Chapter 5. Property Protection

Property protection measures are used to modify buildings or property subject to damage. Property protection measures fall under three approaches:

- Modify the site to keep the hazard from reaching the building,
- Modify the building so it can withstand the impacts of the hazard, and
- Insure the property to provide financial relief after the damage occurs.

Property protection measures are normally implemented by the property owner, although in many cases technical and financial assistance can be provided by a government agency. These are discussed later in this chapter.

5.1. Keeping the Hazard Away

Generally, natural hazards do not damage vacant areas. As noted in Chapter 2, the major impact of hazards is to people and improved property. In some cases, properties can be modified so the hazard does not reach the damage-prone improvements. A fire break is an example of this approach – brush and other fuel are cleared away from the building so a fire may not reach it.

For the five hazards considered in this plan, flooding is the one hazard that can be kept away from a building. There are four common methods to do this:

- Erect a barrier between the building and the source of flooding,
- Move the building out of the floodprone area
- Elevate the building above the flood level
- Demolish the building.

**Barriers:** A flood protection barrier can be built of dirt or soil ("berm") or concrete or steel ("floodwall"). Careful design is needed so as not to create flooding or drainage problems on neighboring properties. Depending on how porous the ground is, if floodwaters will stay up for more than an hour or two, the design needs to account for leaks, seepage of water underneath, and rainwater that falls inside the perimeter. This is usually done with a sump and/or drain to collect the internal groundwater and surface water and a pump and pipe to pump the internal drainage over the barrier.
Barriers can only be built so high. They can be overtopped by a flood higher than expected. Barriers made of earth are susceptible to erosion from rain and floodwaters if not properly sloped, covered with grass, and maintained. A berm can settle over time, lowering its protection level. A floodwall can crack, weaken, and lose its watertight seal. Therefore, barriers need careful design and maintenance (and insurance on the building, in case of failure).

**Relocation:** Moving a building to higher ground is the surest and safest way to protect it from flooding. While almost any building can be moved, the cost goes up for heavier structures, such as those with exterior brick and stone walls, and for large or irregularly shaped buildings. However, experienced building movers can handle any job.

In areas subject to flash flooding, deep waters, or other high hazard, relocation is often the only safe approach. Relocation is also preferred for large lots that include buildable areas outside the floodplain or where the owner has a new flood-free lot (or portion of the existing lot) available.

**Building elevation:** Raising a building above the flood level can be almost as effective as moving it out of the floodplain. Water flows under the building, causing little or no damage to the structure or its contents.

Raising a building above the flood level is cheaper than moving it and can be less disruptive to a neighborhood. Elevation has proven to be an acceptable and reasonable means of complying with floodplain regulations that require new, substantially improved, and substantially damaged buildings to be elevated above the base flood elevation.

Elevating a building will change its appearance. If the required amount of elevation is low, the result is similar to putting a building on a 2- or 3-foot-high crawlspace (see example to the right). If the building is raised 4, 6, or more feet, owners are concerned that it will stick out like a sore thumb and may decline to implement an elevation project.
Another problem with this approach is with basements. Only the first floor and higher are elevated. The basement remains as the foundation. All utilities are elevated and the basement is filled in to protect the walls from water pressure. The owner loses the use of the basement, which may deter him or her from trying this approach.

A third problem with elevation is that it may expose the structure to greater impacts from other hazards. If not braced and anchored properly, an elevated building may have less resistance to the shaking of an earthquake and the pressures of high winds. Given the low threat of earthquakes and low flood depths in Kane County, careful design and construction should prevent these secondary problems.

**Demolition:** Some buildings, especially heavily damaged or repetitively flooded ones, are not worth the expense to protect them from future damage. It is cheaper to demolish them and either replace them with new, flood protected structures, or relocate the occupants to a safer site. Generally, demolition projects are undertaken by a government agency, so the cost is not borne by the property owner, and the land is converted to public use, such as a park.

Acquisition, followed by demolition, is most appropriate for buildings that are difficult to move—such as larger, slab foundation, or masonry structures—and for dilapidated structures that are not worth protecting.

One problem that sometimes results from an acquisition and demolition project is a “checkerboard” pattern in which nonadjacent properties are acquired. This can occur when some owners, especially those who have and prefer a waterfront location, prove reluctant to leave. Creating such an acquisition pattern in a community simply adds to the maintenance costs that taxpayers must support.

**Local implementation:** Following the 1996 flood, some 68 homes were purchased in Montgomery and Aurora with FEMA mitigation funds. The sites were cleared to provide recreation space and flood storage. Some homes on the Fox have been elevated.

**CRS credit:** The Community Rating System provides the most credit points for acquisition and relocation because this measure permanently removes insurable buildings from the floodplain. The score is based on the number of buildings removed compared to the number remaining in the floodplain (Activity 520 – Acquisition and Relocation).
The CRS also credits barriers and elevating existing buildings (Activity 530 – Flood Protection). Elevating a building above the flood level will also reduce the flood insurance premiums on that individual building. Because barriers are less secure than elevation, not as many points are provided.

5.2. Retrofitting

Section 5.1 focused on keeping the hazard from reaching a building or damage-prone part of a property. An alternative is to modify or “retrofit” the site or building to minimize or even prevent damage. There are a variety of techniques to do this. This section looks at the measures that can be implemented to protect existing buildings from damage by floods, sewer backup, earthquakes, tornadoes and high winds, and winter storms.

**Flood retrofitting measures** include **dry floodproofing** where all areas below the flood protection level are made watertight. Walls are coated with waterproofing compounds or plastic sheeting. Openings (doors, windows, and vents) are closed, either permanently, with removable shields, or with sandbags.

Dry floodproofing of new and existing nonresidential buildings in the regulatory floodplain is permitted under State, FEMA and County regulations. Dry floodproofing of existing residential buildings in the floodplain is also permitted as long as the building is not substantially damaged or being substantially improved. Owners of buildings located outside the regulatory floodplain can always use dry floodproofing techniques.

The alternative to dry floodproofing is **wet floodproofing**: water is let in and everything that could be damaged by a flood is removed or elevated above the flood level. Structural components below the flood level are replaced with materials that are not subject to water damage.
For example, concrete block walls are used instead of wooden studs and gypsum wallboard. The furnace, water heater, and laundry facilities are permanently relocated to a higher floor. Where the flooding is not deep, these appliances can be raised on blocks or platforms.

Wet floodproofing has one advantage over the other approaches: no matter how little is done, flood damage is reduced. Thousands of dollars in damage can be prevented by simply moving furniture and electrical appliances out of a basement.

A third flood protection modification addresses flooding caused by overloaded sanitary or combined sewers. Four approaches may be used to protect a structure against sewer backup: floor drain plugs, floor drain stand-pipes, overhead sewers, and backflow protection valves.

The first two devices keep water from flowing out of the lowest opening in the building, the floor drain. They cost less than $25. However, if water becomes deep enough in the sewer system, it can flow out of the next lowest opening, such as a toilet or tub, or it can overwhelm a drain plug by hydrostatic pressure and flow into the building through the floor drain. The other two measures, overhead sewers and backflow protection valves keep water in the sewer line during a backup. These are more secure, but more expensive ($3,000-$4,000).

Local implementation: Committee members from Aurora, Elgin, South Elgin and St. Charles reported on retrofitting projects in their communities. Most of these related to sewer backup protection, but they also included regrading yards and floodproofing some homes.

CRS credit: Credit for dry and wet floodproofing and sewer backup protection is provided under Activity 530 (Retrofitting). Because these property protection measures are less secure than barriers and elevation, not as many points are provided.

Earthquake retrofitting measures include removing masonry overhangs that will fall onto the street during shaking. Bracing the building provides structural stability, but can be very expensive.

Less expensive approaches may be more cost-effective for an area like Kane County that faces a relatively low earthquake threat. These include tying down appliances, water heaters, bookcases and fragile furniture so they won’t fall over during a quake and installing flexible utility connections.
While these simple and inexpensive measures may be cost effective for a home or business, they may not be sufficient for protection of critical facilities. Fire stations need to be sure that they can open their doors and hospitals must be strong enough to continue operating during the shocks and aftershocks.

**Tornado retrofitting** measures include constructing an underground shelter or “safe room” to protect the lives of the occupants. Their worth has been proven by recent tornadoes in Oklahoma, as shown in the photo to the right. They can be installed for approximately $3,000.

Another retrofitting approach for tornadoes and **high winds** is to secure the roof, walls and foundation with adequate fasteners or tie downs. These help hold the building together when the combination of high wind and pressure differences work to pull the building apart.

A third tornado and high wind protection modification is to strengthening garage doors, windows and other large openings. If winds break the building’s “envelope,” the pressures on the structure are greatly increased.

Retrofitting approaches to protect buildings from the effects of **thunderstorms** include storm shutters, lightning rods (illustrated to the right), and strengthening connections and tie-downs (similar to tornado retrofitting). Roofs could be replaced with materials less susceptible to damage by hail, such as modified asphalt or formed steel shingles.

**Burying utility lines** is a retrofitting measure that addresses the winds from tornadoes and thunderstorms and the ice that accompanies winter storms. Installing or incorporating backup power supplies minimizes the effects of power losses caused by downed lines. “Retrofitting” the trees that hang over power lines is discussed in Section 6.6. Urban Forestry. Surge suppressors protect delicate appliances during thunderstorms.

**Winter storm** retrofitting measures include improving insulation on older buildings and relocating water lines from outside walls to interior spaces. Windows can be sealed or covered with an extra layer of glass (storm windows) or plastic sheeting. Roofs can be retrofitted to shed heavy loads of snow and prevent ice dams that form when snow melts.
Local implementation: No retrofitting projects for non-flood hazards were reported to the Planning Committee.

CRS credit: Retrofitting to protect a building for hazards other than flooding is not credited under the CRS.

5.3. Insurance

Technically speaking, insurance does not mitigate damage caused by a natural hazard. However, it does help the owner repair, rebuild and (hopefully) afford to incorporate some of the other mitigation measures in the process.

Insurance has the advantage that, as long as the policy is in force, the property is protected and no human intervention is needed for the measure to work. A standard homeowner's insurance policy will cover a property for the hazards of tornado, wind, hail, and winter storms. Separate endorsements are usually needed for earth movement (e.g., earthquake) coverage.

Although most homeowner’s insurance policies do not cover a property for flood damage, an owner can insure a building for damage by surface flooding through the National Flood Insurance Program. Flood insurance coverage is provided for buildings and their contents damaged by a “general condition of surface flooding” in the area.

Some people have purchased flood insurance because it was required by the bank when they got a mortgage or home improvement loan. Usually these policies just cover the building’s structure and not the contents. Renters can buy contents coverage, even if the owner does not buy structural coverage on the building. There is limited coverage for basements and the below grade floors of bilevels and trilevels.

Several insurance companies have sump pump failure or sewer backup coverage that can be added to a homeowner's insurance policy. Each company has different amounts of coverage, exclusions, deductibles, and arrangements. Most are riders that cost extra. Most exclude damage from surface flooding that would be covered by a National Flood Insurance policy.

Larger local governments can self-insure and absorb the cost of damage to one facility, but if many properties are exposed to damage, self-insurance can be a major drain on the treasury. Communities cannot expect Federal disaster assistance to make up the difference. Under Section 406(d) of the Stafford Act.

If an eligible insurable facility damaged by flooding is located in a [mapped floodplain] … and the facility is not covered (or is underinsured) by flood insurance on the date of such flooding, FEMA is required to reduce Federal disaster assistance by the maximum amount of insurance proceeds that would have been received had the buildings and contents been fully covered under a National Flood Insurance Program (NFIP) standard flood insurance policy. [Generally, the maximum amount of proceeds for a non-residential property is $500,000.]
[Communities] Need to:

- Identify all insurable facilities, and the type and amount of coverage (including deductibles and policy limits) for each. The anticipated insurance proceeds will be deducted from the total eligible damages to the facilities.

- Identify all facilities that have previously received Federal disaster assistance for which insurance was required. Determine if insurance has been maintained. A failure to maintain the required insurance for the hazard that caused the disaster will render the facility ineligible for Public Assistance funding.

- [Communities] must obtain and maintain insurance to cover [their] facility - buildings, equipment, contents, and vehicles - for the hazard that caused the damage in order to receive Public Assistance funding. Such coverage must, at a minimum, be in the amount of the eligible project costs. FEMA will not provide assistance for that facility in future disasters if the requirement to purchase insurance is not met. – FEMA Response and Recovery Directorate Policy No. 9580.3, August 23, 2000

In other words, the law expects public agencies to be fully insured as a condition of receiving Federal disaster assistance.

**Local implementation:** Data on private insurance policies are not available. Flood insurance has been available in Kane County communities since the 1970’s. Current flood insurance coverage is shown in the table to the right. The right column shows the percentage of floodplain coverage. This is the number of floodplain policies divided by the number of buildings in the floodplain, as shown in the table on page 2-18. For some communities on the County line, the figures may inflate the actual coverage, but the pattern is clear: on the average, only one in three floodplain properties in Kane County are covered by flood insurance.

Kane County has a commercial policy on its own properties with a $250,000 deductible, making the County effectively self-insured for smaller, less expensive damage. The policy does not cover for floods and earthquakes. There may be few County-owned floodprone properties and the earthquake exposure is minimal.

### Flood Insurance Policies

<table>
<thead>
<tr>
<th>Community</th>
<th>Total Policies</th>
<th>Floodplain Policies</th>
<th>% coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algonquin</td>
<td>130</td>
<td>91</td>
<td>69%</td>
</tr>
<tr>
<td>Aurora</td>
<td>821</td>
<td>452</td>
<td>64%</td>
</tr>
<tr>
<td>Batavia</td>
<td>10</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Big Rock</td>
<td>0</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Burlington</td>
<td>0</td>
<td>0</td>
<td>N/A*</td>
</tr>
<tr>
<td>Carpentersville</td>
<td>16</td>
<td>12</td>
<td>12%</td>
</tr>
<tr>
<td>East Dundee</td>
<td>44</td>
<td>40</td>
<td>33%</td>
</tr>
<tr>
<td>Elburn</td>
<td>0</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Elgin</td>
<td>110</td>
<td>69</td>
<td>32%</td>
</tr>
<tr>
<td>Geneva</td>
<td>16</td>
<td>5</td>
<td>9%</td>
</tr>
<tr>
<td>Gilberts</td>
<td>1</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Hampshire</td>
<td>10</td>
<td>4</td>
<td>9%</td>
</tr>
<tr>
<td>Huntley</td>
<td>4</td>
<td>1</td>
<td>33%</td>
</tr>
<tr>
<td>Lily Lake</td>
<td>0</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Maple Park</td>
<td>0</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Montgomery</td>
<td>60</td>
<td>21</td>
<td>16%</td>
</tr>
<tr>
<td>North Aurora</td>
<td>9</td>
<td>3</td>
<td>27%</td>
</tr>
<tr>
<td>St. Charles</td>
<td>35</td>
<td>17</td>
<td>9%</td>
</tr>
<tr>
<td>Sleepy Hollow</td>
<td>21</td>
<td>17</td>
<td>30%</td>
</tr>
<tr>
<td>South Elgin</td>
<td>80</td>
<td>64</td>
<td>37%</td>
</tr>
<tr>
<td>Sugar Grove</td>
<td>10</td>
<td>3</td>
<td>38%</td>
</tr>
<tr>
<td>Virgil</td>
<td>0</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Wayne</td>
<td>8</td>
<td>5</td>
<td>71%</td>
</tr>
<tr>
<td>West Dundee</td>
<td>10</td>
<td>6</td>
<td>10%</td>
</tr>
<tr>
<td>Uninc. areas</td>
<td>267</td>
<td>167</td>
<td>26%</td>
</tr>
<tr>
<td><strong>County total</strong></td>
<td><strong>1,661</strong></td>
<td><strong>981</strong></td>
<td><strong>37%</strong></td>
</tr>
</tbody>
</table>

* Burlington has no buildings in its floodplain

Source: FEMA. Data as of January 2003
If a County building in the floodplain were flooded, the County would pay for all the damage if there was no Presidential disaster declaration. The County would pay for the first $500,000 in repairs, if the President did issue a disaster declaration.

Of the 28 municipalities in the County, 16 are enrolled in either the Illinois Municipal League Risk Management Association or the Intergovernmental Risk Management Agency. Both organizations provide risk management advice and coverage for all of the hazards covered in this plan, including flood and earthquake. The other 12 municipalities have either no insurance or commercial policies.

**CRS Credit:** There is no credit for purchasing flood or basement insurance, but the Community Rating System does provide credit for local public information programs that explain flood insurance to property owners. The CRS also reduces the premiums for those people who do buy NFIP coverage.

### 5.4. The Government’s Role

Property protection measures are usually considered the responsibility of the property owner. However, local governments should be involved in all strategies that can reduce flood losses, especially acquisition and conversion of a site to public open space. There are various roles the County or a municipality can play in encouraging and supporting implementation of these measures.

**Government facilities:** One of the first duties of a local government is to protect its own facilities. Fire stations, water treatment plants and other critical facilities should be a high priority for retrofitting projects and insurance coverage.

Often public agencies discover after the disaster that their “all-hazard” insurance policies do not cover the property for the type of damage incurred. Flood insurance is even more important as a mitigation measure because of the Stafford Act provisions discussed above.

**Public Information:** Providing basic information to property owners is the first step in supporting property protection measures. Owners need general information on what can be done. They need to see examples, preferably from nearby. Public information activities that can promote and support property protection are covered in Chapter 9.

**Financial Assistance:** Communities can help owners by helping to pay for a retrofitting project. Financial assistance can range from full funding of a project to helping residents find money from other programs. Some communities assume responsibility for sewer backups, street flooding, and other problems that arise from an inadequate public sewer or public drainage system.
Less expensive community programs include low interest loans, forgivable low interest loans and rebates. A forgivable loan is one that does not need to be repaid if the owner does not sell the house for a specified period, such as five years. These approaches don’t fully fund the project but they cost the community treasury less and they increase the owner’s commitment to the flood protection project. Often, small amounts of money act as a catalyst to pique the owner’s interest to get a self-protection project moving.

The more common outside funding sources are listed below. Unfortunately, the last three are only available after a disaster, not before, when damage could be prevented. Following past disaster declarations, FEMA, the Illinois Emergency Management Agency (IEMA) and the Illinois Department of Natural Resources have provided advice on how to qualify and apply for these funds.

Pre-disaster funding sources

- FEMA’s Pre-Disaster Mitigation (PDM) grants (administered by IEMA)
- FEMA’s Flood Mitigation Assistance (FMA) grants (administered by IEMA)
- Community Development Block Grant (administered by the Department of Commerce and Economic Opportunity)
- Illinois Department of Natural Resources
- Conservation organizations, such as the Conservation Foundation and CorLands, although generally these organizations prefer to purchase vacant land in natural areas, not properties with buildings on them.

Post-disaster funding sources

- Insurance claims
- The National Flood Insurance Program’s Increased Cost of Compliance provision (which increases the claim payment to cover a flood protection project required by code as a condition to rebuild the flooded building)

Post-disaster funding sources, Federal disaster declaration needed

- FEMA’s disaster assistance (for public properties, however, after a flood, the amount of assistance will be reduced by the amount of flood insurance that the public agency should be carrying on the property) (administered by IEMA)
- Small Business Administration disaster loans (for non-governmental properties)
- FEMA’s Hazard Mitigation Grant Program (administered by IEMA)
**Acquisition agent:** The community can be the focal point in an acquisition project. Most funding programs require a local public agency to sponsor the project. The County or a municipality could process the funding application, work with the owners, and provide some or all of the local share. In some cases, the local government would be the ultimate owner of the property, but in other cases the Forest Preserve District or other public agency could assume ownership and the attendant maintenance responsibilities.

CorLands (the Corporation for Public Land) is an organization that can help Northeastern Illinois communities. It purchases and holds certain lands until a government agency or other party can take possession.

**Mandates:** Mandates are considered a last resort if information and incentives aren’t enough to convince a property owner to take protective actions. An example of a retrofitting mandate is the requirement that many communities have that downspouts be disconnected from the sanitary sewer line.

There is a mandate for improvements or repairs made to a building in the mapped floodplain. If the project equals or exceeds 50% of the value of the original building it is considered a “substantial improvement.” The building must then be elevated or otherwise brought up to current flood protection codes.

Another possible mandate is to require less expensive hazard protection steps as a condition of a building permit. For example, many communities require upgraded electrical service as a condition of a home improvement project. If a person were to apply for a permit for electrical work, the community could require that the service box be moved above the base flood elevation or the installation of separate ground fault interrupter circuits in the basement.

**Local implementation:** As discussed in Chapter 1 and Appendix D, there are hundreds of critical facilities, most of which have no special measures to protect them from flooding, tornadoes, and other natural hazards. One exception is Montgomery’s Well 8 Water Treatment Plant. The Village retrofitted it by elevating key components above the flood level.

The Kane County Water Resources Department, the City of Aurora, and Village of Montgomery provide technical assistance to property owners interested in retrofitting.

Aurora, Elgin and St. Charles have financial assistance programs for retrofitting, mostly to help residents deal with sewer backup and local flood problems. St. Charles provides 25% of the cost and Elgin funds 50%. These levels have proven successful in getting property owners motivated to protect themselves. South Elgin used a state grant to help 27 homes install overhead sewers.

Montgomery, Aurora and Elgin have been acquisition agents, facilitating buyouts of homes after the 1996 flood.
CRS credit: Except for public information programs, the Community Rating System does not provide credit for efforts to fund, provide incentives or mandate property protection measures. The CRS credits are provided for the actual projects, after they are completed (regardless of how they were funded or who instigated them).

On the other hand, in order to participate in the CRS, a community must certify that it has adequate flood insurance on all properties that have been required to be insured. The minimum requirement is to insure those properties in the mapped floodplain that have received Federal aid, as specified by the Flood Disaster Protection Act of 1973.

5.5. Repetitive Loss Properties

Chapter 2 explains the criteria for designation of the County’s repetitive loss areas. These properties deserve special attention because they are more prone to damage by natural hazards than any other properties in the County. Further, protecting repetitive loss buildings is a priority with FEMA and IEMA mitigation funding programs.

The 18 repetitive loss areas were reviewed for the key factors that determine appropriate property protection measures. The criteria used are based on several studies that have identified appropriate measures based on flood and building conditions. While a cost/benefit study was not conducted on each property, these guidelines show which measures are cost-effective.

- “High hazard areas” are areas in the floodway or where the 100-year flood is two or more feet over the first floor.
- Buildings in high hazard areas or in less than good condition should be acquired and demolished.
- Buildings with basements and split level foundations in high hazard areas should be acquired and demolished. They are too difficult to elevate and the hydrostatic pressures on the walls from deeper flooding make them too risky to protect in place.
- Buildings subject to shallow flooding from local drainage should be protected through area-wide flood control or sewer improvement projects.
- Buildings in good condition on crawlspaces should be elevated or relocated.
- Buildings in good condition on slab, basement or split level foundations subject to shallow flooding (less than 2 feet) can be protected by barriers and dry floodproofing.
- Recent flood claims. Some properties have not had a flood insurance claim for 20 years, indicating that some measure has probably been put in place to protect the property from repetitive flooding.

These criteria are general and recommendations for individual structures should be made only after a site inspection. Other extenuating circumstances may also alter the recommendations. For example, the building in area 13 is an historic stone structure on
the river. Its lower area could be wet floodproofed, providing partial flood protection without adversely affecting its historical appearance.

The results of this review are shown in the table below. Based on the review criteria, acquisition and elevation should be pursued in areas 7, 8, 9, 12 and 14. This does not mean that the entire areas should be bought out. Initial efforts should focus on the most floodprone properties and, in all cases, willing owners.

<table>
<thead>
<tr>
<th>City</th>
<th>Name/Street</th>
<th>Area Code</th>
<th>Year of Flood</th>
<th>Flood Area Code</th>
<th>Hazard Type</th>
<th>Tentative Recommended Measure**</th>
<th>High * Hazard</th>
<th>Tentative Recommended Measure***</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Uninc. Aurora</td>
<td>7</td>
<td>81, 82, 83</td>
<td></td>
<td>Split-level</td>
<td>Drainage improvements have reduced repetitive flooding</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Austin Ave</td>
<td>1</td>
<td>78, 81, 82, 83, 85, 87, 93, 96</td>
<td></td>
<td>Split level</td>
<td>Barnddry floodproof</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>East View Estates.</td>
<td>2</td>
<td>85, 86, 90, 93, 96</td>
<td></td>
<td>Basement</td>
<td>Local drainage improvements have reduced repetitive flooding</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Fansworth</td>
<td>1</td>
<td>82, 93, 94, 96</td>
<td></td>
<td>Basement</td>
<td>Floodproof (not a floodproof)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>New York</td>
<td>1</td>
<td>87, 89, 90, 97, 97, 0</td>
<td></td>
<td>Slab</td>
<td>Barnddry floodproof</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Shorewood</td>
<td>1</td>
<td>83, 87</td>
<td></td>
<td>Basement</td>
<td>Local drainage improvements have reduced repetitive flooding</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Elgin</td>
<td>1</td>
<td>82, 87</td>
<td></td>
<td>Basement</td>
<td>Elevation</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Uninc. East Dundee</td>
<td>1</td>
<td>87, 89, 93, 94</td>
<td></td>
<td>Slab</td>
<td>Barnddry floodproof</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Grove, Willow</td>
<td>1</td>
<td>79, 83, 89, 93, 94, 97, 97</td>
<td></td>
<td>Crawlspace</td>
<td>Floodproof (not a floodproof)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Kadelas</td>
<td>1</td>
<td>87, 97</td>
<td></td>
<td>Crawlspace</td>
<td>Elevation</td>
<td>Yes</td>
<td></td>
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<td>11</td>
<td>Lindenhof</td>
<td>1</td>
<td>87, 97</td>
<td></td>
<td>Basement</td>
<td>Acquision/Barrier/Regrade***</td>
<td>Yes</td>
<td></td>
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<tr>
<td>12</td>
<td>Park View Marveny</td>
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<td>79, 81, 83, 96</td>
<td></td>
<td>Basement</td>
<td>Wet floodproof</td>
<td>Yes</td>
<td></td>
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<tr>
<td>13</td>
<td>Mill Street</td>
<td>1</td>
<td>96, 97</td>
<td></td>
<td>Elevation</td>
<td>Acquision/Barrier/Regrade***</td>
<td>Yes</td>
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<td>14</td>
<td>North River</td>
<td>2</td>
<td>5/78, 978</td>
<td></td>
<td>Crawlspace</td>
<td>Elevat off</td>
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<td>15</td>
<td>South Elgin</td>
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<td>79, 88</td>
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<td>Crawlspace</td>
<td>Barnddry floodproof</td>
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<td>90, 95</td>
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<td>Slab</td>
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<td>La Fox</td>
<td>1</td>
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<td>Slab</td>
<td>Barnddry floodproof</td>
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<td>18</td>
<td>Algonquin</td>
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<td></td>
<td>Slab</td>
<td>Barnddry floodproof</td>
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* While in a high hazard area, the repetitive flooding was caused by local drainage problems.

** Tentative Recommended Measure is based on data collected from a wetland survey. A more detailed examination of each building is needed before funds are spent on a project.
5.6. Conclusions

1. There are several ways to protect individual properties from damage by natural hazards. The advantages and disadvantages of each should be examined for each situation.

2. Property owners can implement some property protection measures at little cost, especially for sites in areas of low hazards (e.g., shallow flooding, sewer backup, earthquakes, thunderstorms and winter storms). For other measures, such as relocation, elevation and safe rooms, the owners may need financial assistance.

3. Only 37% of the buildings in the County’s floodplains are covered by flood insurance.

4. Local government agencies can promote and support property protection measures through several activities, ranging from public information to financial incentives to full funding.

5. It is unlikely that most government properties, including critical facilities, have any special measures to protect them from flooding, tornadoes, and other natural hazards.

6. Kane County is self-insured for all damage by floods and earthquakes and for damage from other hazards under $250,000. The 16 municipalities in the risk management pools should have adequate insurance coverage for the natural hazards. The other municipalities may or may not have sufficient insurance coverage.

7. Property protection measures can protect the most damage-prone buildings in the County: repetitive loss properties.

5.7. Recommendations

1. Public education materials should be developed to explain property protection measures that can help owners reduce their exposure to damage by natural hazards and the various types of insurance coverage that are available.

2. Because properties in floodplains will be damaged sometime, a special effort should be made to provide information and advice to floodplain property owners. Special attention should be given to repetitive loss and high hazard areas.

3. All property protection projects should be voluntary. Other than State and Federally-mandated regulations, local incentives should be positive, such as providing financial assistance.

4. A standard checklist should be developed to evaluate a property’s exposure to damage from the hazards most prevalent in Kane County: flooding, high winds, lightning, hail and power losses from downed lines. It should include a review of
insurance coverage and identify where more information can be found on appropriate property protection measures. The checklist should be provided to each agency participating in this planning process and made available to the general public.

5. Each public entity should evaluate its own properties using the standard checklist. A priority should be placed on determining critical facilities’ vulnerability to damage and whether public properties are adequately insured.

6. Each public entity should protect its own publicly-owned facilities with appropriate mitigation measure(s).

7. Communities should establish cost sharing programs, such as rebates, to encourage low cost (under $10,000) property protection measures on private property, such as:

   - Surface and subsurface drainage improvements,
   - Berms and regrading for shallow surface flooding,
   - Sewer backup protection
   - Relocating furnaces and water heaters out of basements
   - Tornado safe rooms
   - Installing lightning rods

8. The County and municipalities should seek State and Federal funding support for higher cost measures, such as elevation, relocation and acquisition of high priority properties. High priority properties are:

   - Those properties in repetitive loss areas 7, 8, 9, 12 and 14. If owners of these properties are interested, benefit-cost analyses should be run and outside funding should be applied for.
   - Critical facilities in the floodway or subject to flood depths of more than 2 feet

5.8. References


