

## **Hazard Mitigation Strategy for Federal Disaster #1128:** **1996 East Michigan Tornadoes and Flooding**

Prepare a Construction and Maintenance Manual for road and drainage construction and maintenance personnel. This Manual will be designed for use by the Michigan Department of Transportation, Michigan County Road Association, Michigan River Basin Association; and County Drain Commissioners, and contain the following: construction standards and simplified details for sizing, design of facilities, materials, installation methods for culverts, drainage ditches and bridges; maintenance techniques and maintenance scheduling methods (planning for maintenance, funding issues, personnel issues, managing costs, etc.)

Hold training workshops to explain the use of the Construction and Maintenance Manual and, schedule workshops on an annual cycle for current and new personnel.

Develop a Hazard Mitigation Planning Manual containing a description of planning procedures and model text that addresses hazard mitigation principles associated with land use planning and building inspection in the State of Michigan. Emphasis should be placed on drainage issues and proper design for subdivisions and individual development sites.

Hold Insurance Agent workshops sponsored by the Michigan Department of Environmental Quality to provide information regarding program details, benefits of purchasing insurance, and the mandatory land management and building permit requirements associated with flood insurance availability.

Pursue the development of projects for 404 funding through correspondence, meetings and phone calls.

Coordinate with Public Assistance (Infrastructure Support) to review Damage Survey Reports for mitigation opportunities. Encourage the development of mitigation projects associated with the Section 404 and 406 Programs.

Areas of possible concern are drainage canals, water and waste treatment plants, and other governmental facilities and infrastructure.

Promote the acquisition of repetitively flooded and substantially damaged properties through a voluntary flood damaged property acquisition program. One of the few mitigation options available for this type of situation is to buy out the owners and remove the structures from the floodplain. Property acquisition programs are complex; information presented to affected individuals must be accurate and understandable.

Many areas experienced broad scale flooding (particularly Tuscola and Lapeer Counties); many structures may be situated where elevation of the building could be effective in reducing future flood losses. The elevation of utilities and appliances can also be an effective mitigation technique for communities where broad scale flooding occurred in developed areas.

Incorporate mitigation into infrastructure repairs by considering the Section 406 Hazard Mitigation Program.

Amend the Michigan State Enabling Legislation to incorporate “hazard mitigation” within the list of elements that constitute a comprehensive plan. *Lead Agency: MSP/EMHSD. Support Agencies: MDEQ, Michigan Chapter of the American Planning Association, Michigan Society of Planning Officials and MDNR.*

Amend the State Enabling Legislation to require that the County Drain Commission be included in the review and approval or disapproval of all land use change proposals as an integral step in the land development process for the State of Michigan. The review will include condominiums, development site plans and mobile home parks in addition to the existing review requirement for land subdivisions. *Lead Agency: MDEQ and MACDC. Support Agencies: MDA, MSP/EMHSD and Michigan Association of Conservation Districts.*

Amend the Michigan county, municipal and township zoning enabling legislation to permit county overlay zoning of designated hazardous river and stream corridors, hazardous transportation corridors, and intercommunity hazardous areas.

The EMHSD should establish and coordinate a State Hazard Mitigation Council to address the mitigation recommendations found in the Michigan Hazard Mitigation Plan and to assure that the plan will be carried out in a coordinated and effective manner. *Lead Agency: MSP/EMHSD. Support Agencies: Local, state and federal agencies.*

Establish a “State Hazard Mitigation Fund” to address the mitigation opportunities that are identified during flood events. *Lead Agency: MSP/EMHSD. Support Agencies: MDEQ, MDOT and Consumer and Industry Services.*

Develop a list of potential mitigation projects within the State of Michigan. There is a general idea of the problem areas; however, communities, counties, and emergency managers should be contacted to obtain specific areas of concern. *Support Agencies: MSP/EMHSD*

The EMHSD should require and coordinate the preparation of county hazard mitigation plans as subcomponents of the State of Michigan Mitigation Plan. These county plans can also serve as components of county comprehensive plans for those counties that have established county planning commissions.

Prepare a handbook for planning commissioners addressing the process for hazard mitigation planning at the local level. The handbook would be used as the text for training courses giving on an annual basis. *Lead Agency: MSP/EMHSD. Support Agencies: MDEQ, other agencies and groups associated with land use management, MDA, and MACDC and Department of Consumer & Industry Services.*

Initiate and or expand the training programs for planners to include hazard mitigation planning as a component of local comprehensive plans. The initiative would be sponsored and coordinated through the Michigan Society of Planning Officials with educational sessions and materials distributed through the professional and trade associations encompassing land change activity in Michigan. *Lead Agency: MDEQ. Support Agencies: MSP/EMHSD and MDA.*

Establish a provision in State law that requires the disclosure of flood prone areas as a step in real estate transactions. This should be mandatory regardless of the method of financing or financing institution. *Lead Agency: MDEQ. Support Agencies: MSP/EMHSD*

Create improved instructional information for the National Flood Insurance Program. Other state handbooks could also be upgraded to include current flood plain management guidelines. *Lead Agency: MDEQ. Support Agencies: MSP/EMHSD, FEMA, NFIP Coordinator, State Insurance Industry and State Insurance Bureau.*

Flood insurance questions should be added to insurance qualifications tests for agents and real estate personnel. *Lead Agency: MDEQ, NFIP Coordinator, Department of Consumer & Industry Services. Support Agencies: MSP/EMHSD, FEMA, Insurance Industry, Insurance Associations and State Insurance Bureau.*

An educational program for Insurance Agents should be initiated to address the need for selling specific policies for reimbursement of disaster costs. *Lead Agency: MDEQ and NFIP Coordinator. Support Agencies: MSP/EMHSD, FEMA, Insurance Industry, Insurance Associations and State Insurance Bureau.*

Identify properties experiencing repetitive loss in Michigan. Priority projects for action that are identified through the property inventory will require additional funding either through a “State Hazard Mitigation Fund,” Flood Mitigation Assistance Program funds or community funding. *Lead Agency: MDEQ. Support Agencies: MSP/EMHSD, FEMA, USACE, Association of State Floodplain Managers, and the communities.*

Mapping needs should be identified and prioritized. MDEQ should develop a listing of unmapped communities and continue to identify flood prone areas. FEMA will continue to develop county wide maps within Michigan, following the priority developed by the MDEQ. *Lead Agency: MDEQ. Support Agencies: FEMA, USACE, NRCS, MDNR, MDA, MACDC and MACD.*

The results of the map overlays digitizing program should be reviewed to determine its applicability to flood preparedness and mitigation. If the program is worthwhile, it should be expanded to the rest of the state. *Lead Agency: MDNR. Support Agencies: MSP/EMHSD, MDEQ, FEMA, MDA, MACDC, MACD and DNR.*

A public education program should be developed for retrofitting structures in flood prone areas. This information should be disseminated before a disaster occurs. *Lead Agency: MSP/EMHSD. Support Agencies: FEMA, MDEQ, NFIP Area Coordinators, County Emergency Management Coordinators, State Insurance Bureau, Insurance Associations, MSU Extension Service and Soil Conservation Districts.*

In order to maximize production, farmers commonly cultivate their land to the edge of the drain network. This practice weakens the banks and allows erosion to take place. Consequently, the eroded material constricts the drainage system during a heavy rain event. By establishing a greenbelt of uncultivated land, a filter strip is created that can prevent bank erosion and excessive runoff

from fields and crops. The green belt could be established through a “state setback standard” or the acquisition of a buffer on either side of the drainage ditches.

Legislation is needed to establish a setback requirement for agricultural drainage ditches. *Lead Agency: MDA. Support Agencies: MSP/EMHSD and MDEQ.*

All drains in Michigan should be evaluated for the degree of sedimentation. Establish filter strips within the drain easement where impacted drains are identified. An effort should be made to determine if the effectiveness of the filter strips could be improved with an increase in width. Other strategies to increase the use, extent, effectiveness and permanence of the filter strips could include: tax incentives, direct payment, reduced flood insurance premiums, and land acquisition by the drain commission. *Lead Agency: MDA. Support Agencies: Association of County Drain Commissioners, NRCS, and Local Conservation Districts.*

Conduct a study of Michigan land character and its influence on storm water runoff (site runoff study). The study should be designed with the objective to establish a formula for calculating the maximum land coverage for impervious surfaces. Soil characteristics, slopes and vegetation types will be considered in the development of the maximum lot coverage methodology. Managing the impervious surface coverage of development parcels will help to reduce the high flow regimen in drainage structures and thus preserve the efficiency of the drainage system during major storms. *Lead Agency: MDA. Support Agencies: MDEQ, Michigan Chapter of the American Planning Association, Michigan Society of Planning Officials, possibly other township, municipal and county associations, MACDC and MACD.*

Amend the Planning Enabling Legislation to require that development proposals include an analysis of runoff potential and soil characteristics to establish a maximum property coverage for impervious surfaces. This requirement must be based on accepted standards developed through a study of Michigan land and runoff characteristics. *Lead Agency: MDEQ. Support Agencies: MDA, MACDC and MACD, MDEQ, Michigan Chapter of the American Planning Association, Michigan Society of Planning Officials, possibly other township, and municipal and county associations.*

Amend the Michigan State Planning Enabling Legislation to require cross jurisdictional hydrologic planning between legal entities within watershed units. Designate this coordinated planning as a prerequisite for accepting State funds in the State’s jurisdictions. *Lead Agency: MDEQ – Land & Water Management Division. Support Agencies: MSP/EMHSD, MDNR and MDA.*

Conduct a watershed hydrologic analysis to determine the adequacy of the existing drain capacity given the development pattern and a series of standard storm events. Also, conduct the watershed hydrologic analysis using a land buildout scenario developed through the distribution of the currently allowed zoning ordinance densities. *Lead Agency: MDA. Support Agencies: MDEQ and Michigan Association of Drain Commissioners.*

Develop and adopt minimum standards for drain design and construction. A state-wide watershed management standard must be adopted in order to apply a uniform specification for drain design and installation throughout the watershed. This standard must be developed to address peak flow rates and peak volumes. Develop a mechanism to coordinate all agencies that impact the drain system. *Lead Agency: MDA. Support Agencies: Association of County Drain Commissioners, Natural Resources Conservation Service, MDEQ.*

Prepare a construction and maintenance manual for road and drainage construction personnel. All Road Commissioners should be required to design and construct their roads based on the MDEQ standards. The workshops should also incorporate the recommendations made by the Road Infrastructure Mitigation Committee following the 1986 flood disaster. The manual should emphasize that the key to reducing serious repetitive flood damage to the local, county and state transportation infrastructure is through a cooperative, innovative and coordinated effort at all levels of government. The manual should also emphasize that MDEQ permits are needed for road crossings of all watercourses including designated county drains. *Lead Agency: MDEQ, MDA and MDOT. Support Agencies: Training organizations: CRAM, MTU, T-Square.*

Develop a training program for drain commissioners addressing their role in a flood emergency situation. Establish a mechanism to encourage the cooperation of County Emergency Management Coordinators with the County Drain Commissioners.

Presently there are no automated river gages in Michigan other than those located at airports. NOAA is planning to install one automated river gage in Midland in a secure area owned by Dow Corning. NOAA and the National Weather Service are being funded to install new state-of-the-art forecasting equipment. *Lead Agency: MSP/EMHSD. Support Agencies: MDA and Michigan Association of County Drain Commissioners*

Identify funding sources and take the necessary steps to install real-time rain and flow gages in Central Michigan. Develop an action plan that establishes an effective flood warning system for Central Michigan. *Lead Agency: MDEQ. Support Agencies:*

*MSP/EMHSD, NOAA National Weather Service, US Geological Survey, County and local emergency coordinators, dam owners, volunteer, media and MDA.*

Prepare and distribute detailed maps showing drains and their flow direction as well as transportation routes to assist with disaster response actions associated with liquid pollutants. Drain routes should be part of the county road maps provided by each road commission. They should be incorporated into county land use and zoning maps. Lead Agency: *MSP/EMHSD.* Support Agencies: *MDA and MDEQ.*

The FEMA Region V Mitigation Division and the Michigan State Flood Insurance Coordinator should develop a written request to the Federal Insurance Administration suggesting that they consider initiating a program for flooding insurance coverage for farm crops. Lead Agency: *FEMA and USDA.* Support Agencies: *MDA, State legislators, MDEQ, NFIP Coordinators, Michigan Insurance Industry, Michigan Insurance Bureau, and Farmers Association.*

A nationwide policy addressing development downstream of dams should be drafted and incorporated into the NFIP regulations. Lead Agency: *MDEQ.* Support Agencies: *MSP/EMHSD, FEMA, Association of State Floodplain Managers, Association of State Dam Safety Officials.*

Obtain the Michigan Attorney General's legal opinion of the Michigan state regulations pertaining to floodway habitation. If a more stringent interpretation is provided, develop a strategy for administering the updated directive. Lead Agency: *MDEQ.* Support Agencies: *FEMA*

The Vassar project and other potential hazard mitigation projects should be reviewed for action and, if appropriate, incorporated into the Michigan Hazard Mitigation Plan. Lead Agency: *MDEQ.* Support Agencies: *MSP/EMHSD*

Increase Public awareness of the NFIP. Lead Agency: *FEMA, MDNR, MSP/EMHSD and the banking industry.*

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

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

Review mechanisms available for providing technical assistance in non-project areas for farmsteads located in the 100-year floodplain for floodproofing. Lead Agency: *USDA, FEMA, Agricultural Stabilization and Conservation Service, FmHA, SCS, MDA, and MDNR.*

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. The following functional areas should be addressed: 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 the separation of storm water and sanitary systems, disallowing footing and roof drains to empty 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. Lead Agency: *MDNR, MSP/EMHSD, Michigan Public Health, EPA, EDA, FEMA, and USACE.*

Increase awareness of floodplain management code standards, ordinances, and procedures with local elected officials, building code officials, and floodplain residents. Suggestions for 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. Lead Agency: *FEMA, MDNR, MSP/EMHSD, Michigan Department of Labor-Construction Code Division and Code Officials Association.*