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PRACTICE FLOODPLAIN MANAGEMENT

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Using Zoning to Reduce Flood Damages

By Richard Roths, AICP

Ever since Justice Sutherland delivered the U.S. Supreme Court opinion that upheld the Village of Euclid's zoning power in *Euclid v. Ambler Realty*, on November 22, 1926, it has been widely accepted that one of the tests of a jurisdiction's zoning powers is whether it protects the public health, safety, morals, and general welfare of the community, giving communities the power to take actions that will reduce damages to local property owners.

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 required communities to adopt a floodplain ordinance to be eligible for the National Flood Insurance Program (NFIP). Many communities across the country have adopted such ordinances. More than 20,000 communities participate in NFIP today, but NFIP has been almost too successful in this effort. Most communities adopt a floodplain ordinance based on a model ordinance provided to them by their state coordinating agency for NFIP. Only recently have communities begun to look at the risk beyond what is indicated on the Federal Emergency Management Agency (FEMA) flood maps to determine whether additional steps should be taken. While a number of requirements are included in the model ordinances, the most common ones that affect development are:

- The lowest floor, including basements, of structures located in the floodplain must be elevated at or above the base flood elevation and nonresidential structures can be structurally dry-floodproofed to the base flood elevation.
- Any fill or obstruction in the floodway can cause no more than a one-foot rise in the base flood elevation.

These requirements are designed to ensure that houses are elevated above the base flood level and that development in the floodway doesn't raise flood levels

Following the levee failure in New Orleans during Hurricane Katrina, this home was washed off its foundation. Riverine flooding can produce the same effect.

Richard Roths

ASK THE AUTHOR JOIN US ONLINE!

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About the Author
Richard Roths, AICP, is a principal planner for URS Corporation and a nationally recognized expert in floodplain management, mitigation planning, and hazard mitigation action assistance.

above the elevations that are figured into the determination of the flood fringe area. Unfortunately, these minimum requirements still allow much damage to happen in the real world.

When Congress passed the Disaster Mitigation Act of 2000, communities were told that, if they wanted to be eligible for federal funds to reduce the cost of damages from natural hazards, they had to adopt an all-natural hazard mitigation plan. Mitigation plans can include not only actions that affect existing structures and infrastructure, but also actions that affect future structures and infrastructure (i.e., modifying zoning ordinances, building codes, and subdivision codes).

Five years later, Hurricane Katrina struck the Gulf Coast, producing one of the worst natural disasters in U.S. history. Hurricanes Katrina and Rita left the National Flood Insurance Fund roughly $20 billion in debt, and the fund had to rely on a major loan from the U.S. Treasury. Experts called for a number of changes in NFIP, including raising insurance rates for high-risk coastal homes or vacation homes, requiring flood insurance coverage in more areas to offset losses in the higher-risk areas, updating older flood maps, and enforcing tougher building and land-use policies.

In addition to their floodplain ordinances, communities have had the tools to take actions to reduce risks from hurricanes and floods to their residents in the form of overlaying floodplain ordinances on zoning ordinances, but many have failed to use their two ordinances this way. They have long held the power to reduce risks through the zoning ordinances, which derive their power from their ability to be used to protect the residents of the community. If communities had prudently used their zoning powers and had kept residential uses out of high-risk areas, the damages from floods and hurricanes would be far less. Now communities have been given additional tools that they can use to reduce risks in the form of all-natural hazard mitigation plans. The mitigation plan identifies the risks facing communities, which can then identify portions of their land-use regulations that should be modified to avoid or reduce the risk. If these tools are not used prudently, it is possible that in the future the federal government may require even stricter laws that further limit the scope of local land-use controls.

WHAT IS ALL-NATURAL HAZARD MITIGATION?

Hazard mitigation is an action that is taken to reduce the risk to a community, structure, infrastructure, or individuals from the hazards that occur when the built environment intersects with natural events whose intensity is over and above that which is normally expected, such as:

- Excessive amounts of precipitation leading to flooding
- High winds damaging or destroying structures that aren't designed to withstand such forces
- Wildfires burning structures that have interfaced with the natural environment
- Landslides carrying away structures or burying them because they have encroached on unstable areas

Every community in the U.S. should have a mitigation plan. The hazards mentioned in the previous paragraph are just a small sample of the natural hazards that affect our country. **No community is risk-free.**

As noted earlier, one of the reasons for a community's existence is "to protect the life, health, and safety of its residents." To protect life, health, and safety, a community must understand the risks that affect its jurisdiction. In the mitigation plan, the community must complete a risk assessment for the hazards that affect the community. For most, flooding is one of the major hazards.

Finally, mitigation plans make a community's residents eligible for funds to reduce their risk from hazards that will occur in the future. Several FEMA programs fund mitigation planning.

The mitigation plan identifies the risks facing communities, which can then identify portions of their land-use regulations that should be modified to avoid or reduce the risk.

There are six types of mitigation plans community leaders should be aware of:

The **Flood Mitigation Plan** is funded by the NFIP and its primary purpose is to reduce flood hazards.

The **Community Rating System (CRS) Plan** is not funded by any of FEMA's programs, but is designed to encourage communities to take actions over and above the NFIP minimum requirements and receive credits that reduce the cost of flood insurance. The lower flood insurance rates reduce the expenses of residents, while the actions reduce the risks to their communities.

The **All-Natural Hazard Mitigation Plan** is funded by FEMA's Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) Program and is required to make communities eligible for mitigation project funds from the two programs.

The **Multi-Jurisdictional All-Natural Hazard Mitigation Plan** is essentially the same type of plan as the All-Natural Hazard Mitigation Plan, but is designed to allow multiple communities to collaborate in preparing a mitigation plan.

The **All-Hazard Mitigation Plan** is designed to encourage communities to take action to reduce damages from both natural hazards and manmade hazards, such as technical hazards and terrorism events, while having to prepare only one document.

The **Recovery Plan** is a document prepared after a catastrophic event such as an earthquake, hurricane, tornado, or other event that essentially destroys a major part of a community. The recovery plan includes a review of the pre-disaster land uses and determines whether changes should be made to zoning requirements, economic development goals and plans, building codes, and other regulations essential to a community's survival, as well as a mitigation plan to guide a community's recovery. Funding comes from FEMA disaster funds.

William Becker

Manhattan, Kansas (shown here), was one of dozens of cities suffering serious flooding throughout the Midwest in the summer of 1993.

Each type of plan is necessitated by its own unique circumstances, but FEMA is working on ways to reduce the number of plans, where possible.

A mitigation plan is generally made up of four sections: hazard identification, risk analysis, mitigation strategy, and an implementation strategy. The hazard identification can be used by the community to determine what types of uses are compatible with the risks in various areas of the city. The mitigation strategy can also be used to identify changes in local ordinances that would help make the community safer.

HOW DOES ZONING FIT INTO THE PICTURE?

Part of the mitigation plan is the strategy that the community develops to implement a shared vision to reduce its risks. After reviewing the risk analysis and determining which hazards provide the greatest risks, a community needs to determine which actions and projects should be implemented in order to reduce the risks.

The strategy involves formulating goals that will lead to a long-term vision for a safe community. The goals may include protecting existing structures or infrastructure, protecting health and safety, improving quality of life, ensuring efficient use of public funds, or other equally important actions.

To carry out the goals, the community can identify actions that:

a. prevent damage from occurring;
b. protect existing structures or infrastructure from damage;
c. educate the public regarding the hazards and actions that can be taken to reduce risk;
d. protect the natural resources of the community;
e. protect first responders and their equipment; and
f. protect existing buildings by constructing structures that keep the hazard from reaching the building.

Zoning regulations can be used to prevent damage from occurring and to protect natural resources by limiting uses in at-risk areas or by limiting the locations where structures may be constructed on a site. This protects infrastructure by reducing the need for various types of infrastructure in at-risk areas. First responders will be protected by limiting the necessity to send them into

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high-danger neighborhoods during disaster events and also by ensuring that facilities housing first responders are not located in at-risk areas.

ZONING REGULATIONS

When preparing a comprehensive plan and then adopting the implementing zoning regulations, a community should include a risk analysis as one of the criteria for determining the land use for an area. A risk analysis includes researching hazards that have affected an area in the past, studying scientific data that details risk for various hazards to an area, reviewing the risk assessment section of the state's mitigation plan to ensure all risks are covered, analyzing the probability of various hazards striking the area, reviewing geography, topography, and weather patterns, and looking at the location of existing development to determine what can be impacted by various hazards.

After determining the risks of a given area, a community can then decide whether it is advisable to allow various uses in the area or if minimum standards need to be changed to reduce the vulnerability of the community. For example, do you allow high-density residential development in an area that is expected to have five feet of flooding every 10 years, or do you require development to stay on higher land and let the remainder of the land flood? Let's take a look at some communities and how their zoning or floodplain regulations have been crafted to support a reduction in risk for areas subject to flood damage. The communities and the criteria that make their ordinances more restrictive are included in the matrix on this page.

The primary criteria that the communities used to create more restrictive ordinances are:

- including the floodplain regulations as an overlay in the zoning ordinance;
- adding freeboards to the ordinance;
- restricting the amount of rise in the flood elevations that development can cause;
- requiring setbacks from the stream for development;
- limiting the use of the floodway; and
- including and providing incentives for developers to design to these specifications.

Overlay zones. Every community that participates in NFIP must adopt a floodplain management ordinance. Some communities have hybrid ordinances, but by far most of the communities adopt versions of state model ordinances that will either meet the minimum requirements of NFIP or a combination of any floodplain regulations that their state may have adopted and the federal regulations. The floodplain ordinances are enforced in areas that are identified as floodplain on FEMA's Flood Insurance Rate Maps (FIRMs). Since the floodplains include areas that still have their basic

ORDINANCES EXCEEDING FEMA MINIMUM REQUIREMENTS

Community or Ordinance Name	Overlay District	Greater Than FEMA Minimum	Freeboard (in feet)	Allowable Floodway Rise	Stream Setback (Buffer)
Racine County, WI	Y	Y	Not applicable	Not applicable	
Roseville, CA	Y	Y	+2	0	Y
Exeter, NH	Y	Y	0	0	
Auburn, ME	Y	Y	+1	0	
Maricopa County, AZ	N	Y	+1	0	Erosion buffer
Mecklenburg County, NC	N	Y	+1 to +2	0	Based on size of drainage basin
Central Point, OR	N	Y	+1	0	
Northeastern Illinois Model Ordinance	N	Y	+1	0	

Community or Ordinance Name	Incentives	Critical Facilities	Other Criteria
Racine County, WI		None in floodplain	Limited use in all floodplain districts Urban Floodway (FW) District Urban Floodplain Conservancy Overlay (FCO) District Urban Floodplain Fringe Overlay (FFO) District General Floodplain Overlay (GFO) District
Roseville, CA		None in floodway	Limited use of floodway, only undeveloped land allowed Open space uses
Exeter, NH			
Auburn, ME			
Maricopa County, AZ		None in floodway	Limited use of floodway
Mecklenburg County, NC	Only for buffers Incentives are: • minimum lot size • reduced setbacks • open space credit • density bonus		
Central Point, OR		None in floodplain	Planned unit development criteria include preserving natural features
Northeastern Illinois Model Ordinances		None in floodway	Limited use of floodway, compensatory storage 1.5/1

underlying zoning designations, the floodplain area becomes the overlay zone with additional regulations. Racine County, Wisconsin; Roseville, California; Exeter, New Hampshire; and Auburn, Maine, all have floodplain overlay ordinances. This allows them not only to set minimum standards for construction but also to limit the uses that are constructed in these at-risk areas. This is a more realistic way to regulate areas that are in floodplains.

Setbacks. Some communities require that any structures built in a floodplain be set back from the center line of the stream, the channel of the stream, or the floodway. This setback is added to the ordinance because the communities understand that there is no guarantee that today's stream channel will carry all the water that comes down a stream under all flood conditions. The closer a structure is to a channel, the more likely it is that the structure will be flooded. Some communities modify this setback requirement slightly by not allowing principal structures in the setback area but allowing cheaper accessory structures there. Maricopa County, Arizona, and Mecklenberg County, North Carolina, include setback requirements in their floodplain ordinances, but they are stand-alone ordinances rather then overlay ordinances.

FEMA

Land dedicated for open space next to a waterway, as shown here in Kearny, Arizona, helps reduce flood damages and preserve natural values.

Open space zones. Open space zones are widely accepted as a mitigation tool for floodplains. Some communities require that developers dedicate areas along high-risk zones such as floodplains as open space for local parks. Other communities work with environmental groups to encourage them to purchase the high-risk areas for their natural and beneficial values. When FEMA purchases damaged structures and their underlying land, it requires that acquired land and structures remain in perpetual open space. Once a community purchases the land, it can be used for parks and open space. Minor improvements can be made, such as constructing open shelters, rustic parking lots, and playground equipment.

Some communities require setbacks from streams, while others such as Racine County, Roseville, Maricopa County, Central Point, Oregon, and all of the northeastern Illinois communities that have adopted the state model floodplain ordinance limit the use of areas that are in the floodway to either open space or to those uses with low damage potential. In effect, these areas serve the same purpose as keeping the land in open space while allowing residents to have some use of the land. Not only do these areas reduce damages, but they also provide larger areas to hold floodwaters with minimal damage to the built environment.

Density controls. Density controls can be used in multiple ways to reduce the risks from flooding. One way is to reduce the densities allowed in the floodplain. If a house is built on a larger lot, it first reduces the number of structures at risk. It also gives the developer additional space, allowing more innovative ways to elevate structures above the floodplain by allowing fill below the structure to elevate it above the base flood elevation (BFE). When fill is placed below a structure, a 3:1 slope should be included as the ground slopes below the BFE to help ensure that the soil doesn't erode as readily. In addition, by limiting the density, fewer residences and their occupants are put at risk. Another way is to use density controls to reduce flood risk as Mecklenberg County does. It allows developers to increase densities on sites that are outside the floodplain areas in return for keeping the at-risk floodplain as open space.

Nonconforming use regulations/substantial improvement regulations. One additional way that communities can use their zoning ordinances to reduce flood damages is to rigorously enforce the nonconforming use section of their zoning ordinance and the substantial improvement section of their floodplain ordinance. Nonconforming use regulations can be used to help bring structures into compliance with current regulations, including floodplain regulations. The substantial improvement section requires that, if the value of improvements to a structure equals or exceeds a 50 percent threshold, the structure must be brought into compliance with current regulations. If a structure predates the community's participation in NFIP or predates the current base flood elevations, it may have been constructed well below BFE and be at risk of flooding.

By using nonconforming use regulations, communities can require owners who want to change uses or significantly modify a structure to bring the structure into compliance with floodplain regulations. A number of communities across the country have dropped the 50 percent threshold for substantial improvements to a lower percentage. This, along with the nonconforming use section, can significantly affect the number of structures at risk.

CONCLUSION

Communities have all the tools they need to make their neighborhoods safer. The question is whether they have the will to use them.

Open space zones are widely accepted as a mitigation tool for floodplains.

NEWS BRIEFS

BAN ON ELECTRONIC MESSAGING SIGNS CONSTITUTIONAL

By Lora Lucero, AICP

Electronic messaging center (EMC) signs are digital signs where the copy of the message can change frequently—sometimes as quickly as every four or five seconds. The city of Concord, New Hampshire, originally banned EMC signs with the exception of the time, date, and temperature signs, but when the city faced an equal protection challenge to its sign code—treating one type of digital sign differently than another—it decided to ban all EMC signs.

Naser Jewelers, Inc., wanted to construct an EMC sign for its retail store located along a high-traffic corridor in Concord. There is currently a freestanding static sign six feet off the ground at that location, but Naser Jewelers was eager to install the EMC because of its experience with an EMC at another retail location in Dover. Naser Jewelers maintained that its sales increased about 18 percent at the Dover store as a result of the EMC sign.

When the city's code administrator denied the application, the store argued that the sign code impermissibly infringed on its First Amendment rights and asked the federal court for injunctive and declaratory relief. The store wanted to enjoin the city from enforcing its sign code so that it could proceed to install its EMC in time for the holiday shopping season. The magistrate judge refused, relying on the *Central Hudson Gas & Electric Corp.* (447 U.S. 557 (1980)) test for commercial speech.

The district court judge affirmed for different reasons. Because the EMC ban is content-neutral and does not apply merely to commercial entities, he ruled that the *Central Hudson* test was inapplicable. Instead, he upheld the city's ban because he concluded it was narrowly tailored to serve a significant governmental interest and allowed for reasonable alternative channels of communication. Naser Jewelers was unlikely to succeed on the merits and so it was not entitled to a preliminary injunction.

> The First Circuit concluded that the city's ban on all EMCs is a constitutionally permissible content-neutral regulation.

This decision was appealed to the First Circuit, at which time the American Planning Association stepped in as amicus curiae, joined by the International Municipal Lawyers Association, the Northern New England Chapter of APA, the New Hampshire Municipal Lawyers Association, and the New Hampshire Planners Association. John Baker and Robin Wolpert of Greene Espel, Minneapolis, drafted APA's amicus brief. Baker will discuss this case more fully on April 28 at the Bettman Symposium during the APA conference in Las Vegas.

In a nutshell, the First Circuit was not impressed with the arguments made by Naser Jewelers and concluded the city's ban on all EMCs is a constitutionally permissible content-neutral regulation. The court acknowledged the city's concerns about traffic safety and community aesthetics and concluded that the ban on EMC signs is narrowly tailored to address the city's concerns.

> It is a given that a billboard can constitute a traffic hazard. It follows that EMCs, which provide more visual stimuli than traditional signs, logically will be more distracting and more hazardous. . . . Indeed, plaintiff's own witness stated that bypassers focus more on rapidly blinking electronic signs than static signs. This constitutes a greater hazard. Further, for drivers a flashing light is often a signal of hazard on the roadway, a signal which itself slows and disrupts the traffic flow.

Naser Jewelers' argument—that it would lose potential customers and profit if it could not place an EMC sign at its Concord store—did not impress the court. "The maximizing of profit is not the animating concern of the First Amendment," the court said. APA's amicus brief and the *Naser Jewelers* decision can be accessed at www.planning.org/amicusbriefs.

Lora Lucero, AICP, is editor of Planning and Environmental Law*, and staff liaison to APA's amicus curiae committee.*

NATIONAL PLANNING CONFERENCE SESSIONS OF INTEREST TO *ZONING PRACTICE* READERS

Learn more about "Regulating Signs in the Digital Age" at the American Planning Association's 100th National Planning Conference on Tuesday, April 29 (11:00 a.m.), featuring speakers John Baker, Charles Floyd, AICP, and Daniel Mandelker, FAICP. The session is part of the Bettman Symposium.

In addition, *Zoning Practice* will sponsor a special two-hour session, "Mandatory Training for Planning Commissioners," on Monday, April 29 (10:30 a.m.), with John Nolon, Stuart Meck, FAICP, Tripp Muldrow, AICP, and Steve Villavaso, FAICP. The session explores the issues raised in John Nolon's April 2007 article in *Zoning Practice*, and is part of the conference's Training Planning Commissioners and Officials Track.

Skyline of downtown Tulsa, Oklahoma, with Elm Creek in foreground. Tulsa experienced major floods regularly into the 1980s before undertaking major improvements in floodplain management. Photo by Ronald Flanagan.

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HOW SMART ARE YOUR FLOODPLAIN MANAGEMENT REGULATIONS?

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