

## **Hazard Mitigation Strategy for Federal Disaster #774:** **1986 Central Michigan Flooding**

Within the Saginaw River Basin there has been considerable activity pertaining to proposed flood control projects and floodplain management activities. Flood control projects have been active since 1954. The remaining river basins within the disaster area are more rural and activity has been limited to floodplain management activities at the state and local level.

Flood protection projects were recommended to be constructed at Frankenmuth, Vassar, Flint, Corunna, Owosso, Midland and Shiawassee Flats. The Flood Control Project for the City of Frankenmuth was constructed, and significantly reduced the flood damage within the city. A December 1982 Flood Control Project for the City of Vassar was approved but unfunded. The project consisted of the construction of flood walls and levees, bridge improvements, drainage structures, and the diversion of Moore Drain. The U.S. Army Corps of Engineers indicates that the project would have contained the 1986 flood. Using current interest rates, the project would not be economically justified.

In April 1975, the Corps of Engineers prepared a Flood Control Project Design Memorandum for the City of Midland. The project involved a dike and flood wall, construction and enlargement of the Tittabawassee River. The city rejected the structural approach, in favor of a nonstructural project. The January 1977 Flood Control Project Design Memorandum at Midland provided for permanent evacuation, floodplain regulation and recreational development. This particular project was not implemented; however, the city is purchasing flood prone parcels as they become available.

The November 1982 Flood Control Project at the Shiawassee Flats proposed construction of new levees, drainage and control structures, channel improvement, relocation of buildings, and raising bridges. Local support was not available for the project.

The July 1975 Rogue River Watershed Plan was prepared by the U.S. Department of Agriculture, Soil Conservation Service for the upper portion of the Rogue River in Kent County. The plan involved channel modification, water level control structures, and sediment traps.

The 1960 Misteguay Creek watershed project designed by the U.S. Department of Agriculture, Soil Conservation Service consisted of 3 flood water retarding structures, 43.4 miles of channel work, and 5.7 miles of levees. As a result of the 1985 and 1986 floods, the Soil Conservation Service has begun to repair and redesign portions of the project.

A major area of nonstructural flood hazard mitigation is the system of local and state regulations that govern building and rebuilding in the floodplain. Both the local and state provisions serve as continuing flood hazard mitigation tools.

Local regulations dealing with floodplain development—the communities involved in this disaster declaration have various levels of floodplain management regulations. They vary from none to more stringent than state or federal regulations. Local enforcement of more stringent ordinances than required can result in more restrictive floodplain land use and increased flood loss mitigation.

Individually, the state or local controls are not as comprehensive as desirable for proper floodplain management; however, when used together, the controls are fairly effective. The local unit of government has authority to enact and enforce comprehensive floodplain management by going beyond the state and National Flood Insurance Program minimum regulations. To do this, local officials must have floodplain management firmly in mind when developing land use plans.

The city of Midland has purchased and removed homes within the floodplain/floodway of the Tittabawassee River. The purchase is done solely on a voluntary basis, as money becomes available.

During the 1986 flood, the City of Zilwaukee used a volunteer sandbagging effort to reduce the flood damages from the Saginaw River.

Existing mitigation measures are reducing flood damages. This is evident in Frankenmuth in which the construction of a Corps of Engineers Flood Control Project prevented flood damage during the 1986 flood.

State wide measures: relocation and acquisition, warnings/emergency plans, dam safety/operations, floodplain management, agriculture, infrastructure, state flood hazard mitigation planning, legislative needs.

Provide local units of government with technical expertise and encouragement to develop a relocation/acquisition plan for damaged buildings that lie within the floodway of the Muskegon River in Newaygo County. Acquired lands should be dedicated

to public open space with restrictive covenants prohibiting future development. *Lead Agency: FEMA, SBA, MDNR, MSP/EMHSD, MDOCm, and Newaygo County and affected townships (Brooks, Garfield, Bridgeton and Ashland).*

Provide technical expertise and encouragement to the City of Vassar officials to define available options for handling the severely flood damaged buildings in the city. The Flood Insurance Study for the City should be revised to reflect current 100-year flood discharge estimates, and to better define the 100-year flood elevation. Structural flood protection projects as well as nonstructural measures, including acquisition, relocation, and floodproofing, should be considered. *Lead Agency: FEMA, SBA, City of Vassar, MSP/EMHSD, MDNR, MDOCm, and USACE.*

Provide technical expertise and encouragement to flood stricken communities to help define available mitigation projects that could be funded with Community Development Block Grant funds.

Projects include relocation of existing structures, clearing of the floodway, relocation of sanitary sewage facilities, protective diking and elevation of buildings above the 100-year flood level. *Lead Agency: MDOCm, MSP/EMHSD, and MDNR.*

Develop a realistic Federal, State, and/or local program to relocate or flood proof flood damaged structures.

The impetus to remove flood prone structures from the floodplain has to come from the local level. The state and federal government can provide technical support and funding but the decision to clear flood prone structures is primarily local. The city of Midland has an ongoing acquisition program for property in flood prone areas; the city of Owosso just completed removing 40 structures from the floodplain as part of a redevelopment project; in 1986, the state had a loan subsidy program from relocation or floodproofing along Lake Michigan, Huron, St. Clair, Erie and Superior; and in 1986, the state also implemented a shoreline protection program which made grants of up to \$30,000 available to Great Lakes jurisdictions for shoreline protection or hazard mitigation measures.

Block Grant funds available to communities for flood hazard mitigation purposes to aid in recovery from the September 1986 flood. The block grant is based upon urgent need and is limited to one million dollars per community.

The state needs to continue looking at financial incentives to move or elevate structures in hazard areas in pre-flood disaster format. A version of the low interest loan program offered by the state in 1986 should be considered on a statewide basis and as a permanent program. *Lead Agency: MDOCm, MSP/EMHSD, MDNR, City of Midland and City of Owosso.*

Develop and test river basin warning/communication networks, as monies become available.

Improve the flood gage level system which will require: a network of rainfall measuring devices; additional river stage gages to be placed upstream of vulnerable communities; a network of volunteers to read the rain gages and river gages and report the results to a central location; and a central collection point to provide the NWS River Forecast Center with data. *Lead Agency: NWS, USGS, MSP/EMHSD, MDNR, county emergency coordinators, local law enforcement agencies, dam owners, volunteers, and radio/television stations.*

Review and update local Emergency Operations Plans (EOP). *Lead Agency: MSP/EMHSD, MDNR and FEMA.*

Adopt State legislation that effectively addresses dam safety issues, including periodic inspections, maintenance standards, emergency action plans, and impoundment regulations. *Lead Agency: MSP/EMHSD, MDNR, FEMA, and the Governor's office.*

Expand emergency action plans for dams to include notification and warning procedures for the occasional unusual increase in flow release. *Lead Agency: MSP/EMHSD, MDNR, Public Service Commission, appropriate power companies, FERC, FEMA, NWS, USGS, USACE, and local governments.*

Increase public awareness of the NFIP.

A program should be developed to review and monitor Federally regulated lenders to ensure that flood insurance is purchased and maintained for structures within identified flood prone properties. *Lead Agency: MSP/EMHSD, MDNR, FEMA, and the banking industry.*

Map areas susceptible to flooding and include the best available elevation data on existing floodplain maps. *Lead Agency: MSP/EMHSD, MDNR, FEMA, SCS, USACE, and USGS.*

The State of Michigan should sponsor an annual "Flood Awareness Week." *Lead Agency: MSP/EMHSD, and NWS.*

Increase awareness of hazard provisions in building code standards, ordinances, and procedures with local elected officials, building code officials, and flood plain residents.

Awareness of the NFIP minimum requirements and building code requirements need to be strengthened. Suggestions put forth toward improving enforcement: evaluate resource requirements for NFIP enforcement; expand local building inspector training awareness programs; develop procedures and definitions to clarify the enforcement of substantial improvement requirements; and propose legislation to require identification of flood prone parcels on title abstracts (public disclosure). *Lead Agency: MSP/EMHSD, FEMA, NWS, MDNR, Michigan Department of Labor-Construction Code Division, and Code Officials Association.*

The State of Michigan should establish design, construction, and maintenance guidelines for dikes and levees protecting agricultural land. *Lead Agency: MDNR, MDA, USACE, and SCS.*

Review the programs available for providing floodproofing technical assistance in non-project areas for farmsteads located in the 100-year flood plain (e.g., ring dikes and elevated structures.)

The MDNR has been working with the Flint River Dike Committee to develop a dike design that will provide protection to crops, while maintaining the flow carrying capacity of the river. A dike configuration has been developed; however, funding has not been obtained for construction. *Lead Agency: MDNR, USDA, FEMA, MDA, ASCS, FmHA and SCS.*

Review existing programs to revise or redirect ongoing assistance efforts to adequately provide disaster coverage to the farm community and to incorporate mitigation measures. *Lead Agency: USDA, extension services, Farm Bureau, National Milk Producers Association, and National Farm Organization.*

Create a multi-disciplinary task force to evaluate flood damage to and caused by the failure of sewage handling systems.

Throughout the disaster area, flooding caused damage to sewage handling systems, which in turn, caused additional damages. This task force should review existing guidelines and revise/develop new ones, as necessary. These should address, at a minimum, the following functional areas: auxiliary power for lift stations and treatment facilities; site locations and related floodproofing requirements; adequacy/necessity of storage/holding basins and related design criteria; minimizing infiltration and/or inflow, including separation of storm water and sanitary systems, prohibiting footing and roof drains emptying into sanitary systems, and identifying building code changes where appropriate; criteria for determining optimum level of floodproofing/protection in relation to storm frequency/cost effectiveness; maintenance operations, and emergency plans to minimize flood damage; and post flood recovery operations plans and policies.

The City of Vassar's new sewage treatment facility will be relocated outside of the 100-year floodway. The proposed new facility for the City of Newaygo will be located outside of the floodplain. *Lead Agency: MDNR, MSP/EMHSD, Michigan Public Health, EPA, EDA, FEMA and USACE.*

Create a task force to evaluate the hydraulic design of roads, bridges and culverts. *Lead Agency: MDNR, FHWA, MDOT and County Road Commission.*

Create a State Hazard Mitigation Team with representation from key State agencies. *Lead Agency: MDNR, MSP/EMHSD, and the Governor's Office.*

MSP/EMHSD should reprioritize their training and education needs to include the training of State agency personnel identified to serve on the State Hazard Mitigation Team. *Lead Agency: MSP/EMHSD and FEMA*

The Michigan legislature should adopt the drafted legislation, entitled "Flood Damage Reduction Act." *Lead Agency: MDNR, MSP/EMHSD, and the Governor's Office.*

The State of Michigan should review existing legislation and regulations addressing storage of hazardous materials in flood-prone areas for adequacy and/or enforcement. *Lead Agency: MDNR, MSP-Fire Marshal and EPA.*