

Summary: Stephenson County Multi-Hazard Mitigation Plan

What is Hazard Mitigation Planning?

It is safe to say that “hazard mitigation” is not a term used by most people as they go about their lives. Still, hazard mitigation could be critical to people’s basic health, safety, and welfare.

Simply put, hazard mitigation is defined as any action taken to reduce the chance of a natural hazard from happening, or to reduce a natural hazard’s impact on people or property when it does happen. Stephenson County can be affected by any number of natural and human-made hazards. These include major storms, extreme temperatures, and disease outbreaks. However, over its history, Stephenson County has been most heavily impacted by one hazard in particular: flooding. In fact, during this planning process, the Pecatonica River flooded once again.

Hazard mitigation planning helps communities to develop consensus around actions to reduce or eliminate the long-term risk to human life, health, safety, and property from hazards. **This Multi-Hazard Mitigation Plan is a collection of the various actions that Stephenson County, Freeport, and other communities in the County may take to mitigate hazards.** The actions fall into various categories and priority levels, cover different geographic areas, and address different types of hazards. The organization, contents, and data in the Plan are driven in part by the planning requirements of the Federal Emergency Management Agency (FEMA).

Stephenson County’s Planning Process

The City of Freeport and the Stephenson County Emergency Management Agency (SCEM) took the first steps towards preparing this Plan in 2006. The initial impetus was the City’s desire to identify flood mitigation priorities for its East Side neighborhood, which has been subject to fairly regular and sometimes major flooding over its history. However, it quickly became clear that other places in the City and County were also subject to flooding—mainly originating from the Pecatonica River and Yellow Creek—and other natural hazards. The County and City then agreed that it would make sense to prepare a comprehensive multi-hazard mitigation plan for the whole County, without losing sight of important local issues and details. Another critical consideration in preparing this Plan is that, following adoption, **this Plan makes the County and its communities eligible to apply for competitive grant funding for mitigation projects through FEMA.**

A Hazard Mitigation Planning Committee guided the development of this Plan over the course of about a year. The Committee included people with interest and/or expertise in responding to natural and human-made hazards and disasters; a knowledge of the types, locations, and severity of natural hazards in the past; interest and experience in hazard mitigation; and connections to key communities and neighborhoods. The Committee, its staff, and consultants also pursued public input throughout the planning process. This included reaching out to local governments, state and federal agencies, neighborhood groups, property and business owners, and the general public.

Hazard Identification and Risk Assessment

The Multi-Hazard Mitigation Plan begins by painting a picture of how natural and other hazards have affected the County and its communities today and in the past. Key information regarding the County’s geography, geology, climate, demographics, housing, employment, political jurisdictions, infrastructure, and emergency services are laid out. For instance, much of the County’s population historically developed around rivers and streams—and their floodplains.

Based on historical research and reports from residents and agencies, the hazards that people and property are at risk of in Stephenson County generally include:

- **Flooding**, particularly resulting from seasonal and sometimes unpredictable overflow of the Pecatonica River and its tributaries—most notably the Yellow Creek.
- **Severe storms**, including hail, lightning, tornadoes, and severe winds
- **Severe winter storms**, including snow storms, ice storms, and blizzards.

- **Extreme temperatures**, including periods of extreme heat and extreme cold associated with Stephenson County’s position in the nation’s interior.
- **Drought**, which can significantly affect the County’s strong farm economy and peoples’ water supply.
- **Earthquakes**, which can sometimes affect the County, particularly resulting from shifts in the New Madrid fault.
- **Human-caused and disease-outbreak hazards**, like animal-borne diseases and possibly spill-over from incidents in nearby areas.

The Plan includes a “risk assessment” for each of these identified hazards. This assessment helps determine how severe each hazard is, and how important hazard mitigation actions would be to address it. The risk assessment includes a history of hazard occurrences, a projection of the future probability of occurrences of each hazard, an assessment of the County’s vulnerability to each hazard (e.g., how many people would be affected), and a projection of potential damages from future occurrences of each hazard.

Hazard Mitigation Goals

Armed with knowledge of the hazards that most affect Stephenson County, the Hazard Mitigation Planning Committee developed the following seven hazard mitigation goals, with input and review from the public:

- **Protect human lives, both today and for future generations**
- **Protect human and environmental health**
- **Prevent future development from increasing hazard vulnerability**
- **Preserve open space, including environmentally sensitive and agriculturally productive areas**
- **Protect critical facilities**
- **Help people to protect themselves**
- **Promote the use of partnerships in hazard mitigation**

These goals were used to prioritize hazard mitigation actions and strategies to address each hazard. Other factors were also critical in identifying and prioritizing strategies. These included community support, whether the strategy was technically feasible, where it would be cost-effective, and what groups were available to carry them out. The rest of this summary covers some of the highest priority mitigation strategies identified in this Plan. Readers are encouraged to review the entire Plan for a more complete review of these and other strategies.

Priority Mitigation Strategies for Multiple Hazards

In the course of preparing the Plan, it became apparent that certain strategies could be carried out following Plan adoption to address nearly all of the hazards listed above, such as:

- **Pursuing Regular Community Outreach and Education.** Educational efforts should focus on simple changes in behavior that can minimize risks. Education also needs to be constantly reinforced to be effective. County and local governments can provide communities with information about the effect of disasters, methods for preventing damages, and the actions to take when disasters threaten a locality.
- **Improving Coordination and Communication Among Emergency Responders.** Disasters cross jurisdictional boundaries and affect numerous aspects of a community—from physical safety, to economic stability, to environmental conditions. The County intends to continue to enhance its communication and coordination system, like through better connection of the various emergency responders through radio and through participating in the multi-county Prairie Shield Regional Alliance designed to address hazards and take advantage of resources that cross County boundaries.
- **Promoting and Implementing Modern Hazard Warning Systems.** The County intends to continue outreach efforts to encourage all institutions, businesses, and residents to have a National Oceanic and Atmospheric Administration (NOAA) weather radio for up to date warnings and directions on pending hazards. Additionally, the County will explore expanding its system of warning the public and local governments about impending hazards, such as through automatic e-mails, phone or text messages, and/or an updated Web page.

Regional Flood Hazard Mitigation: Pecatonica River Watershed Alliance

Since Pecatonica River flooding is an issue that extends across counties and states, there is an opportunity for the County to expand its planning and problem-solving efforts to the regional scale. The County will explore advancing a bi-state Pecatonica River watershed regional alliance, perhaps using the Prairie Shield Regional Alliance as a model or launching pad. This new alliance could include representatives of local governments and people representing environmental, hazard mitigation, economic development, and recreation interests. This alliance would help bring together diverse interests to partner to promote the long-term health and vitality of the Pecatonica River watershed, with goals that would include but not be limited to flood mitigation. The Rock River Coalition in southern Wisconsin is a successful example of such an alliance.

Freeport-Pecatonica River Flood Mitigation: A Comprehensive Approach

Flooding of the Pecatonica in the City of Freeport has significant impacts on the City's East Side—an older, diverse neighborhood east of the river—as well as businesses in the “Arcade” area west of the river and in the Lancaster and Van Buren Road areas to the north. Flood events fairly regularly include road and bridge closures and washouts and street, yard, and basement flooding. Occasionally, flooding of the Pecatonica has had more devastating effects, particularly on Freeport's East Side. Major floods like those in 1969, 1975, 1990, 1993, 1996, and 2000 have submerged the neighborhood under several feet of water, threatened lives, and caused major property damage.

The seriousness of the Pecatonica flooding issue in the City of Freeport—combined with the spotty success of past initiatives—points to a need for a comprehensive approach to addressing the problem. This approach must address flooding in a manner that respects the concerns of residents, property owners, and businesses, while effectively addressing public health and safety. The comprehensive initiative recommended for mitigating flooding in the Freeport-Pecatonica River floodplain includes the following strategies:

- **Pursue Regular Community Outreach and Education**, including partnering with the East Side Resident Task Force to help get the word out on activities of the flood mitigation approach to the rest of the neighborhood.
- **Update Official Floodplain Maps**, using modern hydrologic (water) models that reflect current conditions in and around the river, particularly to map accurate floodway boundaries.
- **Enhance Stormwater Management and Erosion Control**, such as through better storm drainage and infiltration systems, to minimize the effect of flooding on private property and business activities.
- **Advance an Initiative of Voluntary Acquisition and Relocation**, to eliminate vulnerability to the most significant and recurring flood hazards altogether. To successfully implement a voluntary relocation initiative on the East Side, it will be critical for the City to keep community concerns at the forefront of program design and ongoing communication with residents. The Hazard Mitigation Plan has a lot more detail on this strategy.

Freeport-Yellow Creek Flood Mitigation: A Focus on the Future

The Yellow Creek—a Pecatonica River tributary that runs from west to east through the southern edge of the County and Freeport—can exceed its normal banks, particularly when the Pecatonica is also at flood stage. Current flooding and possibly increasing flood hazards in the future has been raised as a concern by community members in Freeport, particularly as this southern part of the City continues to be an area of interest for new development. The highest priority strategies for mitigating future flooding in the Freeport-Yellow Creek floodplain include:

- **Update Official Floodplain Maps**, using modern hydrologic models that reflect the growth of Freeport and its south side over the two decades since the current floodplain map was developed.
- **Improve Planning and Regulatory Practices**, like reserving areas for flood storage and stormwater management, so that current issues can be minimized and future development does not create more flooding.
- **Practice and Require Progressive Stormwater Management and Erosion Control**, so that newly developed and redeveloped areas near the Yellow Creek might actually result in reduced stormwater runoff impacts.

- **Protect Critical Facilities and Infrastructure**, particularly to prevent hazards due to washouts of the Highway 26 bridge.

Small Community Flood Mitigation: Learning from the Past

Small communities like Orangeville, Winslow, McConnell, and Pearl City are also subject to recurring and sometimes severe flooding. Like Freeport, flooding often results from the Pecatonica River (in Winslow and McConnell), the Yellow Creek (in Pearl City), and other tributaries of the Pecatonica (in Orangeville and Winslow). Flood events have often occurred in June and August, due to periods of intense rainfall. These have included an event in June 2000 when roughly one-half of Pearl City was submerged underwater, resulting in a Gubernatorial Disaster Declaration. Flood mitigation for small communities in Stephenson County will vary on a community-by-community basis, but several common recommended strategies include:

- **Update Official Floodplain Maps**, based on modern hydrologic models and actual historic experiences, to give better information to property owners and greater credibility to future efforts to regulate building in the floodplain.
- **Improve Planning and Regulatory Practices**, including keeping flood-prone areas in open space, connecting houses in some yard-flooding areas to public sewer systems, and adopting a local floodplain ordinance in Pearl City once floodplain maps have been updated to become more accurate.
- **Increase Access to Flood Insurance**, through partnerships to educate property owners on its availability and by enrolling in the National Flood Insurance Program in Pearl City, once a floodplain ordinance has been adopted.
- **Enhance Stormwater Management and Erosion Control**, including addressing areas where the Yellow Creek and other tributaries are constrained (e.g., undersized culverts), undertaking community-wide stormwater management planning efforts, and requiring good stormwater management practices in new private development projects, like subdivisions.
- **Pursue Acquisition of Certain Properties Most Affected by Flooding**, through being ready when such properties come available for sale—such as near Highway 26 in Orangeville.
- **Protect Critical Facilities and Infrastructure**, particularly facilities like fire stations and bridges that washout during times of flooding, restricting emergency access and evacuation routes to and from the communities.
- **Pursue Regular Community Outreach and Education**, in partnership with the County and others, to clearly communicate the goals and impacts of floodplain maps, and floodplain and stormwater management regulations.

Implementing the Plan: Partnerships and Perseverance

Adoption of this Plan provides the County, the City, and smaller communities with a coordinated approach for prioritizing hazard mitigation activities over the next five or so years. Additional work, analysis, and participation will be necessary before many of these strategies can be carried out through action.

Also, local communities will need the technical support of the Stephenson County Emergency Management Agency (SCEM) to implement many of the recommended mitigation strategies. SCEM will prioritize its mitigation efforts by focusing assistance on areas most vulnerable to the most significant hazards, and where there is visible and consistent community support for hazard mitigation. Communities demonstrated their commitment to hazard mitigation through participation in this planning process, and can continue to do so by partnering with SCEM to implement this Plan.

Finally, many of the strategies recommended in the Plan can occur only if outside financial support through FEMA and other sources is garnered. The Plan has been written to position the County and its communities for this support, with full recognition and respect for the funding criteria of these agencies. The County, the City, and smaller communities will pursue funding for priority strategies identified in the Plan as opportunities present themselves.