripley  
1932 Earthquake Damage and Earthquake Insurance. New York: McGraw.
- Friesma, Paul  
1975 Unpublished work.
- Gilbert, Grove Karl, et al.  
1907 The San Francisco Earthquake and Fire of April 18, 1906 and Their Effects on Structures and Structural Materials. U.S. Geological Survey Bulletin #324. Washington: U.S. Government Printing Office.
- Glassgow, E.  
1972 Letter to Neil J. Erickson. Rapid City: Black Hills Conservancy Sub-District, October 13.
- Guia Industrial Comercial y Profesional  
1973 Managua: CADIN.
- Haas, J. Eugene and Robert S. Ayre  
1970 The Western Sicily Earthquake Disaster of 1968. Washington: National Academy of Engineering.
- Haas, J. Eugene, Harold C. Cochrane and Donald G. Eddy  
1976 The Consequences of Large-Scale Evacuation Following Disaster: The Darwin, Australia Cyclone Disaster of December 25, 1974. Natural Hazards Research Working Paper #27. Boulder, Colorado: University of Colorado Institute of Behavioral Science.
- Hansen, Wallace R., et al.  
1966 The Alaska Earthquake March 27, 1964: Field Investigations and Reconstruction Effort. U.S. Geological Survey Professional Paper #541. Washington: U.S. Government Printing Office.
- Harbridge House, Inc.  
1972 An Inquiry into the Long Term Economic Impact of Natural Disasters in the United States. Prepared for the Office of Technical Assistance, Economic Development Administration, U.S. Department of Commerce. Boston: Harbridge House, Inc.

Himmelwright, Abraham Lincoln Artman  
1906 The San Francisco Earthquake and Fire: A Brief History of the Disaster. New York: The Roebling Construction Co.

Hirschleifer, Jack  
1963 Disaster and Recovery: A Historical Survey. Memorandum RM-3079-PR. Prepared for the United States Air Force Project Rand. Santa Monica, California: The Rand Corporation.

Immediate Action Plan  
1975 Unpublished manuscript seen at the office of Bill Mann. Washington: Department of State, AID.

Ink, Dwight A.  
1970 "The Work of the Federal Reconstruction and Development Planning Commission for Alaska: Views of the Executive Director." Pages 161-167 in National Academy of Sciences, The Great Alaska Earthquake of 1964: Human Ecology. Washington: National Academy of Sciences.

Jones, Barclay G., ed.  
1971 Regional Development Planning. Papers presented at a conference sponsored by Cornell University and the University of Puerto Rico, March, Barranquitas, Puerto, Rico. Ithaca, New York: Center for Urban Development Research, Cornell University.

Kates, Robert W.  
1975 Experiencing the Environment as Hazard. Mimeograph. Paper prepared for the Clark University Conference, Experiencing the Environment. Hopkinton, Massachusetts.

Kates, Robert W. and J. Eugene Haas  
1970 "General Introduction, Conclusions and Recommendations." Pages 1-4 in National Academy of Sciences, The Great Alaska Earthquake of 1964: Human Ecology. Washington: National Academy of Sciences.

Kates, Robert W., et al.  
1973 "Human Impact of the Managua Earthquake Disaster." Science 182, pp. 981-990.

Keightly, W. O.  
1975 Destructive Earthquakes in Burdur and Bingöl, Turkey-May, 1971. Washington: National Academy of Sciences.

- Kennedy, John Castillo  
1963 The Great Earthquake and Fire, San Francisco, 1906.  
New York: William Morrow.
- Krimm, R. W.  
1972 Letter to Neil J. Erickson. Washington: Assistant Administrator for Flood Insurance, October 3.
- Kunreuther, Howard and Elissandra S. Fiore  
1966 The Alaskan Earthquake: A Case Study in the Economics of Disaster. Institute for Defense Analysis, Economic and Political Studies Division.
- Larimer, Owen J.  
1973 Floods of June 9-10, 1972, at Rapid City, South Dakota.  
Hydrological Investigations Atlas 511, 1:18,000.  
Washington: Department of the Interior, U.S. Geological Survey.
- Lessa, William A.  
1964 "The Social Effects of Typhoon Ophelia (1960) on Ulithi." Micronesia 1, pp. 1-47.
- Lorentz, Stanislaw  
1966 "Reconstruction of the Old Town Centers of Poland."  
Pages 43-72 in Seminar on Preservation and Restoration (Williamsburg, Va., 1963) Historic Preservation Today.  
Charlottesville: University Press of Virginia.
- Mansfield, R. R.  
1938 Report on Floods of Rapid River, Pennington County, South Dakota. Presented to the Corps of Engineers District Engineer and the Mayor, Chamber of Commerce and Water Users of Rapid Valley. Washington: Committee on Flood Control of the U.S. House of Representatives.
- Manson, Marsden  
1906 Report of Manson Marsden to the Mayor and Committee on Reconstruction on those portions of the Burnham Plans which meet our commercial necessities and an estimate of the cost of the same. Unpublished report. San Francisco.
- Mikelson, J.  
1972 Letter to Neil J. Erickson. Rapid City: Professor of Geology and Engineering, South Dakota School fo Mines and former member of Rapid City Planning Commission, June 13-14 and October 18, 1973.

- Mileti, Dennis S.  
1973 "Drowning: A Communicable Disease." Paper presented at the Annual Meetings of the American Sociological Association Session on Mass Communication and Public Opinion, New York. Boulder, Colorado: University of Colorado Institute of Behavioral Science.
- 1974 A Normative Causal Model Analysis of Disaster Warning Response. Unpublished Ph.D. Dissertation. Boulder, Colorado: University of Colorado Department of Sociology.
- 1975 Disaster Relief and Rehabilitation in the United States: A Research Assessment. PB 242976. Springfield, Virginia: U.S. Department of Commerce, National Technical Information Center.
- Mileti, Dennis S., Thomas E. Drabek and J. Eugene Haas  
1975 Human Systems in Extreme Environments: A Sociological Perspective. Monograph #021. Boulder, Colorado: University of Colorado Institute of Behavioral Science.
- Minnis, Myra S.  
1971 The Voice of the People in Disaster and After: A Study in Residential Integration. Lubbock, Texas: Texas Tech University.
- Mitchell, William  
1976 "Reconstruction After Disaster: The Gediz Earthquake of 1970." Geographical Review 66, pp. 296-313.
- Mitchell, William A. and Edward A. Glowatski  
1971 "Some Aspects of the Gediz (Turkey) Earthquake." Journal of Geography 70, pp. 224-229.
- National Academy of Sciences-National Research Council  
1972 Housing Technology Alternatives for Use in Planning Post-Disaster Housing Assistance Programs. Building Research Advisory Board. Washington: National Academy of Sciences-National Research Council.
- New York Review of Reviews  
1906 Cited in Elmira Gazette. New York. June 4, 1906.
- New York Times  
1908 Cutting in Phelan papers, Carton 19. Berkeley, California: Bancroft Library.

Nicaragua Government Advertisement

1975 New York Times, January 26, pg. 74.

Nielsen, Nora G. and Martyn J. Bowden

1972 "Bound to the Barriadas: Migrations to the Peripheral Squatter Settlements of Lima." Proceedings, NESTLVAL, Volume II, pp. 28-39.

Norton, Frank R. B. and J. Eugene Haas

1970a "The Human Response in Selected Communities: The Cities and Towns." Pages 248-356 in National Academy of Sciences, The Great Alaska Earthquake of 1964: Human Ecology. Washington: National Academy of Sciences.

1970b "The Human Response in Selected Communities: The Native Villages." Pages 357-402 in National Academy of Sciences, The Great Alaska Earthquake of 1964: Human Ecology. Washington: National Academy of Sciences.

Nye, Francis Ivan and Felix M. Berardo, eds.

1966 Emerging Conceptual Frameworks in Family Analysis. New York: Macmillan.

Rapid City Journal

1972 Article, June 16.

Reed, Sylvanus Albert

1906 The San Francisco Conflagration of April, 1906. Special Report to the National Board of Fire Underwriters, Committee of Twenty. New York.

Rogers, Everette M.

1964 The Diffusion of Innovations. Glencoe, Illinois: Free Press.

Rogers, George W.

1970 "Impact of the Earthquake on the Economy of Alaska." Pages 32-38 in National Academy of Sciences, The Great Alaska Earthquake of 1964: Human Ecology. Washington: National Academy of Sciences.

Rosenthal, John C.

1974 Redevelopment After a Natural Disaster: A Planning Strategy for Recovery. Unpublished B.A. thesis. Cincinnati, Ohio: University of Cincinnati.

Sandner, G.

1969 Die Haupstädte Zentral Amerikas. Heidelberg: Quelle and Meyer.

San Francisco Relief Survey

1913 New York: Russell Sage Foundation. Publication seen in Phelan papers, Carton 19. Berkeley, California: Bancroft Library.

Saroff, Jerome R.

1966 "Sociology in the Reconstruction of Anchorage, Alaska: A Missing Factor." Pages 108-114 in Arthur B. Shostak, ed., Sociology in Action: Case Studies in Social Problems and Directed Social Change. Homewood, Illinois: The Dorsey Press.

Saroff, Jerome R. and E. Jack Schoop

1964 "Planning in Anchorage After the Earthquake." Journal of the American Institute of Planners (August), pp. 231-233.

Schnoor, Howard

1970 "The Work of the Federal Reconstruction and Development Planning Commission for Alaska, Views of the Executive Office of the President." Pages 150-155 in National Academy of Sciences, The Great Alaska Earthquake of 1964: Human Ecology. Washington: National Academy of Sciences.

Selkregg, Lidia, Edwin B. Crittenden and Norman Williams, Jr.

1970 "Urban Planning in the Reconstruction." Pages 186-242 in National Academy of Sciences, The Great Alaska Earthquake of 1964: Human Ecology. Washington: National Academy of Sciences.

Shally, V. W.

1972 Letter to Neil J. Erickson. Huron, South Dakota: U.S. Department of Agriculture, Soil Conservation Service, July 11 and October 16.

Sharp, Robert E.

1970 "Views of the Alaska Governor's Administrative Assistant." Pages 183-185 in National Academy of Sciences, The Great Alaska Earthquake of 1964: Human Ecology. Washington: National Academy of Sciences.

Sjoberg, G.

1960 The Preindustrial City, Past and Present. New York: Free Press of Glencoe.

Soil Conservation Service

1972 Type 15 Flood Insurance Study, Rapid City, South Dakota. Preliminary Report. Huron, South Dakota: U.S. Department of Agriculture.

The Statesman's Yearbook

1908 Statistical and Historical Annual of the States of the  
1923 World. New York: Macmillan and Company.  
1939

Steinbrugge, Karl V.

1968 Earthquake Hazard in the San Francisco Bay Area: A Continuing Problem in Public Policy. Berkeley, California: University of California Institute of Governmental Studies.

Suplemento Telefonico de Nicaragua

1973 June.

Sutherland, Monica

1971 The Damndest Finest Ruin. New York: Ballantine Books.

Suttles, Gerald

1972 Social Construction of Communities. Chicago: University of Chicago Press.

Tefel, R. A.

n.d. El Infierno de los Pobres. Managua: Ediciones El Pez Y La Serpiente.

Thomas, Gorden and Max Morgan Witts

1971 The San Francisco Earthquake. New York: Stein and Day.

Thompson, Herbert J.

1972 "The Black Hills Flood." Weatherwise 25, pp. 162-167, 173.

Trainer, Patricia Bolton

1976 Family Recovery Following a Natural Disaster: The Case of Managua, Nicaragua. Unpublished Ph.D. Dissertation. Boulder, Colorado: University of Colorado Department of Sociology (forthcoming).

United National Education, Scientific and Cultural Organization

1968 The Skopje Earthquake of 26 July 1963. Report of the UNESCO Technical Assistance Mission. Paris: UNESCO.

United Nations, Economic and Social Council, Committee on Housing, Building Planning

1966 Report on the Rehabilitation and Reconstruction of Housing and Community Facilities in Cases of Natural Disasters. Unpublished report.

- United Nations, Secretariat  
1970 Skopje Resurgent, The Story of a United Nations Special Fund Town Planning Project. U.N. Development Programme.
- U. S. Congress  
1959 Cheyenne River and Tributaries, South Dakota and Wyoming.  
U.S. Department of Defense, Army Corps of Engineers,  
House Document No. 280, 86th Congress, 2nd Session.  
Washington: Government Printing Office.
- U. S. Bureau of the Census  
1973 Mobile Homes. U.S. Department of Commerce, Bureau of the Census, 1970 Census of Housing. Washington: U.S. Department of Commerce.
- U. S. Geological Survey  
1971 Map of Flood Prone Areas, Rapid City West Quadrangle and Rapid City East Quadrangle. 7.5 Minute Series. Washington: U.S. Government Printing Office.
- White, Gilbert F.  
1964 Choice of Adjustment to Floods. Department of Geography Research Paper #93. Chicago: University of Chicago Press.
- 1974 Natural Hazards: Local, National, Global. New York: Oxford University Press.
- White, Gilbert F. and J. Eugene Haas  
1975 Assessment of Research on Natural Hazards. Cambridge, Massachusetts: MIT Press.
- White, Gilbert F., et al.  
1975 Flood Hazard in the United States: A Research Assessment. Monograph #NSF-RA-E-75-006. Boulder, Colorado: University of Colorado Institute of Behavioral Science.
- Whitney, Albert  
1906 On Insurance Settlements Incident to the San Francisco Fire. Report of the Special Committee of the Board of Trustees of the Chamber of Commerce. San Francisco.

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