

Floodplain Management



Local Floodplain Administrator's Manual

2006 Edition

ILLINOIS DEPARTMENT OF NATURAL RESOURCES OFFICE OF WATER RESOURCES LOCAL FLOODPLAIN ADMINISTRATOR'S MANUAL

MARCH 2006 EDITION

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STATE OF ILLINOIS LOCAL FLOODPLAIN ADMINISTRATOR'S MANUAL

INTRODUCTION

Illinois has one of the largest inland system of rivers , lakes and streams in the United States. Nearly 15% of our total land area (or 7,400 square miles) is subject to flooding. Total streamflow in Illinois averages over 25 BILLION gallons per day!

Rivers and streams are part of nature's system for carrying water from high ground down to lakes and oceans. Floodplains are part of that system and carry unusually large amounts of water. The land areas adjacent to the streams, rivers, and lakes that are inundated when flooding occurs are floodplains. Flooding is a natural process and floodplains are a vital part of that process.

A watershed is an area that drains into a lake, stream, or other body of water. Other names for it are basin or catchment area. Watersheds vary in size, and larger ones can be divided into sub-watersheds (Fig 1.)

Figure 2 shows the primary watersheds in Illinois. The boundary of a watershed is a ridge or a divide. Water from rain and snowmelt are collected by the smaller channels (tributaries), which send the water to larger ones and eventually to the lowest body of water in the watershed (main channel).

A flood occurs when heavy rains or snowmelt send more water downstream than the carrying channel can handle. There are three primary types of flooding in Illinois:

Riverine Flooding - A flood typically seen as water flowing over a stream's banks.

Ponding - A flood occurring when low areas fill up faster than they can be drained.

Sheet Flooding - A flood when water flows along the surface without a channel.

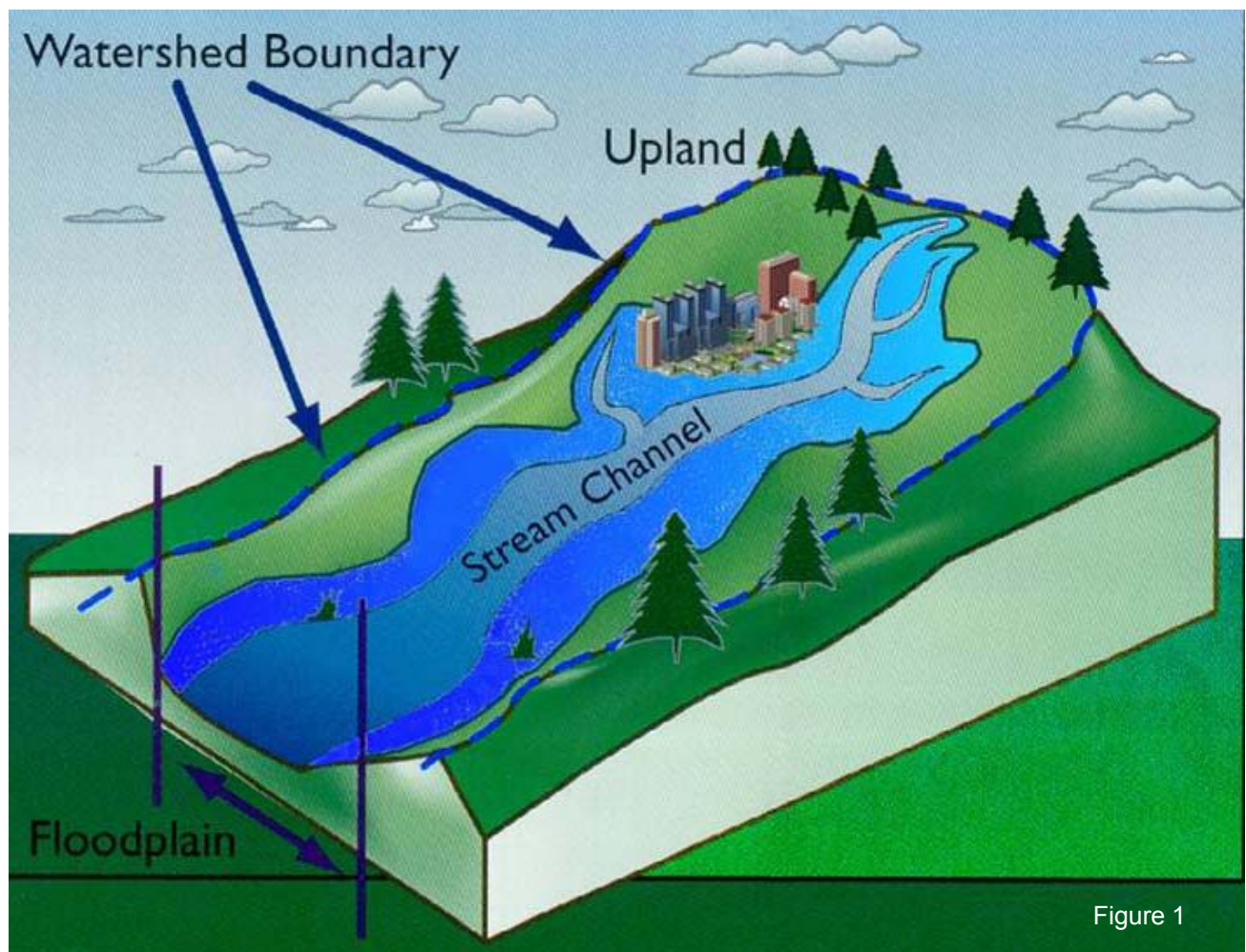


Figure 1

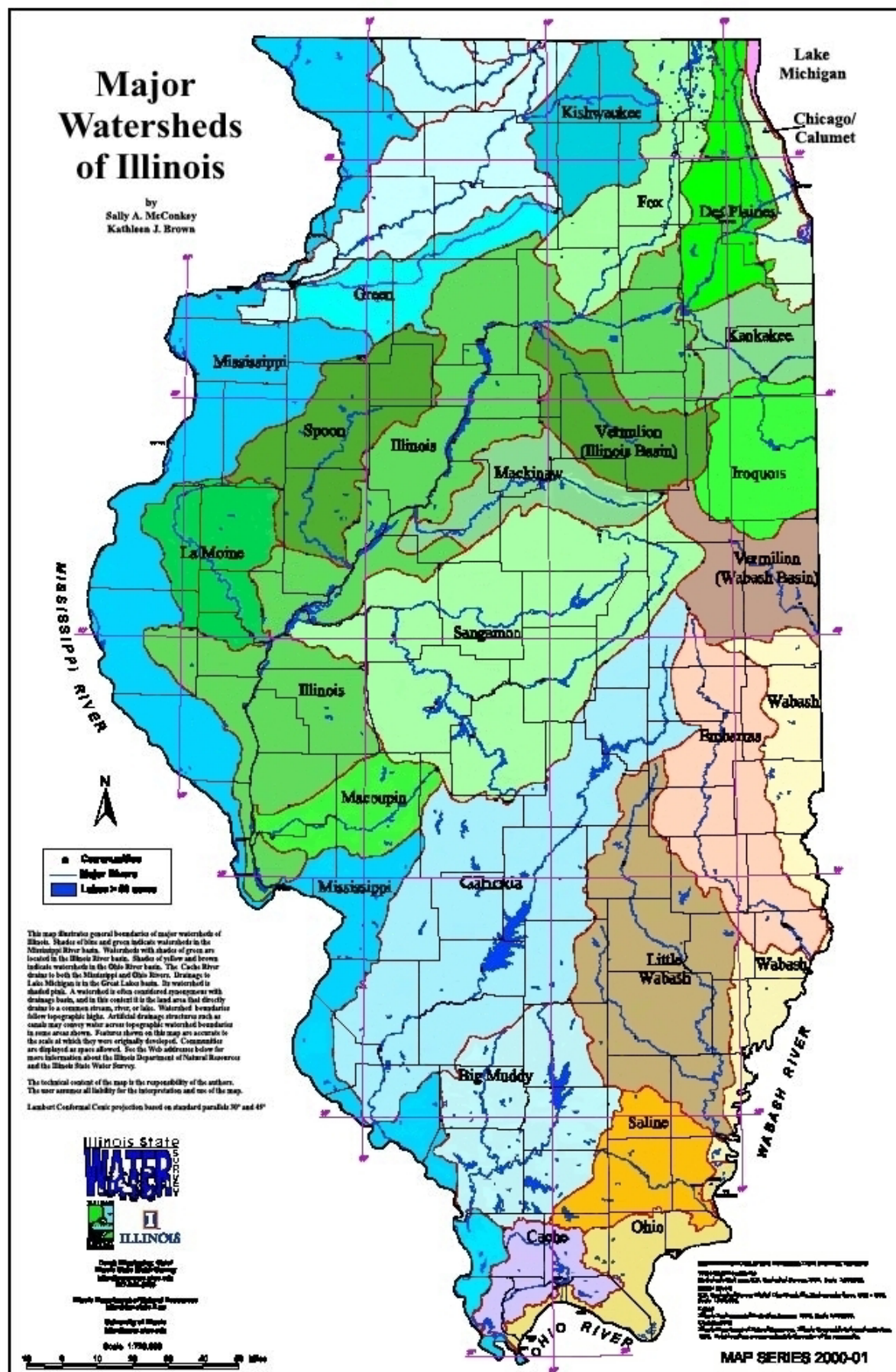
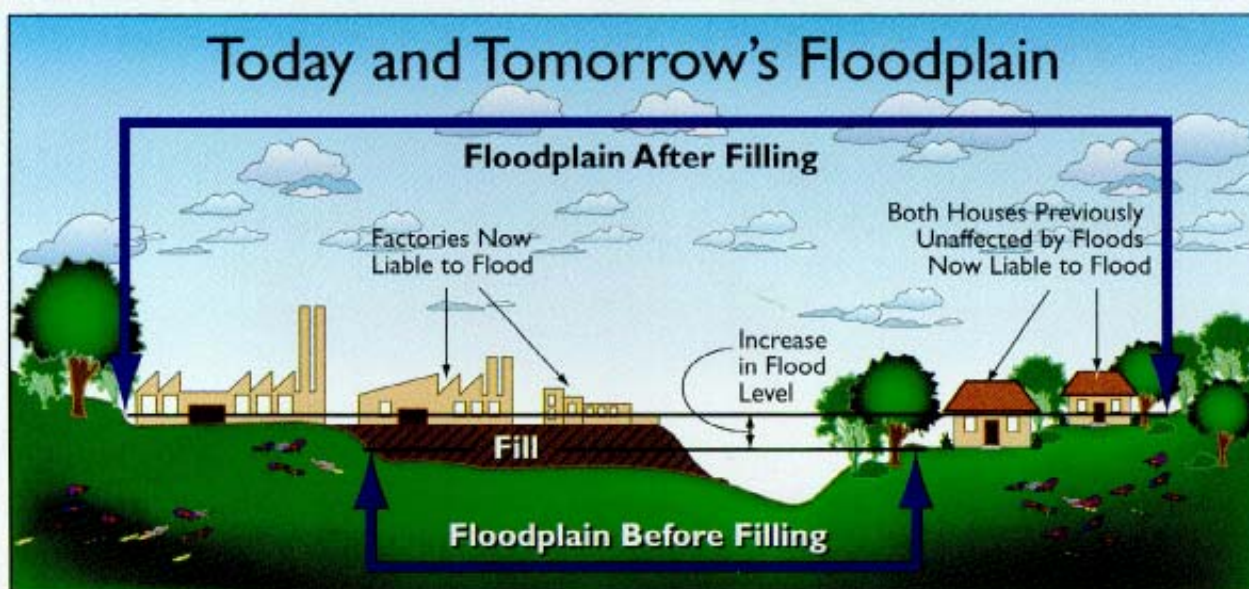


Figure 2



If large areas of the floodplain are filled, then there will be an increase in the land area needed to store flood waters. This means your home or business may be impacted.

Figure 3

Floods can also be caused by large ice jams or logs forming dams which block normal water flow. Other phenomena are also called "flooding". Poor local drainage or sewer problems, for example, can cause a basement to be flooded.

Under natural, undeveloped conditions, flooding causes little or no damage. Over the years, insufficient regard has been given to preserving the natural flood storage and conveyance capacities provided by floodplains.

As Illinois developed, the state's waterways often served as the focal point for growth and commerce. The waterways provided needed water resources and transportation corridors. Historically, development occurred along these water corridors.

Homes, buildings, businesses, and even entire communities now occupy floodplains across Illinois. This floodplain development has resulted in continual and, often, severe damage as well as loss of life (Fig. 3).

In Illinois, it is estimated that over 250,000 buildings are located in floodplains. Floods are by far the most common natural disaster in Illinois, accounting for well over 90% of the declared disasters.

Annual damages in the state are now estimated to average nearly 700 million dollars.

Floodplain areas in Illinois are documented areas of hazard. Unwise floodplain development further increases property damage and potential loss of life from flooding. The purpose of this manual is to assist local floodplain managers in their efforts to reverse this trend.

The manual explains the downstate* floodplain regulation requirements of the State of Illinois and the National Flood Insurance Program (NFIP).

Assistance in enacting and administering floodplain regulations is available from the Illinois Department of Natural Resources, Office of Water Resources (IDNR/OWR), and the Federal Emergency Management Agency (FEMA). Requests for assistance should be addressed to:

Illinois Department of Natural Resources
Office of Water Resources
One Natural Resources Way
Springfield, IL. 62702-1271
(217) 782-3863

-OR-

Federal Emergency Management Agency
Region V
536 South Clark Street
Chicago, IL. 60605
(312) 408-5500

* NOTE * IDNR/OWR has different, more specific floodplain rules and requirements for the Counties of

Introduction

McHenry, Lake, Kane, DuPage, Cook and Will. Information and assistance for these counties can be obtained from :

Illinois Department of Natural Resources
Office of Water Resources
2050 West Stearns Road
Bartlett, IL 60103
(847) 608-3100

CHAPTER 1

The National Flood Insurance Program

BACKGROUND

The National Flood Insurance Program (NFIP) was created by Congress in 1968 to slow ever rising disaster relief costs and reduce the loss of life and property caused by flooding. The Program has four goals:

- 1) to make flood insurance available to the general public;
- 2) to require that new buildings be constructed to resist flood damages;
- 3) to guide future development away from flood hazard areas; and
- 4) to transfer the costs of flood losses from the taxpayer to floodplain property owners through flood insurance premiums.



The NFIP is a voluntary program based on a mutual agreement between the Federal government and the local community. The NFIP is administered by the Federal Insurance Administration (FIA) within the Federal Emergency Management Agency (FEMA). The Illinois Department of Natural Resources/Office of Water Resources (IDNR/OWR) is the state coordinating agency for the NFIP.

Flood insurance, and many types of state and federal financial assistance such as mortgage loans and community grants, are only available in those communities that adopt and enforce a floodplain management ordinance that meets or exceeds the minimum standards of the program.

FLOODPLAIN MANAGEMENT QUICK HISTORY

Pre-1968

- *Main Focus on flood control structures*
- *Limited availability of private sector flood insurance*

Flood Insurance Act of 1968

- *Establish National Flood Insurance Program*
- *Make available federal flood insurance*
- *Map flood hazard risk zones*
- *Require LOCAL floodplain management and enforcement*

Flood Disaster Protection Act of 1973

- *Require mandatory purchase of flood insurance for all federally guaranteed loans and grants*
- *Reduce taxpayer support to pay flood claims*

National Flood Insurance Reform Act of 1994

- *Improve compliance with fines to lenders which do not require the purchase of flood insurance*
- *Create Flood Mitigation Assistance Programs*
- *Increase flood insurance coverages*
- *Establish the Community Rating System*

These same standards must also be adhered to by all state and federal agencies.

The NFIP's regulations are intended to prevent the loss of life and property, and reduce economic and social hardships resulting from flood disasters. There is clear evidence that these goals have been achieved in areas where buildings and other development activities are in compliance with the community's floodplain management ordinance.

Flood insurance is only available in communities that participate in the NFIP. Flood insurance premiums for new buildings are based on flood risk, which is determined by the elevation of the lowest floor of the structure relative to the elevation of the base flood.

Nationwide, nearly 20,000 communities participate in the NFIP. Over 5 million flood insurance policies are in

force with a total coverage in excess of \$897 billion.

PROGRAM ENTRY

There are two very distinct phases of community entry and participation in the NFIP.

EMERGENCY PHASE

The “Emergency Phase” is normally the entry stage of participation. In the Emergency Phase, the community was normally provided with a very simple floodplain map based on very limited data. Where no clear flood risks are present, and Emergency Phase community may be required to pass only minimum floodplain development regulations. In the Emergency Phase, insurance is made available at a flat rate based only on the type of structure, regardless of the structure’s location. Very few Emergency Phase communities remain in Illinois.

REGULAR PHASE

To continue in the NFIP, a community is expected to enforce a more comprehensive floodplain construction ordinance which includes the requirement that new buildings in floodplains have the lowest floor, including basement, elevated to or above the base flood elevation. In addition, all other development activities must not alter or divert flood flows onto neighboring properties. Nearly all communities in Illinois are now in this “Regular Phase” of the NFIP. In most cases the community is given a Flood Insurance Rate Map and a Flood Insurance Study which provides detailed information of local flood hazards.

When a community joins the Regular Phase of the NFIP, additional amounts of flood insurance become available. The premiums for flood insurance on new buildings reflect the actual risk of flood hazard present at the site (actuarial rates). Flood premiums are based on how high or how low a structure is in relation to the flood elevation. Any building which existed prior to the community’s entry into the NFIP qualifies for government subsidized insurance rates.

FLOOD INSURANCE

INSURABLE LOSSES

A National Flood Insurance Program “Standard Insurance Policy” covers direct loss caused by a flood (less the deductible). A flood is defined as a “general and temporary condition of partial or complete inundation of normally dry land area from the overflow of a lake, river, stream, ditch, etc. or the unusual and rapid accumulation or runoff of surface waters.” In specific instances,

and when associated with proximate flooding, flood insurance will also cover damages caused by high ground water, sewer backup, or subsurface flows.

INSURABLE PROPERTY

Any walled and roofed building in a community participating in the National Flood Insurance Program can be insured, whether or not it is in a floodplain. A manufactured home affixed to a permanent site and anchored can also be insured. Two types of coverage are available for insurable buildings:

1. Structural coverage on the walls, floors, insulation, furnace, and other items permanently attached to the structure; and
2. Coverage on the building’s contents (this may be purchased separately from structural coverage).

UNINSURABLE PROPERTY

Property located outside an insurable building, vehicles, trailers on wheels, boats, animals, crops in the field, money, valuable papers, fences, outdoor swimming pools, bridges, driveways, docks, land values, plants, landscaping, and finished portions of a basement cannot be insured with a standard NFIP policy.

BASEMENT COVERAGE

Typically, National Flood Insurance insures against damages caused only by surface flooding. It will not cover damages from seepage or sewer backup unless there is a general and temporary condition of flooding in the area and flooding is the proximate cause of the seepage.

National Flood Insurance does not cover finished portions of a basement such as carpeting and paneling. Unimproved structural parts such as the foundation, walls, stairway, and utility connections are covered. It will also cover unimproved (not taped or painted) dry-wall and insulation.

The following items are also covered as part of structural coverage: sump pumps, water tanks, oil tanks, furnaces, water heaters, heat pumps, electric junction and circuit breaker boxes, clothes washers and dryers, food freezers, air conditioners, and clean-up.

Some private insurance carriers sell coverage for basement sewer backup or sump pump failure. This covers water damage to a building and basement contents when the sewer lines backup or the sump pump fails (not associated with nearby flooding).

These are commercial flood policies and details will vary from company to company.

FLOOD INSURANCE RATES

The relationship of a building's lowest floor (including basement) to the base flood elevation (BFE) can have a significant impact on flood insurance rates.

Rates are subsidized for older existing buildings that were built before the community enacted a detailed floodplain management ordinance and joined the NFIP. These types of buildings are called pre-FIRM structures (Fig. 1).

Rates for buildings constructed after the community joined the NFIP (post-FIRM construction) are actuarial, that is, they vary from building to building depending on how far the lowest floor (including basement) of the building is above or below the base flood level (Fig. 2).

Typical flood insurance premiums in Illinois are less than \$500. However, newer buildings which are not constructed in accordance with the community's flood protection ordinance, can have rates well over \$1,000.00. Premiums are lowest if the building is located outside a floodplain.

Proper enforcement of the floodplain ordinance can have a profound effect on flood insurance rates.

MANDATORY PURCHASE REQUIREMENTS

Purchase of flood insurance is voluntary except where a person receives federal aid, a mortgage, or other loan for a flood-prone property. Federal law requires flood insurance for all federal assistance and commercial loans to construct, improve, or purchase structures located in floodplain areas. In these cases, it is the lender's responsibility to make flood zone determinations for insurance purposes. In most cases, lenders require structural coverage equal to the amount of the loan or the minimum amount available, whichever is less. However, some lending agencies may have stricter requirements in their own regulations.

INCREASED COST OF COMPLIANCE (ICC)

When a building covered by a standard flood insurance policy sustains a loss caused by a flood, it may be eligible for up to \$30,000 to floodproof, relocate, elevate, or demolish (F.R.E.D.) the building. The intent of ICC is to eventually reduce the number of structures which are repetitively flooded.

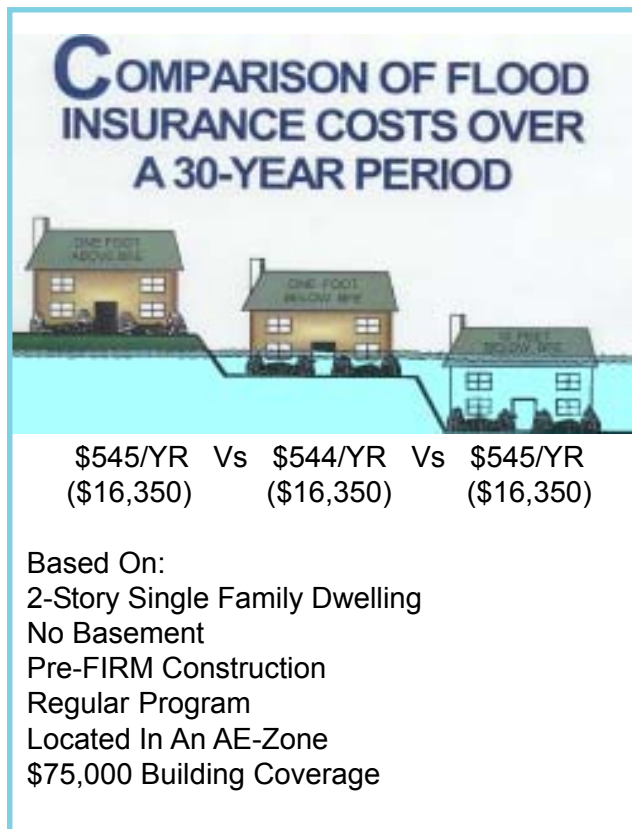


Figure 1 Insurance Rates for a Pre-FIRM structure (built before NFIP)



Figure 2 Insurance Rates for a Post-FIRM structure (built after NFIP)



ICC BEFORE AND AFTER

A building is eligible for an ICC claim payment if:

1. it is in a floodplain,
2. has a flood insurance policy in effect, and
3. the community determines it has been substantially damaged (see page 40).

Many communities in Illinois have also adopted local regulations to track cumulative losses on buildings which are repetitively flooded. In this situation, when multiple losses on a structure add up to 50% damage, an ICC claim payment would be eligible.

ICC has become one of the most effective tools for many communities in the state to reduce their exposure to repetitive flood damages.

COMMUNITY ASSISTANCE PROGRAM

As the state coordinating agency for the NFIP, IDNR/OWR conducts scheduled visits with NFIP participating communities.

Most communities will be visited at least once every five years. Communities experiencing rapid growth, development pressures or problems are visited more frequently.

The visits are made to document floodplain development activities and to evaluate how communities are coping in their efforts to regulate floodplain development according to the NFIP. The primary purpose of the visits is to assist communities in identifying and solving floodplain management problems.

During the visit, any shortcomings in procedures or

enforcement of the local ordinance are identified and appropriate corrective actions are discussed. When noncompliance with the local ordinance or NFIP regulations is identified, the community is expected to take actions necessary to remedy the infractions. Enforcement action against a community can be initiated if a community refuses to address noted deficiencies. However, before such action is taken, the state will make every effort to work with the community and resolve any outstanding compliance issues. Failure to resolve compliance issues can result in suspension from the NFIP.

EFFECTS OF SUSPENSION OR NON-PARTICIPATION IN THE NFIP

Non-participation or suspension from the NFIP can subject the community to the following consequences:

1. Flood insurance will no longer be available. No resident will be able to purchase a flood insurance policy;
2. No federal grants or loans for buildings may be made in identified flood hazard areas. This restriction includes all Federal agencies such as Housing and Urban Development, Emergency Services Disaster Agency, Small Business Administration, etc;
3. No federal disaster assistance may be provided in identified flood hazard areas;
4. No federal mortgage insurance may be provided in identified flood hazard areas. This includes Federal Housing Authority, Veterans Administration, and Farmers Home Administration;
5. Several types of state grants and loans (such as IDNR, Department of Commerce & Community Affairs, Department of Transportation, Environmental Protec-

tion Agency, Department of Public Health, etc..) may not be available; and

6. Local governing bodies may be susceptible to some form of liability by not participating because their action: 1) denies the ability of its citizens to purchase flood and related water damage insurance; and 2) does not take positive steps to reduce the exposure of life and property in the face of authoritative scientific and technical data.

Once a community is suspended, it must resolve the outstanding violations before it may re-enter the program.

NFIP QUICK REFERENCE GUIDE

There are four types of communities for NFIP purposes. They are shown below with some of their characteristics and actions necessary to be taken by local officials, lending institutes, and insurance agents.

1) MAPPED AND PARTICIPATING

Community Actions: Require permits for new development in floodplains. Require new development to comply with the local floodplain ordinance.

Flood Insurance: Available throughout the community (inside or outside the floodplain).

Lender Actions: Require flood insurance on all loans in the floodplain. Give notice about flood hazards and federal disaster assistance availability.

2) MAPPED AND NOT PARTICIPATING

Community Actions: Local floodplain permits not required but state and federal permits still apply in floodplain.

Flood insurance: Not available.

Lender Actions: Federally-assisted loans prohibited in the floodplain. Conventional loans permitted at lender risk. Give notice about flood hazards and unavailability of federal disaster assistance.

3) NOT MAPPED AND PARTICIPATING

Community Actions: Regulate new construction to avoid flood damage to the extent known. Minimal regulations apply.

Flood Insurance: Available throughout the community.

Lender Actions: No specific requirements; flood insurance available but not required.

4) NOT MAPPED AND NOT PARTICIPATING

Community Action: None required.

Flood Insurance: Not available.

Lender Actions: No specific requirements.

Chapter 2

Floodplain Data And Mapping

THE BASE FLOOD

The base flood is the National Flood Insurance Program (NFIP) and the State of Illinois' designated flood for regulation purposes. By definition, the base flood has a 1% or 1 out of 100 chance of occurring in any given year. If we had flood gage records over a long period of time (say, several thousand years) we would see that base floods occur on the average about once every 100 years. Because of this statistical probability, the base flood is also called the 1% chance or the 100-year flood.

Using the base flood concept allows all communities to regulate to the same standard. Although a 100-year flood sounds remote, it must be kept in mind that the base flood hazard is present every year. A base flood can, and has on several occasions in recent years, occurred more than once in the same year. During the life of an

average 30 year mortgage, a home located within the 100-year floodplain has nearly a 30% chance of being damaged from a base flood during the life of that mortgage. The same home has less than a 1% chance of fire damage during the same period.

BASE FLOOD ELEVATION (BFE)

The BFE is the elevation (normally in feet above sea level) which the base flood is expected to reach. Base flood elevations have been determined on many of the streams and rivers in Illinois. Floodplain maps show the boundaries of the base flood. However, the accuracy of those boundaries is only as good as the original map used to develop the floodplain map. For example, if the base flood elevation is 496 feet above sea level and the original topographic map used to develop the floodplain map had a 10 foot contour interval, it is obvious that judgment was used to locate the approximate floodplain boundary between the 490 and 500 foot contour lines. When mapping a floodplain, better ground topography always results in more accurate floodplain delineations.

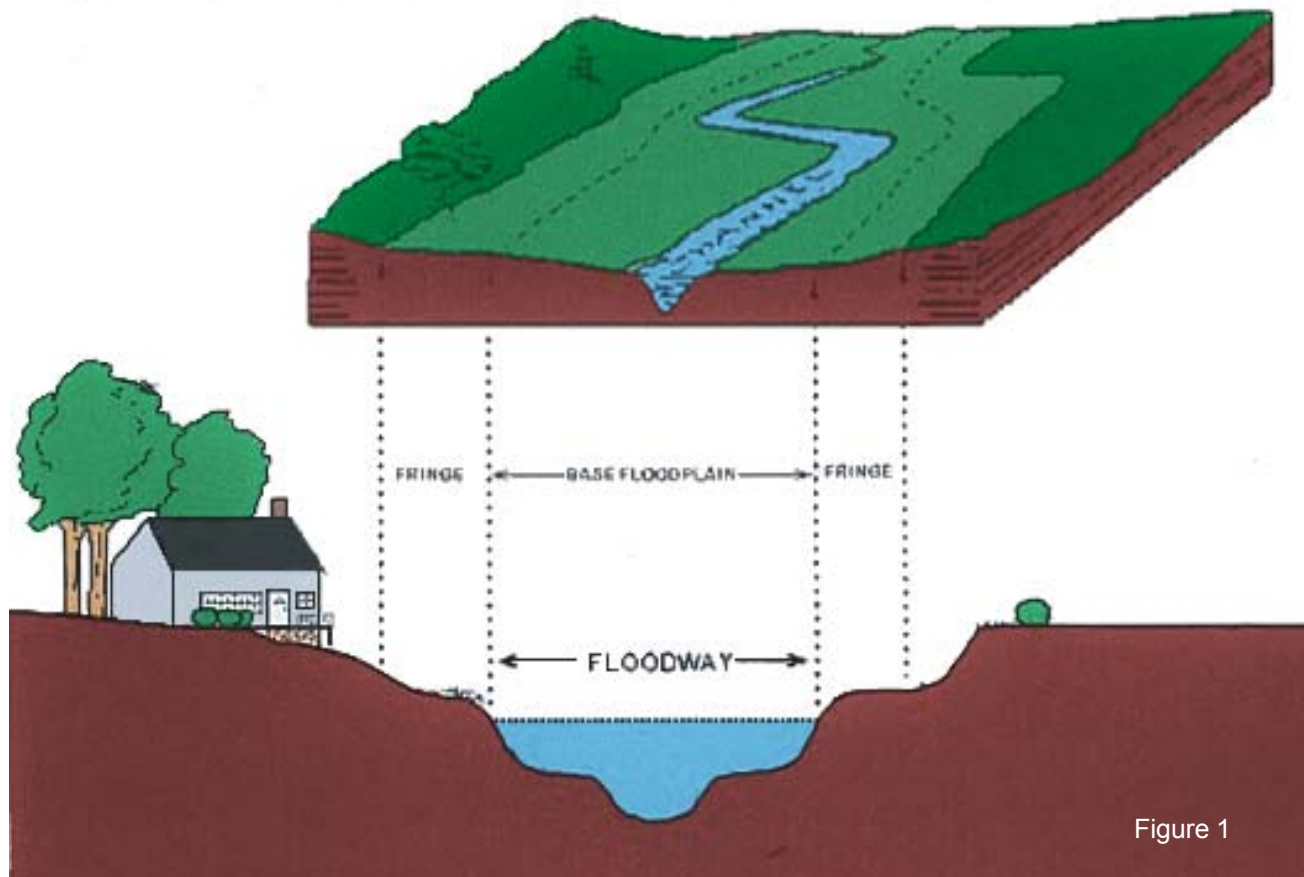


Figure 1

THE FLOODPLAIN OR “SPECIAL FLOOD HAZARD AREA” (SFHA)

For purposes of the NFIP, the area that would be inundated by the base flood is called a “special flood hazard area” (SFHA).

The floodplain area (SFHA) is normally shown as a gray shaded area on a community’s floodplain map. The State Model Ordinance calls a floodplain “a floodplain” and does not use the NFIP term SFHA.

IS A PROPERTY IN OR OUT OF THE FLOODPLAIN?

Because of the inherent inaccuracy of all maps, the floodplain maps are best used only to generally identify which properties are located in the floodplain and, therefore, subject to floodplain regulations. Communities are encouraged to plot the floodplain boundaries on more detailed topographic maps if they are available.

If you are not sure if a property is in or out of the floodplain, you must rely on the actual property elevation. For example, if a development site appears to be located in the floodplain on the floodplain map, but a ground survey of the property shows the natural ground elevation to be above the base flood elevation, then the development is, in fact, not in the floodplain and, therefore, not subject to floodplain development regulations. Conversely, if the site is located close to but outside of the shaded floodplain area on the map, but ground elevations show the site to be below the base flood elevation, then development at the site is subject to the regulations. This is why the floodplain is defined in the State model ordinance as that area “generally” identified on the floodplain map.

Accurate site elevations always take precedence over the maps. However, if a building is located within the floodplain on a map and more accurate ground surveys show otherwise, formal map revision procedures must be undertaken in order to remove the site from the floodplain and release the building from the insurance requirements of the NFIP (see page 18).

THE FLOODWAY

The floodway is typically the channel of a river or stream and the overbank areas adjacent to the channel. During a flood event, the floodway carries the bulk of the flood waters downstream and is the area where water velocities and forces are the greatest and most destructive.

Regulations require that the floodway be kept open so that flood flows are not obstructed or diverted onto other properties (Fig. 1).

A state permit is required for all but minor floodway development activities (see Chapter 3). Where no floodway has been delineated, state permit review is required for any development activities proposed within the entire mapped floodplain area.

THE FLOOD FRINGE

The area on either side of the floodway is called the flood fringe (fig. 1). This area is subject to inundation from the base flood but conveys little or no flow. No state permit is required for development in the flood fringe. However, local floodplain permit requirements still must be enforced in the fringe areas.

FLOOD INSURANCE STUDY (FIS)

When a community with significant flood risk joins the NFIP, a Flood Insurance Study (FIS) is generally prepared by FEMA to determine the flood hazard present in the community (Fig. 2). However, smaller communities or those with minimal flood risks often do not have a FIS prepared for them. When prepared, the FIS provides accurate and detailed flood hazard information which can assist the local administrator in regulating floodplain development. FIS information includes a written report containing a description of a community’s flooding conditions, flood profiles showing 500, 100, 50, and 10-year flood elevations for each stream reach studied in detail, and data concerning the different characteristics of the floodway calculated for cross sections taken along the stream.

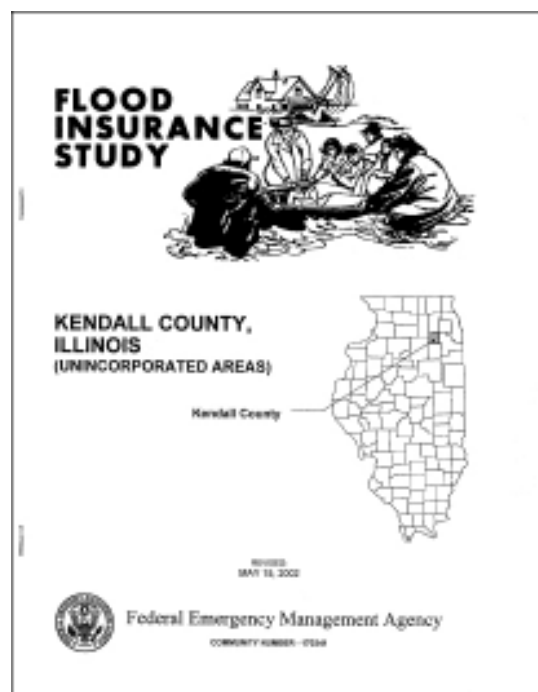


Figure 2. Flood Insurance Study

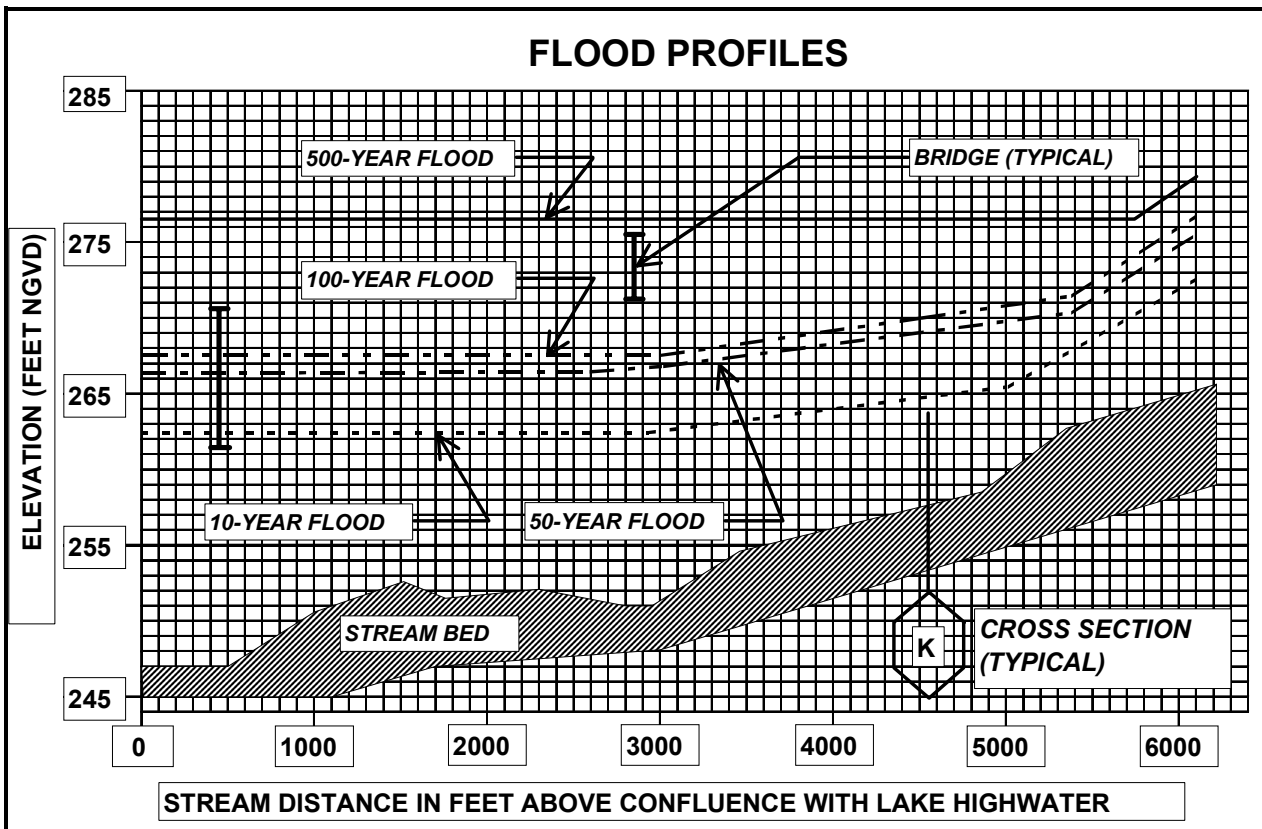


Fig. 3. Flood Profile

THE FLOOD PROFILE

The flood profile (Fig. 3) which is included in the FIS can be used to determine more exact base flood elevations for any specific site within a floodplain. Where an FIS has been produced the flood profile will take precedence over the FIRM for determining Base Flood Elevations.

THE FLOODWAY DATA TABLE

Where detailed mapping has been completed, a FIS will often include a Floodway Data Table (Fig. 4). The Floodway Data Table shows detailed information about flooding characteristics at surveyed cross-sections of a stream. The floodway data table will provide the floodway width, the stream discharge, and the base flood elevation at each cross section. Cross section locations are depicted on the Flood Insurance Rate map.

FLOODPLAIN MAPS

Floodplain maps vary in detail dependent on several factors including availability of topographic base maps, flood gage data, development potential in the floodplain, and the amount of flood hazard present.

Floodplain maps are the basis for implementing floodplain management regulations. All communities with any significant potential flood hazard have, jointly with FEMA and the State, produced a floodplain map upon entry into the program.

Floodplain maps for most rural or minimally developed areas in the state lack any detailed engineering. These maps show only approximate estimations of where flooding is most likely to occur. Conversely, floodplain maps for urbanized areas or areas where flood damages occur more frequently are studied and mapped in detail.

NOTE: At the time of this handbook's publication, the State of Illinois and FEMA are in the process of producing new statewide floodplain maps. These new maps will be in a digital Geographic Information System (GIS) format. All new maps will be Countywide Flood Insurance Rate Maps (FIRM). However, until that project is completed, there remain several different types of FEMA floodplain maps.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
(FEET NGVD)								
Green River								
A	0	188	1,691	6.9	267.5	257.3 ²	257.4 ²	0.1
B	380	161	1,539	7.6	267.5	258.0 ²	258.1 ²	0.1
C	480	161	1,550	7.6	267.5	258.1 ²	258.2 ²	0.1
D	980	155	1,143	10.3	267.5	259.6 ²	259.7 ²	0.1
E	1,560	319	2,103	5.6	267.5	262.9 ²	262.9 ²	0.0
F	1,770	288	2,345	5.0	267.5	265.2 ²	265.2 ²	0.0
G	2,270	73	849	13.8	267.5	265.3 ²	265.3 ²	0.0
H	2,770	119	1,564	7.5	267.5	267.5	268.5	1.0
I	2,940	169	1,971	6.0	267.5	267.5	268.5	1.0
J	3,440	170	1,802	6.5	268.1	268.1	269.1	1.0
K	4,540	207	2,164	5.4	270.1	270.1	270.7	0.6
L	4,840	227	1,839	6.4	270.3	270.3	271.0	0.7
M	5,370	113	837	14.0	271.2	271.2	271.5	0.3

¹ Feet Above Confluence With Lake Highwater

² Elevation Computed Without Consideration of Backwater From Lake Highwater

TABLE	FEDERAL EMERGENCY MANAGEMENT AGENCY	FLOODWAY DATA
1	City of Floodville, CA	GREEN RIVER

Fig. 4 Floodway Data Table

FLOOD HAZARD BOUNDARY MAP (FHBM)

As a rule, when a community first joined the NFIP, it was given an Flood Hazard Boundary Map (FHBM) (Fig. 5). This is a very simple map which only shows where the floodplains are most likely located based on very basic data. FHBMs do not include base flood elevations and are not based on detailed studies. If development activities in that community are relatively minimal, the FHBM will most likely be the only map ever issued to a community. Therefore, many rural counties and smaller communities in Illinois have FHBMs as their regulatory maps.

Producing a detailed engineering flood study can be very expensive and must be justified by the flood risk and development potential. Therefore, in most situations, these unstudied stream with minimal development potential will remain unstudied on the new digital flood products unless a community has completed it's own detailed flood study and more accurately identified the floodplain area.

When development is proposed in a floodplain area identified on the FHBM it is up to the developer to provide base flood elevations, obtain the proper state and

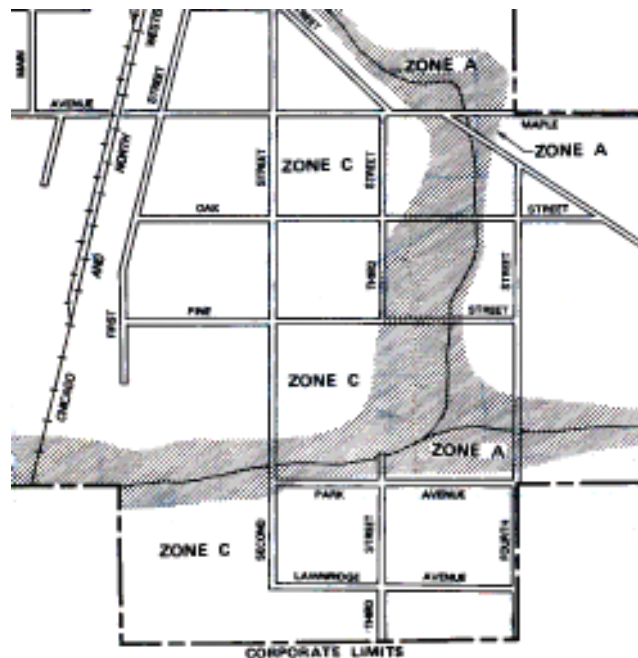


Figure 5. Flood Hazard Boundary MAP

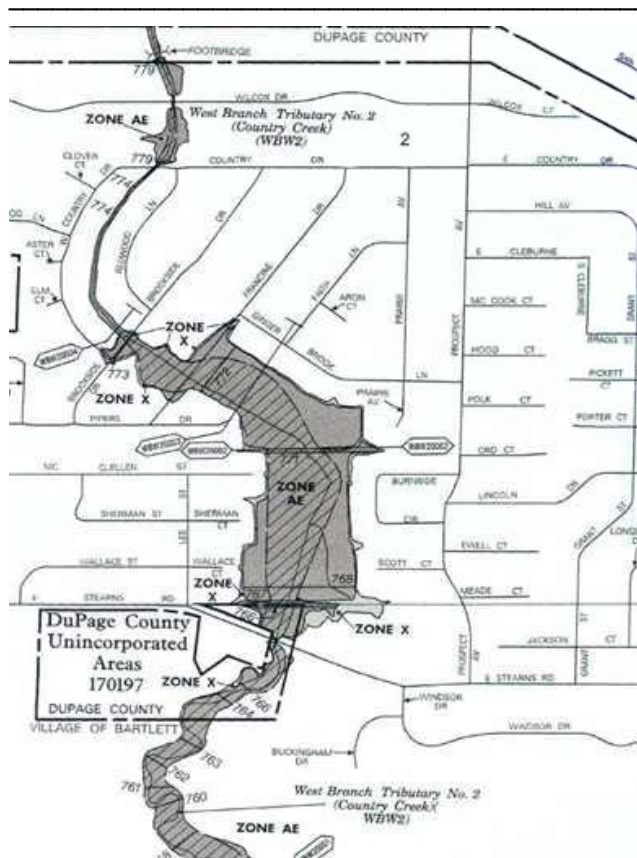


Fig. 6. Digital Flood Insurance Rate Map

federal permits, and show that any buildings will be protected from the base flood. The calculation of a base flood elevation will normally require the services of a professional engineer. In some cases, the Illinois State Water Survey may be able to provide base flood elevations. Their address and phone number can be found in the Appendix. (A-37).

FLOOD INSURANCE RATE MAP (FIRM)

The Flood Insurance Rate Map (FIRM) is the map that most Illinois communities receive after conversion into the regular phase of the NFIP (Fig. 6). Unlike the FHBM, FIRMs generally include flood elevations and are based on a detailed study. Floodplain areas are generally shown as "Zone AE" on the FIRM. With the FIRM, flood elevations at any specific development site within the community can generally be determined. Occasionally, a community will have a FIRM which does not include base flood elevations. When this happens, it is up to the developer to provide the base flood elevation, obtain the proper state and federal permits, and show that any buildings will be protected from the base flood.

The most recent digital maps being printed by FEMA are still called Flood Insurance Rate Maps (FIRMs) but



Fig. 7. Digital Flood Insurance Rate Map

they include both base flood elevations and identified floodways. The new generation of digital FIRMs may also include studied and unstudied streams. The floodway on these new maps is identified by a cross-hatched area on either side of the channel (Fig. 7). All new mapping is being done by this method. The new maps make regulating much easier for the community since all of the necessary data is found on one map rather than several.

FLOOD BOUNDARY AND FLOODWAY MAP

Many streams in Illinois have delineated floodways which are shown on a separate Flood Boundary and Floodway Map. On the older FHBM, the white area on either side of the channel is the identified floodway. These older floodway maps do not give base flood elevations. A community must use the FIRM or the Flood Insurance Study to identify base flood elevations. As newer digital FIRMs are produced in Illinois, these older floodway maps are slowly being phased out and replaced. The new FIRMs include a floodway which is shown as a cross-hatched area (Fig. 7).

EXPLANATION OF FLOODPLAIN ZONES

Zone Description

“A” The Base Flood Elevations (BFEs) have not been determined. The lowest floor elevation is required (must be provided by the applicant).

“AE or A1-A30” The Base Flood Elevations (BFEs) are provided. The lowest floor elevation is required.

“AE” Designation for A1-A30 zones found on newer maps. The lowest floor elevation is required.

“AH” Shallow water depths (ponding) between one and three feet occur. Base flood depths may be provided. The lowest floor elevation is required.

“AO” Shallow water paths (sheet flow) between one and three feet occur. Base flood depths may be provided. The lowest floor elevation is required.

“A99” Where enough progress has been made on protective systems such as dikes, dams, and levees, to consider it complete for insurance rating purposes. No BFEs are provided.

“B” Areas between limits of the 100-year flood and the 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile or where areas protected by levees from the base flood. “B” zones have been replaced by “X” zones on the newer FEMA maps. The lowest floor elevation is not required.

“C” Areas of minimal flooding located outside of both the 100-year and 500-year flood zones. “C” zones have been replaced with “X” zones on newer FEMA maps. No lowest floor elevation required.

“X” Areas determined to be outside of both the 100-year and 500-year flood zones. No lowest floor elevation required.

“D” Areas in which flood hazards have not been determined and is usually very sparsely populated. No lowest floor elevation required.

COUNTYWIDE FLOOD INSURANCE RATE MAP

Countywide Flood Insurance Rate Maps (FIRMs) show flood hazard information for all geographic areas of a county, including incorporated cities and villages as well as rural areas. Previously, maps were prepared for each jurisdiction. The new countywide maps are not limited by political boundaries. These maps make regulating much easier for the community since the maps can be used as community grows and municipal boundaries change. All of the necessary data is found on one map rather than several. All new FIRMs are being produced in a digital countywide format. Eventually, these new countywide FIRMs will provide complete statewide coverage.

DIGITAL FLOOD INSURANCE RATE MAPS (DFIRM)

All new floodplain maps are being produced digitally. This means that all the data used to create a hardcopy floodplain map is now stored on computer files. This includes base map information, graphics, text, shading and other geographic and graphic data.

The DFIRM is generally produced in a countywide format, where all flood hazards for the county and incorporated communities are shown on one set of maps.

These maps can be used for floodplain management purposes in a manner similar to other flood maps, but they can also be combined with other digital map information to create layers of new information for planning purposes. The State and FEMA are currently converting all floodplain maps into a digital format. This will greatly aid with the updating of maps and keeping them current (Fig. 7).

AREA OF STATE CONCERN MAP

In addition to the types of FEMA maps described above, IDNR/OWR sometimes produces what is called an Area of State Concern Map. This map is prepared only in situations where extreme development pressures or recurrent flood damages are taking place along a stream which does not have a floodway map or a detailed study done by FEMA.

The Area of State Concern Map identifies an approximate floodway or an area where state permit review should take place prior to local permit issuance. The Area of State Concern Map can assist the local floodplain manager and expedite the local permit process because it identifies those areas where state permit review is required.

THESE ARE YOUR MAPS!

The floodplain maps are produced jointly by FEMA, the State, and the local community. No floodplain map is finalized without community input and approval. Therefore, it is very important that these maps be kept accurate and up-to-date as floodplain risks evolve. As part of the NFIP participation agreement with FEMA, the community is expected to maintain their floodplain maps and keep them accurate.

Remember... these are the community's maps and it is a local responsibility to keep them current and accurate.

CHANGING FLOODPLAIN MAPS OR DATA

Flooding is not static. Watersheds, channels, and floodplain characteristics change over time. Floodplain mapping is also subject to change as new data becomes available.

From time to time, communities or individuals may find it necessary for floodplain maps or data to be revised. In the majority of cases, rather than reprint an entire map, FEMA will simply issue a letter which revises the existing floodplain map. There are five basic reasons that a map may need to be changed:

1) Revisions to correct an error: If a map contains minor errors (for example, streets or corporate limits are in the wrong location, or corporate limits have changed by annexation), the local government should send FEMA a new community map. If a city or village has several annexations each year that affect the floodplain, a revision request should be submitted only once a year. The new digital floodplain maps will greatly improve the process of updated this type of information.

2) Revisions based on better ground elevation data: If a detailed contour map shows errors in the floodplain boundaries, copies of the more accurate information should be submitted to FEMA. If the base flood elevation is known (or has been more accurately computed since the map was made), it should be included with the submittal. Rapidly evolving Geographic Information Systems and Geographic Positioning Satellite data should help the development of accurate digital floodplain maps

3) Revisions based on authorized filling in the floodplain: If there has been a substantial amount of new permitted filling in or near the floodplain, a certified "as-built" topographic map should be submitted to FEMA after the project has been completed. Remember, any filling in the floodplain may require both state and local approval.

4) Revisions based on better flood data: A Flood Insurance Rate Map and Flood Insurance Study reflect the best data available on flood risks at the time of publication. Parties challenging this data can do so only if the challenge is based on better or more accurate study techniques.

The better data should be submitted to FEMA for a map revision determination.

5) Revisions based on new flood protection: A map may be revised to reflect new flood protection projects built since the map was prepared. Plans for large projects usually include after-project maps that can readily be

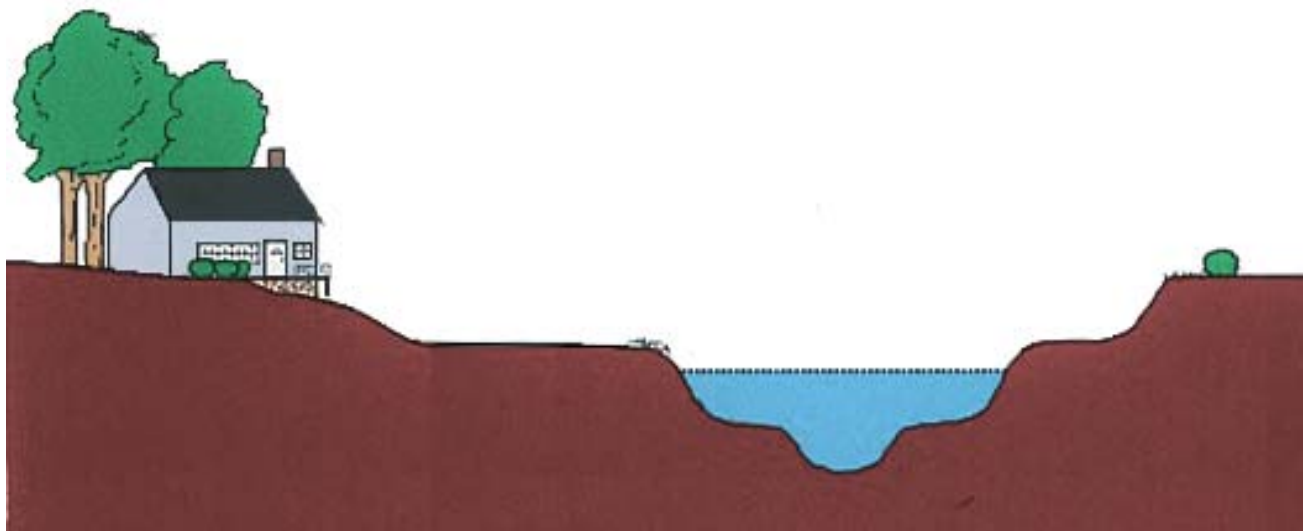


Figure 8. Letter of Map Amendment - Ground is naturally higher than the flood elevation.

used to revise a floodplain map. However, in most cases a map cannot be changed until the project is actually constructed and in operation. Furthermore, small projects such as on-site detention or channel improvements typically do not lower the base flood enough to warrant a map revision.

MAP CHANGES

There are several types of map changes. A few of the more common map changes are:

LETTER OF MAP AMENDMENT (LOMA)

Individual structures or legally described parcels of undeveloped land may occasionally be inadvertently included in the mapped floodplain. A property owner who believes that a specific structure or parcel of land has been incorrectly shown in the floodplain can obtain elevation data to prove the maps wrong.

The Letter of Map Amendment (LOMA) process requires an engineer or surveyors certification that the parcel is located at a natural (no filling) elevation higher than the base flood elevation.

This process is not applicable to requests that involve changes to the base flood information. (Fig. 8)

Letter of Map Revision (LOMR)

The Letter of Map Revision (LOMR) is applicable when a floodplain area is physically modified to change flood

conditions. A LOMR normally requires revised hydraulic modeling and usually will not involve specific lots, properties, or structures but rather entire reaches of a stream. If the request is approved, FEMA will normally issue a Letter of Map Revision (LOMR). Most LOMRs require a processing fee. (Fig. 9)

Conditional Letter of Map Revision (CLOMR)

The CLOMR allows for approval of anticipated map revisions based on proposed modifications or conditions that are expected to exist in the future. Under this process, engineering data may be submitted for a proposed project or future condition with a request that FEMA review the data and issue a CLOMR describing the revisions that may be made upon completion of the proposed work. There is normally a processing fee for a CLOMR.

Letter of Map Revision Based on Fill (LOMR-F)

Flood Insurance Rate Maps (FIRMs) can be revised based on the placement of fill. However, new structures in these filled areas with the lowest floor BELOW the regulatory flood elevation will ONLY be allowed if the community provides assurances that any land or existing or proposed structures are “reasonably safe from flooding” and meet current FEMA floodplain building requirements. These rules will also apply to any future development that may occur on these filled parcels.

If a community wants to allow structures with the lowest floor below the regulatory flood elevation in filled floodplains, the COMMUNITY must ensure that buildings are “reasonably safe from flooding”. The criteria

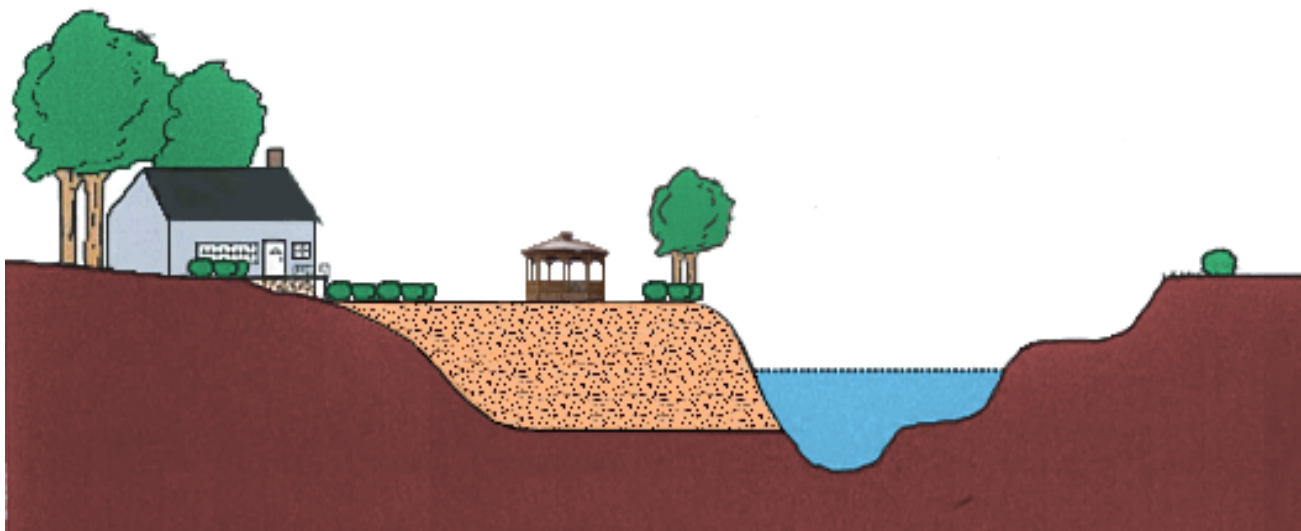


Fig. 9. Letter of Map Revision - Ground has been physically modified to reduce flood risk.

for “reasonably safe from flooding” are technically complicated and may be difficult for many communities to administer. Communities should also avoid signing any assurance that buildings are “reasonably safe from flooding” with little or no understanding of the potential implications and liabilities

NOTE If a community chooses to take on this responsibility, you should adopt language in your floodplain ordinance that defines a “reasonably safe” area below the base flood elevation. The community must also ensure that all of the “reasonably safe” criteria are met and documented on permit files every time development occurs in any of these LOMR-F areas. A signed community assurance form is then required by FEMA prior to processing the map revision. For these reasons, the State Model Ordinance does not encourage the adoption of LOMR-F regulations.

Further guidance can be obtained through the FEMA technical bulletin “Ensuring That Structures Built on Fill In or Near Special Flood Hazard Areas Are Reasonably Safe From Flooding” (FEMA Technical Bulletin 10-01). This document can be obtained at: <http://www.fema.gov/mit/techbul.htm>

INFORMATION NEEDED TO REQUEST A MAP AMENDMENT OR REVISION

Anyone (local governments or individuals) can request a map change. However, a floodway change does need to be approved by both state and local governments.

Information required to support the map change will vary based upon the type of request.

There are three types of FEMA map change application forms:

MT-EZ- This form is used when elevations show that an individual structure or lot is naturally higher than the base flood elevation. There is no charge for this type of map change.

MT-1 - This form is used to support a map change based on fill or revised base flood data. This type of map change typically effects multiple lots or larger geographic areas. There is normally a fee associated with processing this request.

MT-2 - This form is used to support large scale flood control projects or physical modifications to the natural topography of the floodplain. State and local permit approval must be certified as a condition of this type of map revision. There is normally a fee associated with processing this request.

FEMA has detailed guidance on map changes, directions, and downloadable forms available at www.FEMA.gov.

Further information and guidance can also be obtained from IDNR/Water Resources or FEMA Region V.

INFORMATION NEEDED TO REQUEST A FLOODWAY REVISION

A floodway map revision can only be obtained if it is first permitted and approved by a State or local government. Requests to revise a floodway may be initiated through contact with FEMA, but review and approval by IDNR/OWR will generally be required before the revision is final.

FURTHER INFORMATION

It is not practical to fully describe the procedures for changing floodplain map in this manual. FEMA has several publications which describe in detail the instructions for changing floodplain maps. This information can be obtained at www.FEMA.gov.

Communities participating in the National Flood Insurance Program (NFIP) must have a floodplain develop-

The permit application should include the following information:

*A complete description of the proposed activity including plans drawn to scale showing

*the location, dimensions, and elevations of the area in question and of all existing or proposed structures, fill, storage of materials, drainage facilities, or any other landscape alterations;

*The elevation of the lowest floor (including basement) of all proposed buildings;

*The base (or 100-year) flood elevation at the site;

*The ground elevations at the site;

*Certification by a registered professional engineer or architect that any floodproofing methods to be used (applicable for non-residential buildings only) meet NFIP criteria; and

*Verification that all required state and federal permits have been obtained.

PERMIT FEES

It is common to make the builders of projects in the floodplain bear the cost of the permit system. Fees should be set to pay for the salary and expenses of permit administration. Many communities pay their inspector a set amount for each permit issued. Permit fees could be made higher for large or commercial projects that would necessitate more inspections, and lower for less complex developments such as the installation of manufactured homes or building additions.

OTHER PERMIT REVIEW AUTHORITIES

Depending on the type, magnitude, and location of the project, other federal, state, and local authorities may have jurisdiction over the proposed development. The local floodplain administrator should keep abreast of these various other authorities and be sure that developers obtain all necessary permits before proceeding with work in the floodplain.

The primary federal agency that may have permit authority over floodplain activities is the U.S. Army Corps of Engineers. The Corps has authority to regulate the discharge of dredged or fill materials into rivers, lakes, streams, and adjacent wetlands (Section 404 of the Clean Water Act, 33 USC 1334). The Corps also regulates all construction activities on navigable waterways (Section 10 of the River and Harbor Act of 1889, 33 USC 403).

The primary state agency with permit authority over floodway activities is the Illinois Department of Natural

Resources/Office of Water Resources (IDNR/OWR). IDNR/OWR floodway permit requirements are outlined in the next chapter (see Chapter 4). Other state agencies that may have jurisdiction over floodplain work include:

1) The Illinois Environmental Protection Agency (IEPA). IEPA provides water quality certification as required by section 401 of the Clean Water Act. This certification is mandatory for all projects requiring a Corps Section 404 permit. In addition, IEPA requires permits for water supply and waste treatment systems, certain landfills and mining activities and other miscellaneous projects;

2) The Illinois Department of Natural Resource/Office of Realty and Environmental Planning (IDNR/OREP). IDNR/OREP does not issue permits for work in streams or floodplains. However, IDNR/OREP is responsible for preserving and conserving the state's natural resources and has review responsibilities for projects that may impact those resources. IDNR/OREP also has endangered species protection authority; and

3) The Illinois Historic Preservation Agency (IHPA). IHPA has authority to identify and protect certain prehistoric and historic properties.

Possible other local authorities that may have jurisdiction over floodplain development include:

The county or adjacent municipalities (as a result of intergovernmental agreements);

Drainage or drainage and levee districts;

Sanitary districts;

River conservancy districts;

Park districts;

Soil and water conservation districts; and

Other departments in the community such as the Fire Marshal or Health Department.

MAINTAINING RECORDS

The building official is responsible for keeping all appropriate records related to the floodplain ordinance. A complete record must be kept for every permit application. This is particularly important when a permit is denied and when a request is made for a variance. Normally a file folder is kept for each project. As a minimum, the file should contain:

- *the application for permit,
- *copies of all letters pertaining to the project,
- *photographs,
- *copies of state and federal permits,
- *elevation certificate (documenting the lowest floor elevation),
- *floodproofing certificate (when applicable), and
- *copies of any map changes (when applicable).

The official should have sufficient up-to-date copies of the floodplain ordinance, flood maps and map revisions, flood insurance study, federal regulations, and manuals. These could be used by each prospective applicant. They could also be given or sold (to pay for reproduction) to frequent applicants, bankers, real estate agents, or contractors.

DOCUMENTING ELEVATIONS

The local ordinance requires that the lowest floor (including basement) of all new buildings be constructed at or above the flood protection elevation (or, for non-residential structures only, floodproofed to that level). The building official must keep a record of these elevations. The elevation record is used both to confirm that new buildings are properly constructed and set the flood insurance premium on the building. A diagram showing lowest floor locations on a variety of building types can be found in the Appendix of this manual or on the www.FEMA.gov web site.

NOTE ** It is very important that the elevation of the lowest floor (including basement) be properly obtained and recorded for each new building in the floodplain. The elevations must be as-built elevations.**

In recording elevations it is necessary to use the same datum used in the flood insurance study, usually mean sea level or "NGVD" (National Geodetic Vertical Datum). Lowest floor elevations are measured at the top of the floor or slab.

The Federal Emergency Management Agency (FEMA) has developed an ELEVATION CERTIFICATE which can be used to record lowest floor elevations. The form also has a place to indicate the elevation of the grade adjacent to the structure. The elevation certificate should be completed by the building official, an engineer, an architect or a surveyor.

An example of the Elevation Certificate is included in the Appendix (A-21). The form can also be downloaded from the www.FEMA.gov web site.

FEMA also provides FLOODPROOFING CERTIFICATES so that local officials may document that non-residential structures have been adequately floodproofed. These certificates must be completed by a registered engineer or architect.

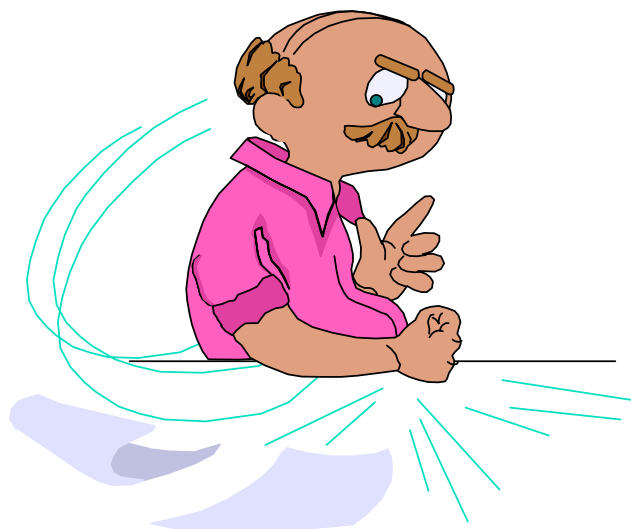
An example of the Floodproofing Certificate is included in the Appendix (A-35). The Floodproofing Certificate can also be downloaded from the www.FEMA.gov web site.

VARIANCES

A variance is a waiver of one or more of the specific standards of the floodplain ordinance. Variance requests should be considered very carefully. A variance should be granted only for a unique situation on a specific site. Under no circumstances should the granting of variances establish a pattern or set a precedent that is inconsistent with the intent of the floodplain regulations. Such a pattern could result in the community's suspension from the NFIP.

The following determinations should be made prior to the granting of a variance:

- *the development activity cannot be located outside the floodplain;
- *an exceptional hardship would result if the variance were not granted;
- *the relief requested is the minimum necessary;



*there will be no additional threat to public health or safety, or creation of a nuisance;

*there will be no additional public expense for flood protection, rescue or relief operations, policing, or repairs to roads, utilities, or other public facilities;

*the applicant's circumstances are unique and do not establish a pattern inconsistent with the intent of the NFIP; and

*all other required state and federal permits have been obtained.

Generally, the most difficult determination is "hardship". The fact that elevating a building increases construction costs is NOT considered a hardship. The applicant must prove that without a variance a substantial hardship will be suffered. Before the variance is issued, it is very important that the community notify the applicant in writing that the granting of a variance may:

1) result in increased premium rates for flood insurance up to \$25 for \$100 of coverage; and

2) increase the risks to life and property. Further, the community should require that the applicant acknowledge in writing the assumption of the risks and liability and hold the community harmless from future liabilities.

Once again, the community should maintain a well documented file on any variance. The file should include all findings of fact, the signed release of liability, the lowest floor elevation of the structure, and any correspondence on the request.

A step-by-step variance documentation form is located in the appendix of this manual. (App. A-14)

INSPECTIONS

After a permit is issued, the building official is responsible to ensure that the project is built according to the approved plans. This can be done by one of two methods. The easier method is to require the applicant to have an engineer inspect the project and certify to the community that it was done in accordance with the permit. For certain very technical projects, this method is preferable; the permittee can probably afford it and most building officials are not technically qualified to judge adequate floodproofing.

However, in most cases, such a method is not warranted. Development projects, including buildings on fill or elevated on stilts or piles, can be inspected by the building official. When the development is a building, at

least three inspections are suggested.

1. After the foundation is staked out, but before construction is begun. This inspection should ensure that the building is properly located on the site. The builder should not start the foundation until this inspection has been passed.

2. When the foundation is completed. This inspection should verify the elevation of the lowest floor. The builder should not proceed with the walls or finished floor until this inspection has been passed. If the floor elevation is not high enough, the permit may be revoked until the foundation is corrected.

3. When construction is completed. A final inspection should be made to confirm that the building meets all the requirements of the floodplain ordinance including any openings and utilities. The as-built lowest floor elevation must be surveyed and documented on an elevation certificate.

USE OR OCCUPANCY PERMITS

Many communities require that a new building cannot be used or occupied without a use permit or a "certificate of occupancy". The official would not issue a use permit until the building passes the final inspection. In a floodplain, this includes final certification of the as-built lowest floor elevation.

VIOLATIONS AND ENFORCEMENT

When the building official confirms that floodplain development is underway without a permit, or that a project is being built contrary to the permitted plans, the city, village, or state's attorney should be consulted.

A "stop work" order should be delivered to the owner as soon as possible. If a development project is found to violate the provisions of the ordinance, the official should notify the property owner, in writing, of the nature of the violation and order corrective measures to be taken. Some communities include in their ordinances a provision that gives the local building official power to revoke a permit.

When the official and the attorney cannot persuade the developer to comply with the ordinance, the attorney should take legal action which may include obtaining a court order to stop the development. The attorney can also seek a fine and an order for the developer to bring the project into compliance.

Occasionally, the community is at fault for failing to notify a developer or property owner of the floodplain permit requirements. These situations are much more dif-

difficult to resolve. The homeowner legally obtained a permit from the community and therefore often feels he should not be held liable to correct the violation. Again, the municipal attorney should be consulted. In some cases, a community's Errors and Omissions Insurance Coverage will help to defray the necessary corrective actions.

In either situation, a violation is expected to be corrected to the "greatest extent practicable". Failure to do so, could result in the community being suspended from the National Flood Insurance Program.

HELP IN ENFORCEMENT

The community is not alone in wanting its ordinance enforced. Help in dealing with violations is often available from other sources. Your first point of contact can be IDNR/OWR.

IDNR/OWR has published a "Floodplain Compliance Manual" for community officials which can be provided upon request. In addition, staff will work with you to determine the best way to deal with any particular violation and to provide expert advice.

If the project is in a floodway (or a floodplain where no floodway has been mapped), construction without an IDNR/OWR permit may be a violation of state law. If the project is in a wetlands area, development without a Corps of Engineers permit may be a violation of federal law. The building official should contact IDNR/OWR and the Corps of Engineers to ascertain whether the project is a violation of state or federal law and, if so, discuss mutual enforcement actions.

SECTION 1316 DENIAL OF INSURANCE

If a project violates the local floodplain ordinance, and the building official has exhausted all other remedies, NFIP flood insurance can be denied on the structure. Section 1316 of the National Flood Insurance Act provides for denial of flood insurance coverage on a building in violation of the local floodplain management ordinance. This technique is especially useful for new construction that will be sold to someone else. Without flood insurance, the buyer will have an extremely difficult time trying to obtain a mortgage from most lenders. For guidance on a 1316 declaration, contact the FEMA regional office.

Enforcement of the floodplain ordinance must not be taken lightly. Failure to take action against violations jeopardizes the integrity of the regulatory program. Communities that do not enforce their floodplain ordinance could be suspended from the NFIP (see page 8 - Effects of Non-Participation in the NFIP).

Chapter 4

State Regulations: Preventing Increased Flood Heights and Resulting Damages

During the 1800's, there were many occasions when railroads and other development blocked drainage ways and floodplains. After the floods and resulting damages, the builders were sued. Since then, Illinois courts have consistently ruled that it is illegal to block the flow of surface waters so as to cause damage to others.

The primary purpose of state floodplain regulation is to prevent construction projects which might increase flood risk or cause damages to others. This is done by withholding the development permit until the project plans are reviewed to ensure that no obstruction to flood flows or increases in flood damages will be created.

Needless to say, trying to determine a proposed project's effect on flood heights can be difficult and expensive, particularly when future developments must be considered. To reduce this regulatory burden on communities and property owners, the state and federal governments have financed detailed Flood Insurance Studies for those floodplain areas where development is most likely to occur. These studies include detailed mapping and the calculation of a floodway. In addition, the state will review floodway development proposals to ensure that obstruction to flood flows will not occur.

THE FLOODWAY

The determination of a floodway and the resulting map are based on the following legal concepts:

1. Property owners should be allowed to develop their land provided they do not obstruct flood flows and cause damage to others. The base flood elevation may be allowed to increase but not if significant damages would result; and
2. Properties on both sides of a stream must be treated equitably. The degree of obstruction permitted for one must also be permitted for the other.

The floodway study is usually done with a computer. At each cross section, hypothetical obstructions are placed at the two edges. The computer assumes the base flood is flowing through the cross section (an equal amount of carrying capacity is taken from both sides) and the computer monitors increases in flood heights. The movement of the obstruction is stopped when the flood

level reaches a predetermined increase related to increasing damages. In Illinois, this increase is limited to 1/10 foot.

Two lines are then drawn marking where the obstruction was stopped. These lines generally divide the floodplain into three areas: the center area of faster moving water called the floodway and two areas of shallow, slow moving or still water at the edges called the fringe (Fig. 1)

Development outside of the floodway: Once a floodway is delineated, the job of the floodplain regulator is greatly simplified. When a permit application is submitted, the building official checks the site location in relation to the floodway boundaries. This is easily accomplished by scaling the distance onto the FIRM and floodway boundary. If the site is in an identified fringe (in other words, outside of the floodway), the building official knows the development will not cause flood damage to others: the floodway study already calculated that fringe obstructions will not cause a significant increase in flood heights. (NOTE: this does not mean that the development will not create a localized drainage problem, only that it will not block the flow of waters from flooding of the stream that was studied). A local floodplain development permit review must still take place.

Development within the floodway: When a development site is determined to be within the floodway, or in a floodplain where the floodway has not been identified, the community must require that the applicant first obtain a permit or "letter of permit not required" from the Illinois Department of Natural Resources, Office of Water Resources (IDNR/OWR).

STATE PERMIT REVIEW

In accordance with the Rivers, Lakes and Streams Act, 615 ILCS 5/5 thru 29a (1992 State Bar Edition) IDNR/OWR regulates construction activities in the floodways of streams draining 1 square mile (640 acres) or more in urban areas and 10 square miles (6400 acres) or more in rural areas. The purposes of IDNR/OWR's regulations are to prevent increased flood damages and to protect the public interests and uses in the state's public bodies of water.

IDNR/OWR does not have authority to ensure that the building protection standards of the National Flood Insurance Program (NFIP) or local communities are met. Compliance with building protection standards must be assured by local permit review.

Complete State regulations can be viewed at www.dnr.state.il.us/owr/resman/

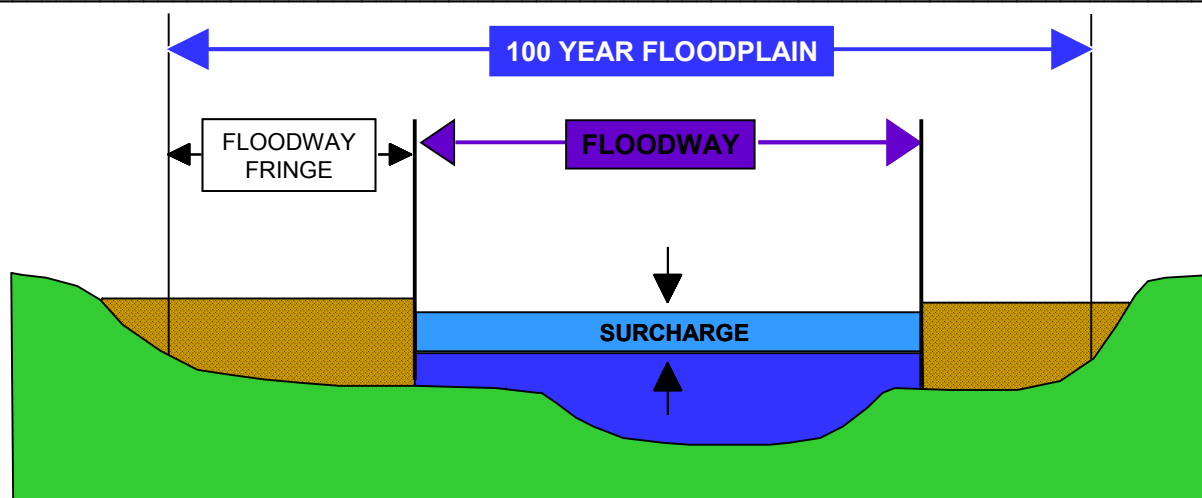


Fig. 1

Floodway + Floodway Fringe = 100 Year Floodplain
Surcharge not to exceed 0.1 foot

* NOTE * In the six-county area surrounding metropolitan Chicago (Cook, DuPage, Kane, Lake, McHenry, and Will Counties) only “appropriate uses” are allowed in the floodway. These uses are typically water dependent or open space. Specific guidance on floodway development in the six-county area can be obtained by calling IDNR/OWR.

EXEMPTED ACTIVITIES

Over the years, certain minor construction activities have been exempted from IDNR/OWR floodway review either by legislative action or administrative decision. Exempted activities include:

- 1) Installation of field tile systems, tile outlet structures, and any water or sediment control construction activity in any floodway land (overbank) area which would not obstruct flood flows such as grade stabilization structures and waterways;
- 2) Installation of irrigation equipment in any floodway land (overbank) area;
- 3) Work on private lakes which would not impact the dam or traverse the lake such as the construction of boat docks, bank stabilization and maintenance dredging;
- 4) Removal of brush, woody vegetation, trash or other debris;
- 5) Routine maintenance and repair of existing structures;
- 6) Maintenance and repair, to preserve design capacity and function, of artificially improved stream channels, drainage ditches, levees and pumping stations; and

- 7) Installation of fences in rural areas.

STATEWIDE PERMITS

There are many types of smaller non-obstructive development activities which occur on a daily basis in the state's floodplain areas. IDNR/OWR has chosen not to review these activities in detail since they have limited potential to cause an increase in flood heights.

In order to eliminate time consuming state permit review, IDNR/OWR has issued several “Statewide Permits”. Projects done in accordance with the conditions of a Statewide Permit do not need an individual state permit. The developer should obtain a copy of the applicable Statewide Permit from IDNR/OWR prior to construction and closely follow the construction criteria outlined in the Statewide Permit

Statewide Permits which have been issued include:

- SWP-2**-Bridges and Culverts in Rural Areas on Streams Draining Less Than 25 Square Miles
- SWP-3**-Barge Fleeting Facilities
- SWP-4**-Aerial Utility Crossings
- SWP-5**-Minor Boat Docks
- SWP-6**-Minor Floodway Construction
- SWP-7**-Outfalls
- SWP-8**-Underground Pipeline and Utility Crossings
- SWP-9**-Minor Shoreline and Streambank Protection Activities
- SWP-10**-Accessory Structures and Additions to Existing Residential Buildings
- SWP-11**-Minor Maintenance Dredging Activities
- SWP-12**-Bridge and Culvert Replacement Structures or Bridge Widening

SWP-13-Temporary Construction Activities**SWP-14-Special Uses of Public Waters**

A listing of Statewide Permits and conditions can be viewed online at:

www.dnr.state.il.us/owr/resman/permitprogs

PUBLIC WATERS

IDNR/OWR's regulations also protect the public interests and uses in the state's public bodies of water. Development activities which are proposed along the identified Public Bodies of Water must meet state construction guidelines and a public notice period.

The listing of Public Bodies of Water can be found at:

www.dnr.state.il.us/owr/resman

DAM SAFETY

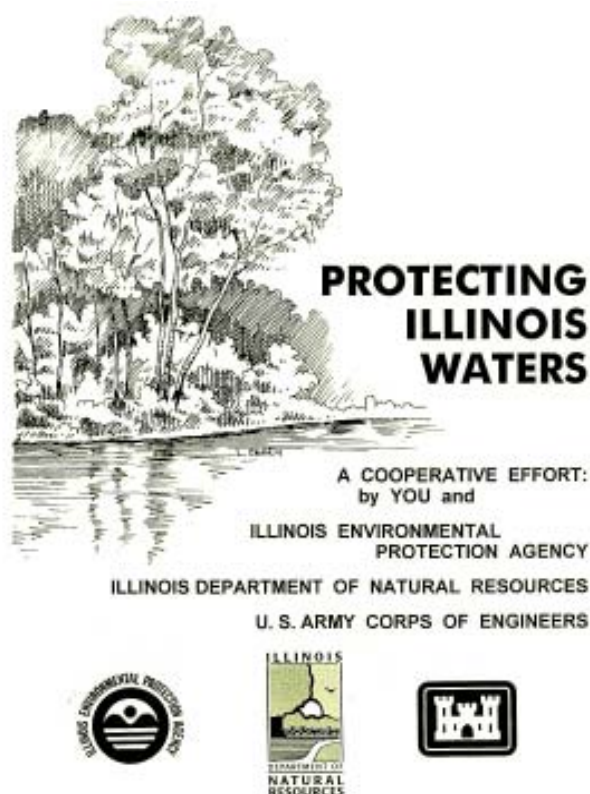
IDNR/OWR also regulates the construction and maintenance of dams within the state. The State of Illinois issues permits for the construction, operation and maintenance of new dams and the operation and maintenance of dams which existed prior to September 2, 1980.

Dams are classified by the state based on both size and hazard potential. A large dam with residential housing downstream will be classified at a greater risk than a small rural farm pond dam with no downstream housing. There are three hazard classifications. All dams in the two higher classifications are required to have a permit under these rules. Dams in the lower hazard classification require a permit for construction or modification if they meet certain size criteria. Anyone proposing to construction a new dam is recommended to submit a preliminary design report to the state as early as possible. Contact IDNR/OWR for further guidance.

APPLICATION PROCESS

Applicants for an IDNR/OWR permit must complete the "Protecting Illinois Waters" application form which is shared by the U.S. Army Corps of Engineers, the Illinois Environmental Protection Agency, and IDNR/OWR (see A-36 for jurisdictional boundaries and addresses). Note that each of these three agencies has its own authority and permit requirements. For any particular project, permits may be required from any or all of the agencies.

In addition to the application form, an applicant for an IDNR/OWR permit must submit project plans and possibly, depending on the type of project, detailed engineering analyses of the project's effects on flood heights and velocities. IDNR/OWR does not issue a construction permit until it is satisfied that the work will not sin-



gularly or cumulatively increase flood damages outside the project right-of-way. When the state permit is issued, local officials can usually be assured that the floodway requirements of the local ordinance have also been met. The State permit application form can be downloaded and printed from the IDNR website at: www.dnr.state.il.us/owr/resman/

WHEN FLOODWAYS ARE NOT DELINEATED

Unfortunately, for many small communities in Illinois, floodways have not been established. These communities must still make sure that new development will not cause increased flood heights and damages. As has been mentioned earlier, an applicant for any work in the floodplain (where there is no identified floodway) should be referred to IDNR/OWR for state review of the project. In the vast majority of cases, the state review will ensure that this standard is met, either by a determination that the site is not in the floodway, or by a detailed review of the project proposal. In either case, IDNR/OWR provides notification of its determination to both the applicant and the community.

If an IDNR/OWR determination is not available (because, for example, the project is not under state jurisdiction) the local regulatory official should require sufficient plans and data from the applicant to determine that the project will not damage other properties.

Chapter 5

Protecting Buildings

THE NATIONAL FLOOD INSURANCE PROGRAM (NFIP) REQUIRES THAT ANY NEW BUILDING OR SUBSTANTIALLY IMPROVED BUILDING LOCATED IN A FLOODPLAIN BE CONSTRUCTED IN A WAY THAT WILL PROTECT IT FROM THE BASE FLOOD.

There are three basic methods of providing this protection:

- 1) elevation on fill;
- 2) elevation on stilts, pilings, walls, or other foundation; and
- 3) dry floodproofing. (Note: dry floodproofing is allowed only for nonresidential structures).

Small additions and inexpensive buildings (less than \$1000.00) may be exempted from the building protection standards.

“BUILDING”

The term “building” is defined as a structure that is principally above ground and enclosed by walls and a roof.

Buildings must be protected from flood damage for three reasons:

1. They are the most important, most valuable, and most common man-made structures subject to flood damage. Floodplain regulations are intended to prevent flood damage.
2. They are usually occupied or used by people. Protecting them protects human life and health and reduces human suffering.
3. Buildings and their contents are the only things covered by an NFIP flood insurance policy. Protecting them reduces flood insurance claims that are subsidized by the taxpayer.

These reasons should be kept in mind when deciding whether a development project qualifies as a “building”. For example, a manufactured home is considered a building for regulatory purposes, as is an unlicensed travel trailer or recreational vehicle on site for more than 180 days. Structures that are not enclosed are not buildings. These would include carports, open pavilions, and tents.

RESIDENTIAL BUILDINGS

Residential structures which are new or substantial improvement (see pg 39) must have the lowest floor (including basement) elevated to or above the base flood elevation. The local building official must maintain documentation that the elevation of the lowest floor is at or above the base flood elevation. Any area below the flood protection elevation must be constructed of flood resistant materials and designed so as to minimize damages.

NON-RESIDENTIAL BUILDINGS

New construction or substantial improvements of commercial, industrial, or other nonresidential structures must ensure that the lowest floor (including basement) is elevated, or the structure must be dry floodproofed, to at least the base flood elevation. Documentation of meeting either the elevation or floodproofing requirements must be maintained by the local building official. Floodproofed nonresidential buildings must be certified by a registered professional engineer or architect.

HOW FLOODS DAMAGE BUILDINGS

In order to protect new buildings, it is important to understand how floods damage buildings. A flood can directly damage a building in three ways:

1. Hydrostatic Pressures-the lateral pressure of standing water can push over walls or break windows. Hydrostatic pressure increases as water gets deeper. Once

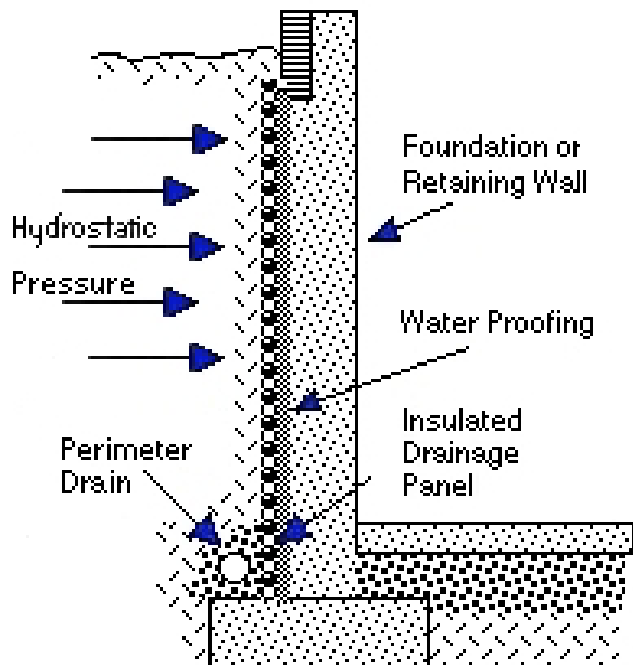


Fig. 1 Hydrostatic Pressure

the ground under a building is saturated, hydrostatic pressure from underneath can crack a concrete floor or even float a wood frame house (Fig. 1).

2. Hydrodynamic Forces-the effects of current, waves, and floating debris or ice can batter down walls. These effects increase with the velocity of flood flows. For this reason, the construction of buildings should be avoided altogether in areas where velocities would exceed 5 feet per second or in the floodway where flows are the greatest. (Fig. 2).



Fig. 2 Hydrodynamic Forces

3. Wetting-contact with water can warp, decompose, rot, or otherwise ruin certain materials. Especially damage prone are wood, drywall, carpeting and most furniture and contents. In addition, floodwater is often contaminated. Any materials exposed to floodwaters should be discarded or thoroughly cleaned with a disinfectant.

THE FLOOD PROTECTION ELEVATION (FPE)

All newly constructed buildings in the floodplain must be protected against the base flood. The way this is accomplished is to elevate the building or, in the case of a non-residential building, floodproof the building to the flood protection elevation (FPE). This term is defined as the base flood elevation plus some margin of safety. This margin of safety is called "freeboard". Freeboard compensates for additional hazards or unpredict-

able factors that accompany the base flood. These include wave action, downstream obstructions, ice or log jams, damage to floor joists, and statistical variability in base flood elevation calculations. Freeboard will also ensure that any ductwork or electrical work in the floor joists are protected from flood damage. The NFIP does not require freeboard for regulatory purposes. However, the Illinois Department of Natural Resources, Office of Water Resources (IDNR/OWR) strongly recommends that a community adopt a freeboard appropriate to the local flood hazard. In ponding areas, it could be 1/2 foot. On the Mississippi or Illinois Rivers it could be up to 4 feet because of waves. For most areas in the state, one or two feet is appropriate. The State Model Ordinance (see Chapter 9) adopts a 1 foot freeboard.

METHODS OF ELEVATING BUILDINGS

The basic provision for the protection of buildings in the floodplain is elevating the structure to ensure that the lowest floor (including basement) is at or above the flood protection elevation. This can be accomplished by several methods. These methods generally apply to building sites in the flood fringe. While any of these methods might be allowed in the floodway, public safety (and the safety of emergency crews) as well as the increase risk of damage must be carefully considered. In addition, all floodway construction must first receive state permit approval (see Chapter 4).

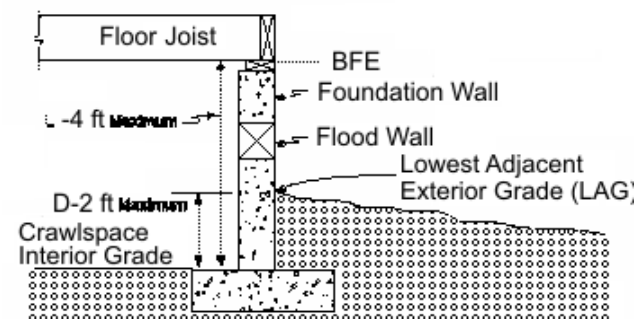
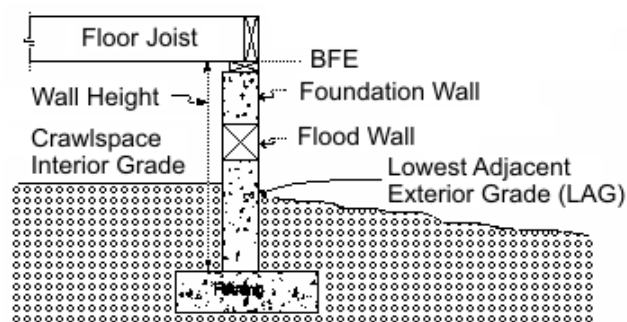


Figure 3.



Figure 4. Same elevation crawlspaces

CRAWLSPACE

Crawlspaces are commonly used as a method of elevating buildings in floodplains to or above the flood protection elevation. When flood elevations are relatively shallow, designing a building with a crawlspace can often meet the elevation requirement (Fig. 3).

The IDNR/OWR and FEMA do not recommend below grade crawlspaces in flood-prone areas. It is strongly recommended that crawlspaces in the floodplain be designed so that the interior grade of the crawlspace and the exterior grade are at the same elevation. This will allow flood waters to flow freely underneath the home during shallow flood events (Fig. 4). Flow-through crawlspaces will also reduce the likelihood of problems associated with water accumulation, moisture damage, drainage and health hazards, such as growth of bacteria, mold and fungus.

FEMA regulations allow the construction of below grade crawlspaces. (Fig. 3) If a community chooses to allow the construction of below-grade crawlspaces in floodplain areas, several conditions must be met:

- * The interior grade of a crawlspace must not be more than 2 feet below the lowest adjacent exterior grade (LAG).
- * The height of the below-grade crawlspace foundation wall must not exceed 4 feet at any point.
- * There must be adequate drainage to remove floodwater from the interior area of the crawlspace.
- * All interior and exterior materials below the flood protection elevation must be flood resistant.
- * Heating, ventilating, and air conditioning can not be located in the crawlspace.
- * The crawlspace must comply with properly sized ventilation and flow-through opening requirements (see p. 34).

* NOTE* Based on popularity in the midwest, the State Model Floodplain Ordinance references these specific construction criteria allowing crawlspaces below the flood protection elevation. Some communities may prefer NOT to allow below grade crawlspaces and this section in the State Model Ordinance can be removed. A below grade crawlspace will also result in higher flood insurance premiums.

Further guidance can be found by referencing: "Crawlspace Construction for Buildings Located in Special Flood Hazard Areas" (FEMA Technical Bulletin 11-01) The bulletin can be obtained at: <http://www.fema.gov>

FILL

The use of a poured slab over placed fill will often meet the elevation requirement when flood heights are not excessive (Fig 5).

When flood elevations are higher, a combination of fill with a crawlspace or block foundation may meet the elevation requirement. When using fill to elevate a structure, the following conditions should be met:

- * Fill should be placed in layers no greater than six inches deep before compaction.
- * The fill should extend at least ten feet out beyond the foundation of the building before sloping below the base flood elevation.
- * The fill should also be protected against erosion and scour during flooding by vegetative cover, rip rap, or other measures.
- * If vegetative cover is used, the slopes should be no steeper than 3 horizontal to 1 vertical.
- * The fill should not adversely affect the flow of surface drainage from or onto neighboring properties.

It is important to note that when a building site is filled, it is still considered in the floodplain and no basements are permitted. As mentioned previously, the building's lowest floor must be at or above the flood protection elevation.

The only exception to this rule is when a Letter of Map Revision based on Fill (LOMR-F) has been issued by FEMA and the community provides "reasonable assurance" that the lower area will never flood. The State of Illinois strongly discourages the construction of basements below the flood protection elevation in filled areas.

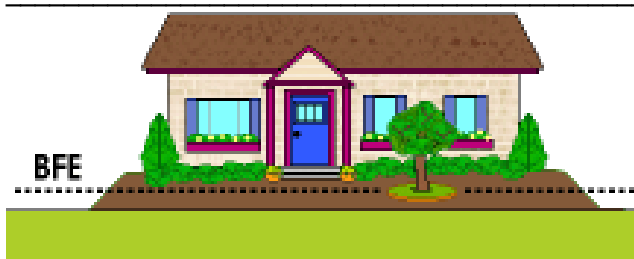


Fig. 5.

STILTS, PILES, POLES, AND WALLS

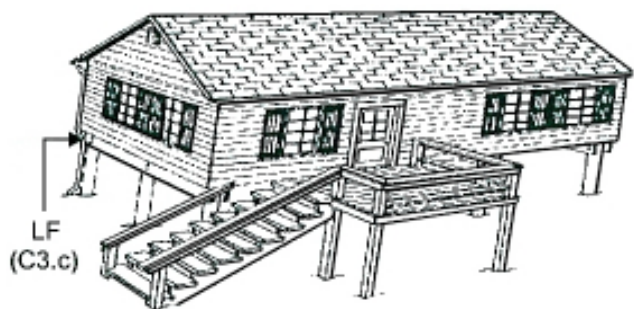
When flood heights are extreme such as those along the Illinois or Mississippi Rivers, most buildings can only meet the elevation requirement by being constructed on stilts, piles, poles, or walls so that all damageable parts of the building are at or above the flood protection elevation (Fig. 6).

When using stilts, poles, piles or walls to elevate, the following conditions must be met:

*Supporting members must be designed to resist hydrostatic forces, hydrodynamic forces, and wetting effects of flooding.

*The design and supporting members should be certified by a Professional Engineer to ensure that they resist the effects of debris, ice, wave action, etc. It is important that the design of an elevated foundation allow flood waters to enter and exit lower areas without damage to the structure.

Keeping the area below the lowest floor open is the best way to prevent flood damage. However, the owner may want to ensure that the lower area is protected against vandalism, animals, etc. This can be done with screening or open lattice work. It is important that the lower area is not converted to habitable space sometime in the future. The IDNR/OWR recommends that local officials have the building owners sign a Non-Conversion Agreement at the time of permitting. An example of this agreement is included in the appendix of this manual (page A-18).



FULLY ENCLOSED LOWER AREAS

When elevating a structure in areas of relatively deep flooding, very limited uses are allowed below the base flood elevation, such as parking of vehicles, building access (stairs, etc.), and limited storage. Damage caused by flooding of these areas can easily be kept to a minimum by following design and construction requirements found in the NFIP regulations. However, it is important that the lower area be used only for parking and building access and is not later converted to habitable space. Fig 7 A Non-Conversion Agreement should be required on all buildings with enclosed lower areas (App. A-18).

Enclosed areas located below the flood protection elevation must meet several conditions:

1. Service equipment such as furnaces, air conditioners, heat pumps, hot water heaters, washers, dryers, elevator lifts, electrical junction ductwork, circuit breaker boxes, and food freezers are NOT permitted below the base flood elevation.
2. All walls, floors, and ceiling materials located below the flood protection elevation must be unfinished and constructed of materials resistant to flood damage (see listing on p. 35).
3. The walls of any enclosed area below the flood protection elevation must be designed and constructed in a manner to prevent flotation, collapse, and lateral movement of the structure.
4. The walls must have permanent openings. These openings must:
 - a. have a total net area of not less than one square inch of opening for each square foot of enclosed area subject to flooding,
 - b. allow flood waters to automatically enter into, flow through, and drain from the enclosed area,
 - c. there should be at least two openings on different sides of each enclosed area,
 - d. the bottom of all openings must not be higher than one foot above grade,
 - e. if flood heights could rise to within two feet of the lowest floor, air vents should be installed.

In lieu of these opening requirements, the design could be certified by a registered professional engineer.



Fig. 7

BASEMENTS

Any area having its floor below ground level on all sides is considered a basement by the NFIP (even a typical "crawl space" or walk-out basement"). NFIP regulations require that the lowest floor of any building in a floodplain be at or above the flood protection elevation. Therefore, basements cannot be allowed in a floodplain. The only exception to this rule is the specific crawlspace criteria listed above.

WALK OUT BASEMENTS

Many newer subdivisions in Illinois are designed to contour along existing streams. Most of the lots in these subdivisions back up to a stream. Local Officials should be very aware of these types of developments. Although the building footprint itself may be located outside of the floodplain, an excavated walk-out basement can bring the floodplain right back to the home! In recent years, the walk-out basements on many newer homes have flooded due to poor design. Walk out basements should always be constructed above the flood protection elevation.

FLOODPROOFING NONRESIDENTIAL BUILDINGS

Floodproofing is permissible ONLY for nonresidential structures.

DRY FLOODPROOFING

Dry floodproofing means making the building watertight and structurally strong enough to resist flood pressures. The floodproofing measures must be taken on the building itself. Protection such as sandbagging or berms are not considered dry floodproofing measures because they are separate from the structure. Dry floodproofing is very difficult and expensive. Because of the technical expertise required, the NFIP requires the applicant to demonstrate that the building is properly designed by a registered professional engineer.



Because of water pressures that accompany a flood, dry floodproofing can be a tricky and dangerous endeavor. Walls of cinder block or even concrete can collapse under as little as 3 feet of flood depth. For this reason, a signed floodproofing certificate (Fig. 8, A-35) from a professional engineer must be maintained on file for every floodproofed structure.

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**FEDERAL EMERGENCY MANAGEMENT AGENCY
NATIONAL FLOOD INSURANCE PROGRAM
FLOODPROOFING CERTIFICATE
FOR NON-RESIDENTIAL STRUCTURES**

Floodproofing of non-residential buildings may be permitted as an alternative to elevating its or above the Base Flood Elevation; however, a design certification is required. This form is to be used for that certification. Floodproofing of a residential building does not affect only a floodplain management elevation, requirements or affect the insurance rating unless the community has been issued an order to allow floodproofed residential structures. The permitting of a floodproofed residential basement requires a separate certification and design complies with the local floodplain management ordinance.

TO ENGINEER/NAME _____
ADDRESS (Including Apt., Unit, Suite, and/or Bldg. Number) CITY, STATE AND ZIP CODE _____
DESCRIPTION (List and Block Numbers, etc.) _____
STATE _____ ZIP CODE _____

FOR INSURANCE COMPANY USE
POLICY NUMBER _____
COMPANY NAME NUMBER _____

SECTION I: FLOOD INSURANCE RATE MAP (FIRM) INFORMATION
Is the following from the proper FIRM:

DISTRICT NUMBER	FIRM NUMBER	SUFFIX	DATE OF FIRM INDEX	FIRM ZONE	BASE FLOOD ELEVATION (or AG Zones, Use the)

SECTION II: FLOODPROOFING INFORMATION (By a Registered Professional Engineer or Architect)

Floodproofing Design Elevation Information:
 Building is floodproofed to an elevation of _____ feet NGVD. (Elevation datum used must be the same as that on the map.)
 Height of floodproofing on the building above the lowest adjacent grade is _____ feet.
 (NOTE: For insurance rating purposes, the building's floodproofed design elevation must be at least one foot above the Base Flood Elevation rating unless the building is floodproofed only in the Base Flood Elevation, then the building's insurance rating will result in a reduction.)

SECTION III: CERTIFICATION (By Registered Professional Engineer or Architect)

Incidental Floodproofed Construction Certification:
 I certify that, based upon development and/or review of structural design specifications, and plans for construction, the design and construction are in accordance with accepted standards of practice for meeting the following provisions:
 The structure, together with attendant utilities and sanitary facilities, is watertight to the floodproofed design elevation indicated, with walls that are substantially impermeable to the passage of water.
 All structural components are capable of resisting hydrostatic and hydrodynamic flood forces, including the effects of buoyancy and anticipated debris impact forces.
 I certify that the information on this certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S.C. Code, Section 7051.

DATE _____ LICENSE NUMBER (or Aff. No.) _____
 COMPANY NAME _____
 CITY _____ STATE _____ ZIP CODE _____
 DATE _____ PHONE _____

Copies should be made of this Certificate for: 1) community official, 2) insurance agent/company, and 3) building owner.

Form B1-65, AUG 98 Replaces all previous editions

Fig. 8
Both the Corps of Engineers and the Federal Emergency Management Agency (FEMA) have detailed publications on floodproofing. These publications can be ordered from the FEMA web page at www.FEMA.gov

“WET FLOODPROOFING”

Although not specifically allowed by NFIP regulations, there are occasions when it may be permissible to allow water to enter a non-residential building, of minimal value, if no damage would occur (for example, a detached garage or a storage shed). When water enters the building, pressures on both sides of the walls equalize and structural damage is less likely to occur. This method is called wet floodproofing. IDNR/OWR has incorporated this guidance into the State Model Floodplain Ordinance.

IDNR/OWR recommends that wet floodproofing be allowed **ONLY if ALL** of the following conditions are met::

*the structure shall be non-habitable; *the structure shall be used only for storage or parking and will not be later modified for a different use;

*below the flood protection elevation, the structure shall be built of materials not susceptible to flood damage;

*all utilities, (plumbing, heating, air conditioning, electrical equipment, etc.) shall be above the flood protection elevation;

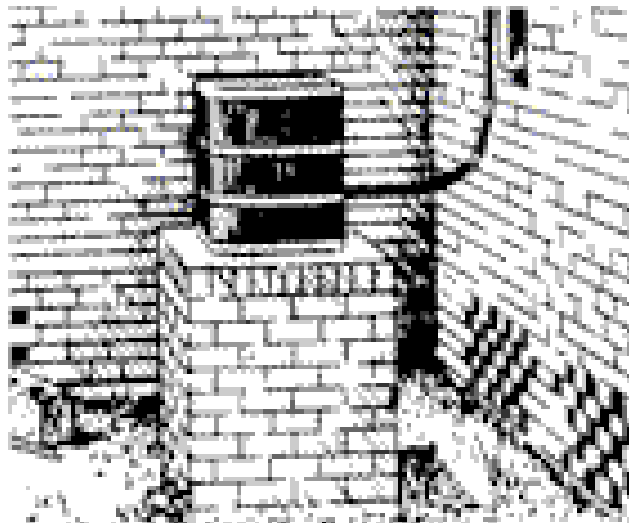
*the structure should have at least two permanent openings on different sides no more than a foot above grade. To address hydrostatic pressure, there must be 1 square inch of opening for every 1 square foot of floor area subject to flooding.; and

*the structure shall be less than some reasonable threshold in value and/or size (such as \$7500.00 or 500 sq. ft.).

The lowest floor elevation of the structure must be documented and the owner should be advised of the flood insurance requirements (flood insurance will be extremely high). Communities should also require the applicant to sign a release of liability from granting a wet floodproofing permit or variance. (A-14)

CONSTRUCTION METHODS

Constructing a building in the floodplain should be undertaken only after serious consideration of the risks of property damage and loss of life. The following construction methods can help minimize these potential damages when parts of a structure may be exposed to flooding:



*the structure should offer the least obstruction to flood flows by being aligned parallel to the streamflow.

*structural walls of a building should be designed to withstand the lateral forces of floodwater and the vertical or uplift forces from floodwater and rising ground water levels. Water pressure, both above and below ground, is increased by the rise of floodwater. This pressure causes increased stress on buildings' foundations, footings, and floor slabs.

*supports should be strengthened and spaced as far apart as possible to minimize the possibility of creating flow obstructions from ice or log jams, debris, etc.;

*if wave action is possible, the flood protection elevation should include appropriate freeboard;

*footings and foundations should be at sufficient depth and on load bearing soil to provide necessary lateral resistance to water pressure and should be able to resist vertical pressure; and

*floor drains and other plumbing below the base flood elevation should be fitted with valves to prevent backflow of water that would damage the interior of the building.

BUILDING UTILITIES

The local ordinance requires that building utilities and machinery such as electrical, plumbing, air conditioning, and heating equipment be elevated above the flood protection elevation. Electrical wiring and outlets, air conditioners, furnaces, gas fixtures, ductwork, and similar equipment may be suspended from the ceiling or walls or elevated on pedestals in the lower area, provided they are above the flood protection elevation. Water and sewer pipes, electrical and telephone lines, submersible pumps, and other similar waterproofed service facilities may be located below the flood protection elevation.

SEPTIC AND WATER SYSTEMS

The NFIP requires that new and replacement water supply systems, sanitary sewer systems, and onsite waste disposal systems must be designed to minimize or eliminate infiltration of floodwater. Sewage systems must also be designed to avoid causing contamination during flooding. Design considerations include:

* Manhole covers should be above the base flood elevation or designed to minimize infiltration.

* Waste disposal facilities including pumping stations, lagoons, and treatment plants must be

floodproofed or elevated to at least the base flood elevation. This is also a requirement of the Illinois Environmental Protection Agency (IEPA).

* Dikes or levees may need to be constructed to the flood protection elevation to protect waste treatment facilities located below the flood protection elevation (also required by the IEPA).

* On-site or private waste disposal and treatment systems such as septic tanks should be situated and constructed to avoid obstruction to flood flows and impairment due to flooding. This may be difficult, because on-site facilities may be substantially below the base flood elevation and financially difficult to properly construct. Generally, inlets to or outlets from the septic tank should be watertight or equipped with check valves or standpipes to prevent floodwater from returning through the system or discharging during a flood.

FEMA has a very detailed booklet entitled "Protecting Building Utilities from Flood Damage". This booklet can be ordered from the FEMA website at: www.fema.gov.

CONSTRUCTION MATERIALS

The area below the flood protection elevation must be unfinished and remain free of water damage. This requires that construction below the flood protection elevation be done only with materials resistant to flood damage.

Some of those materials include:

- Brick, face or glaze
- Cast stone in waterproof mortar
- Cement/bituminous
- Cement/latex
- Clay tile, ceramic veneer
- Concrete
- Concrete block
- Concrete tile
- Epoxy, formed-in-place
- Glass
- Glass blocks
- Insulation, foam or closed cell types
- Metal
- Paint: polyester-epoxy and other waterproof types
- Polyurethane
- Silicone
- Steel with waterproof applications
- Stone: natural or artificial
- Terrazzo
- Vinyl tile with asphaltic adhesives

Wood, if properly treated by pressure preservative treatment to inhibit insects and decay, can also be used as a flood resistant construction material. The professional organizations which have tested wood products make the following recommendations:

*American Wood Preserver's Bureau (AWPB) mark "C-9" on plywood which has been pressure treated to .40 CCA minimum. (Previously marked LP-22"): acceptable for ground or water contact.

*American Wood Preserver's Association (AWPA) mark "C2" on wood (which includes material treated for ground contact as well as for above ground use only) which has been pressure treated to .40 CCA minimum: acceptable for flood prone areas.

*American Plywood Association (APA) stamp "Rated Sheathing Exposure 1 or 2": exterior type plywood acceptable for flood prone areas.

Projects constructed with pressure treated wood will last longer if hot-dipped galvanized or stainless steel fasteners are used. Conventional nails and fasteners may corrode resulting in unsightly rust stains or separation of the wood.

Further guidance on flood resistant materials can be obtained by referencing "Flood Resistant Material Requirements" (Technical Bulletin 2-93). The bulletin can be found at the FEMA web site: www.fema.gov.

CRITICAL FACILITIES

A critical facility means any public or private facility which, if flooded, would create an added dimension to the disaster or would increase the hazard to life and health. Examples are public buildings, emergency operations and communication centers, health care facilities and nursing homes, schools, and toxic waste treatment, handling or storage facilities. Critical facilities should be elevated to at least the 500 year flood protection elevation. In addition any ingress and egress should be protected to the 500 year flood protection elevation. The State Model Floodplain Ordinance requires that critical facilities be elevated to the flood protection elevation.

MANUFACTURED (OR MOBILE) HOMES

Manufactured homes in the floodplain have often been a focal point for controversy. In 1986, new FEMA regulations changed the official term from "mobile homes" to "manufactured homes". This change required all communities in Illinois to amend their local ordinances and change all references of "mobile homes" to "manufactured homes".



In 1989, the elevation standards for manufactured homes installed in floodplain areas were revised. The new rules make manufactured home requirements different from the requirements for other buildings.

The old regulation simply required new manufactured home installations to have their lowest floor elevated to or above the base flood elevation.

Communities with "existing manufactured home parks" (those existing prior to the effective date of the community's ordinance) now have an additional option. At sites that have not previously suffered substantial flood damage, the elevation requirement for the lowest floor is to or above the base flood elevation, or three foot above the ground elevation, whichever is lower. Manufactured homes located outside of an existing park, or in an existing park on a site where flood damage has occurred, must still be elevated above the base flood elevation (just like any other residential building).

IDNR/OWR has chosen to require that **all** manufactured homes located in a floodplain be protected to the same standard as any other residential building (lowest floor elevated to the flood protection elevation).

In addition to elevation requirements, all manufactured homes in Illinois must be anchored to meet the Rules and Regulations for the Illinois Mobile Home Tie-Down Act issued pursuant to 210 ILCS 120 (State Bar Edition). A copy of the Rules and Regulations of the State's Tie-Down Act can be acquired from the Illinois Dept. of Public Health, Division of Environmental Health, 525 W. Jefferson St., Springfield, IL 62761.

RECREATIONAL VEHICLES AND TRAVEL TRAILERS

Travel trailers and recreational vehicles can remain onsite within a floodplain for more than 180 days **ONLY** if the following conditions are met:



* The vehicle must be either self-propelled or towable by a light duty truck. The hitch must remain on the vehicle at all times.

* The vehicle must NOT be attached to external structures such as decks and porches.

* The vehicle must be designed solely for recreation, camping, travel, or seasonal use rather than as a permanent dwelling.

* The vehicles largest horizontal projections must be no larger than 400 square feet.

* The vehicle's wheels must remain on axles and inflated.

* Air conditioning units must be attached to the frame so as to be safe for movement out of the floodplain.

* Propane tanks, electrical and sewage connections must be quick-disconnect and above the 100-year flood elevation.

* The vehicle must be licensed and titled as a recreational vehicle or park model.

* The vehicle must be either (a) entirely supported by jacks rather than blocks or (b) have a hitch jack permanently mounted, have the tires touching the ground, and be supported by blocks in a manner that will allow the blocks to be easily removed by use of the hitch jack.

Any recreational vehicles or travel trailers which do not meet ALL of these conditions, must be elevated to the flood protection elevation.

GARAGES AND SHEDS

Garages and sheds are considered "buildings" and

therefore, must be regulated.

If a detached garage or shed is to be used simply for minor storage or parking, the structure could be "wet floodproofed" (see page 36). However, larger garages or storage buildings (those over \$7,500 or 500 square feet) must meet the elevation or floodproofing requirements of the ordinance.

Attached garages can be constructed below the flood protection elevation, but must meet the conditions outlined in the section "Fully Enclosed Lower Area" (see page 34).

Any garage or shed which is to be located within a floodway (or a stream where the floodway has not been identified) and exceeds 70 square feet must be reviewed for state permit compliance.

SUBSTANTIAL IMPROVEMENT AND SUBSTANTIAL DAMAGE (THE 50% RULE)

SUBSTANTIAL IMPROVEMENT

A substantial improvement is defined in the NFIP regulations as any repair, reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50% of the market value of the structure before the "start of construction" of the improvement. The State Model Floodplain Ordinance also includes any addition which increases a floor area by more than 20% to this definition. Generally, structures are substantially improved in one of two ways:

1. rehabilitations or improvements that do not affect the external dimensions of the structure; or
2. additions that increase the square footage or market value of the structure.

The State Model Floodplain Ordinance requires that any development activity valued at over \$1,000 must meet the flood protection requirements. If the improvement or addition would increase the floor area of a existing building by more than 20% or increase the market value by 50%, the entire structure must be brought into compliance with the flood protection requirement (i.e. elevated or floodproofed). This recommendation is included in the model ordinance.

In certain situations, the State of Illinois may not allow additions in the floodway.

Any substantially improved structure must be brought into compliance with NFIP requirements for new construction; in other words, it must be elevated (or

floodproofed if it is a non-residential structure) to the flood protection elevation.

When a structure is substantially improved, the structure is considered a new “post-FIRM” structure, and actuarial flood insurance rates would apply based on the lowest floor elevation of the structure.

LONG-TERM IMPROVEMENTS AND CUMULATIVE IMPROVEMENTS

Often times, improvements are made to a building over a long period of time. Although none of the individual improvements may meet the substantial improvement criteria, the sum of the improvements may. While FEMA has not provided clear regulations for this type of situation, recommendations have been provided. Each permit applicant should be made fully aware of the “substantial improvement” regulations. The administrator should record the number of permits granted per structure and the cumulative costs. When the total equals or exceeds half of the market value of the structure when the first improvement began, no additional permits should be granted unless the entire structure is brought into compliance with the floodplain regulations.

SUBSTANTIAL DAMAGE

A building is considered substantially damaged when it sustains damage from any cause (fire, flood, earthquake, etc.), whereby the cost of fully restoring the structure would equal or exceed 50% of the pre-damage market value of the structure.

The cost to repair must be calculated for full repair to “before damage” condition, even if the owner elects to do less. The total cost to repair includes both structural and finish materials as well as labor.

A substantially damaged building which is repaired must be brought into compliance with the NFIP requirements for new construction; in other words, it must be elevated (or floodproofed if it is a non-residential structure) to the flood protection elevation.

Conducting post-flood damage assessments are a major component of a Floodplain Manager’s job. Should major flooding occur, a Local Official is encouraged to contact IDNR/OWR immediately. (See Following a Flood on p. 43). Properly regulating the Substantial Damage provisions of the local ordinance will ensure that future flood losses are reduced.

REPETITIVE LOSSES / CUMULATIVE SUBSTANTIAL DAMAGE

IDNR/OWR strongly recommends that communities adopt a cumulative provision to track repetitive flood losses. With this language, a community tracks multiple flood losses. At the point where a structure has suffered damages that equal or exceed 50% of the original market value (substantial damage), the structure must be brought into compliance with the flood protection requirements. If the property owner carries flood insurance, the standard NFIP policy will include up to \$30,000 to floodproof, elevate, relocate or demolish the structure (see “Increased Cost of Compliance” on p. 7).

The state model floodplain ordinance includes cumulative damage language.

FEDERAL AND STATE FUNDED FLOODPLAIN DEVELOPMENT ACTIVITIES

Both the Federal government and the State of Illinois have Executive Orders which regulate construction in floodplain areas. The Federal Executive Order is #11988. The State Executive Order on Floodplain Management is E.O. 5 (2006).

In brief, these Executive Orders require that Federal or State agencies which plan, promote, regulate, or permit activities, as well as those which administer grants or loans in the State’s floodplain areas, must ensure that all projects meet the standards of both the state floodplain regulations and the National Flood Insurance Program (NFIP).

These standards require that new or substantially improved buildings as well as other development activities be protected from damage by the 100-year flood. Critical facilities must be protected to the 500-year flood level. In addition, no construction activities in the floodplain may cause increases in flood heights or damages to other properties.

These rules apply to such activities as university buildings, IDOT roads, bridges and filling activities, construction grants for schools, libraries, hospitals, and nursing homes, park districts and school districts, State and Federal office facilities and State or Federal flood control projects.

Chapter 6

Other Regulated Activities

“DEVELOPMENT”

The definition of floodplain development goes far beyond the traditional building permit system most communities have in place. Floodplain development regulations apply to both buildings and activities or alterations to the landscape that might affect flow patterns or the flood carrying capacity of a watercourse. In addition to the building and construction activities discussed in Chapter 5, floodplain “development” also includes:

- *installation of utilities, construction of roads, bridges, culverts, and similar projects;
- *construction or erection of levees, dams, walls, and fences;
- *drilling, mining, filling, dredging, grading, excavating, paving, and other alterations of the ground surface;
- *storage of materials including the placement of gas and liquid storage tanks;
- *channel modifications and;
- *any other activities that might change the direction, height, or velocity of flood or surface waters.

All of these other “development” activities can and do increase flood damages. They should be reviewed closely by the local permit official..

EXEMPTED ACTIVITIES

Theoretically, every shovelful of dirt moved in a floodplain will affect the flow of water. However, regulations which prevent even the smallest development would be both unfair and unreasonable. Accordingly, the Illinois Department of Natural Resources, Office of Water Resources recommends that certain insignificant activities be exempted from local floodplain regulations. These exemptions include:

- *Buildings and additions equal to or less than 70 square feet in floor area (tool sheds, animal shelters, porches, etc.);
- *Resurfacing existing roads;
- *Minor maintenance of existing buildings or facilities; and

ties; and

*Gardening, plowing, and similar practices that do not involve a change in the ground surface elevation.

SUBDIVISION PLATS AND OTHER MAJOR LAND USE PROPOSALS

When planning, communities should take into account flood hazards, to the extent they are known, in all official actions related to land management, land use and development. Proposed subdivisions, manufactured home parks, annexations, planned unit developments, and additions must meet all the floodplain development requirements of the National Flood Insurance Program (NFIP).

Any development proposals greater than 5 acres or 50 lots must include base flood elevations and floodway delineations. These lines should be shown clearly on the plat or plan. If a base flood elevation does not exist for the site, then the developer must provide it. Building sites should be located outside of the identified floodplain. (Fig. 1)

Subdivision Plat for a Flood Prone Area

A. Plat Features Related to Flooding

1. Clustering lots to avoid flood areas.
2. Sewer and water protected against flooding.
3. Drainage facilities.
4.  Common areas dedicated or reserved for park space.
5. Boundary of floodway and flood fringe shown on plat.
6. Deed restrictions preventing development in floodway areas and requiring elevation of flood fringe uses.
7. Bridge designed to pass flood flows without substantially increasing flood heights.
8. Access road protected against flooding through elevation on fill.

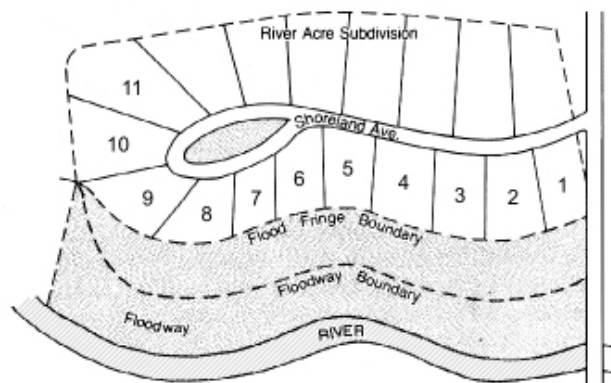


Figure 1. SUBDIVISION PLANNING GRAPHIC

The development proposal must also include a signed statement by a Registered Professional Engineer that the plat or plan accounts for any changes in the drainage of surface waters in accordance with the Illinois Plat Act, 765 ILCS 205/2 (State Bar Edition).

Special note on walkout basements: Subdivision plats should be reviewed closely when lots border a stream or river. Residential lots which border floodplain areas are frequently used for the construction of walkout basements. Although the footprint of the structure may be located outside of the mapped floodplain or above the flood elevation, walkout basements are frequently excavated out of the bluff side and therefore, subject to flood damage. In essence, the floodplain is excavated back to the structure. Construction plans for these types of structures, should be reviewed closely and walkout basements constructed high enough to avoid flood damage.

FENCES, LEVEES AND WALLS

When located in a floodplain, an innocent-looking fence can easily become clogged with debris during a flood and create an obstruction to flood flows thereby increasing flooding on neighboring properties. Levees and walls may also impact flood flows and increase damages on others. For this reason, fences, levees and wall should always be reviewed for floodplain permit compliance.

When reviewing these development activities, the local official should perform a site inspection and determine if the fence, levee, or wall will create an obstruction to flood flows. Site specific issues such as the location of the fence (parallel or perpendicular to flows), ground topography, local drainage issues, and the location of neighboring property should all be considered. If the fence, levee, or wall is located or extends into a Floodway (or a floodplain area with no mapped floodway), state permit review is required prior to the local permit review.

DAMS

IDNR/OWR regulates the construction and maintenance of dams within the state. The State of Illinois issues permits for the construction, operation and maintenance of new dams and the operation and maintenance of dams which existed prior to September 2, 1980.

Dams are classified by the state based on both size and hazard potential. A large dam with residential housing downstream will be classified at a greater risk than a small rural farm pond dam with no downstream housing. There are three hazard classifications. All dams in



the two higher classifications are required to have a permit under these rules. Dams in the lower hazard classification require a permit for construction or modification if they meet certain size criteria. Anyone proposing to construct a new dam is recommended to submit a preliminary design report to the state as early as possible. Contact IDNR/OWR for further guidance.

FILL

By nature, floodplains are low-lying areas which seem to invite filling activities. Filling is included under the NFIP definition of “development” and therefore requires a floodplain development permit. If the filling is proposed in a floodway (or in a floodplain where no floodway has been identified), state permit review is required. When a local official is reviewing a permit application for filling, care should be taken to ensure that the fill will not alter drainage or divert flood water to other properties.

STORAGE OF MATERIALS INCLUDING GAS AND LIQUID STORAGE TANKS)

Materials stored in the floodplain can have the same effect as fill during a flood event. They can alter or diver flood flows and damage neighboring property.

If the materials are buoyant (such as lumber, propane tanks, storage tanks, ammonia tanks, etc.) and are not properly anchored, these items can become floating debris that may strike buildings or plug bridge openings causing increased flood damages. Such hazards must be carefully considered in the permit review process.

Storage tanks located in a floodplain should be anchored and properly elevated above the flood protection elevation. If they cannot be elevated, a storage tank must be certified as floodproofed by a Registered Engineer. If floodproofed, the local official should maintain a Floodproofing Certificate on file for each tank (A-35). In addition, any openings on the tank should be watertight to avoid contamination during a flood.

HAZARDOUS MATERIALS

Increased flood heights are not the only flood related hazard that can be created by floodplain development. The model ordinance prohibits the placement of chemicals, explosives, buoyant materials, and other hazardous materials below the flood protection elevation unless they are properly elevated or floodproofed. It may be wise to completely prohibit certain hazardous materials in the floodplain. Two lists of hazardous materials have been developed by the U.S. Army Corps of Engineers:

1. Items that are extremely hazardous or vulnerable to flood conditions that should be prohibited from the floodplain:

- Acetone
- Ammonia
- Benzene
- Calcium Carbide
- Carbon Disulfide
- Celluloid
- Chlorine
- Hydrochloric Acid
- Hydrocyanic (Prussic) Acid
- Magnesium
- Nitric Acid
- Oxides of Nitrogen
- Phosphorous
- Potassium
- Sodium
- Sulfur

2. Items that are sufficiently hazardous or vulnerable to recommend their prohibition in all spaces below the flood protection elevation:

- Acetylene gas containers
- Drugs (in quantity)
- Food Products (potential health problems)
- Gasoline
- Charcoal, coal dust (subject to spontaneous combustion when wet)
- Matches and sulfur products (in quantity)
- Petroleum products
- Soaps and detergents (in quantity)
- Tires (in open storage)
- Wood products (in quantity)

OTHER DEVELOPMENTS

As mentioned, anything that alters the natural topography of the floodplain is considered "development." This includes such items as culverts, bridges, grading, paving, mining, land alterations, etc. Although often difficult for local officials to regulate, these smaller developments should be reviewed. Though they may seem trivial, these items can increase flood heights. Serious consideration should be given to all floodplain developments prior to the issuance of a permit.

FOLLOWING A FLOOD

Following a flood disaster, many communities are caught unaware of their post-flood responsibilities. The same definition of floodplain "development" includes the repair or reconstruction of a substantially damaged structure (see p. 40). Buildings which have been damaged by flooding may fall under the substantial damage re-



quirements. The local administrator must ensure that the repair of a damaged structure meets the floodplain permit requirements.

Following a flood, the local administrator should follow these five steps:

Step 1: Contact the Illinois Department of Natural Resources /Office of Water Resources (IDNR/OWR) or the Federal Emergency Management Agency (FEMA) Explain that you want guidance on damage assessments and permit requirements for flood damaged structures.

Both offices have experience, materials, and guidance to help you carry out your floodplain management responsibilities.

Step 2: Identify those structures believed to be substantially damaged and begin doing damage assessments.

Local officials should tour flooded areas and identify every framed structure which has a water mark two or more feet above the ground or any building which has obvious structural damage. Manufactured homes can be substantially damaged with as little as one foot of flooding. Damaged buildings should be marked on a map of the community for future reference.

Damage assessments can be difficult. Local officials should inspect every flood damaged building and calculate the cost of repairs. An easy to use worksheet is available to help make these determinations. FEMA has developed a computerize program called the Residential Substantial Damage Estimator. This program has been used extensively by local officials across the nation and provides quick and accurate damage assessments. If available, insurance adjuster estimates can also be used to document the extent of flood damage. The pre-flood market value of every flooded structure can quickly be estimated from the County Assessor's records.

Again, IDNR/OWR and FEMA can assist the local official during the damage assessment process.

Step 3: Post information for the public on the local ordinance requirements for obtaining permits for repairs and rebuilding.

This is best accomplished by posting notices directly on to the flood damaged structures. Often repairs begin on flooded buildings before the water even recedes from the structure. Therefore, it is very important that this step take place as soon as possible.

History shows that information normally spreads very fast among flood victims. Posted signs, flyers, notices on damaged structures, press releases, and letters mailed to individual owners can all be used for this purpose. Have a "Floodplain Development Permit Application" in hand and ready to distribute. Keep it simple.

Be prepared for residents who are angry that they cannot being making immediate repairs to their damaged structures.

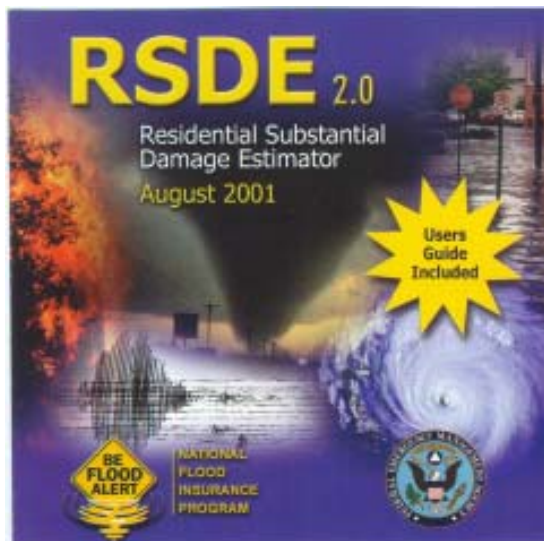
Step 4: Provide technical information to residents on elevation and floodproofing techniques.

Before repairs begin on flood damaged structures is the perfect opportunity to ensure that similar flood damages do not occur again. If the flood event is a declared disaster, federal or state assistance is usually available to implement mitigation techniques. If the structure is substantially damaged and has a flood insurance policy, Increase Cost of Compliance (ICC) coverage is available to mitigate the structure (see page 7). Technical manuals and guidance are available from many government and private sources. Workshops can be presented in flooded communities to introduce flood victims to thevarious options available to them. IDNR/OWR and FEMA will help with these workshops.

Step 5: Implement a permit application procedure.

At this point the community should be on its way to enforcing the floodplain ordinance. Those structures identified as substantially damaged (more than 50% of the pre-flood market value) should be "red-tagged". Remember, in many cases, the National Flood Insurance Program (NFIP) policy will pay to elevate or relocate a damaged structure (see page 7 - Increase Cost of Compliance).

Permits should not be issued until the structure is brought into compliance with floodplain regulations. Those with less than 50% damage can be issued permits to repair.



Chapter 7

Mitigation Strategies For Flood Damage Reduction

While the focus of this manual is on floodplain regulation, this chapter is included at the end to provide the local floodplain administrator an overview of the many options available to reduce flood damages to existing structures.

In the simplest terms... floodplains are for floods. Flooding is a natural process and cannot be eliminated. The damage resulting from floods, however, can be minimized through wise flood hazard mitigation. Flood hazard mitigation is a term which is used to describe any management strategy that reduces the severity of flood disasters through the use of both structural and non-structural measures.

Beginning in the 1930's, federal policy directed efforts towards preventing flood damage by controlling the flow of water (ie: trying to keep floods away from people). This policy was implemented by the construction of structural modifications such as dams and levees. Although these efforts did provide protection for many previously vulnerable areas, they did not reduce public expenditures for flood damages. The taxpayer costs for flood damages continue to rise annually.

In the mid 1960's there was a reassessment of national policy and the beginning of a shift to a more comprehensive approach to flooding. Rather than solely trying to prevent floods, the new policy recognized floodplains as an essential component to a natural process. Federal policy began to emphasize non-structural strategies to complement the existing structural components. It required greater involvement by local governments, put more attention on protecting the natural environment, and redistributed some of the financial burden of flood losses from the general public to those individuals who use or own flood prone property.

The emphasis of federal flood policy has shifted from almost exclusive use of structural control measures to equal consideration of non-structural strategies. It is now recognized that a variety of mitigation approaches must be combined to fit the unique circumstances of any given situation.

Local governments have the best opportunity to implement flood mitigation plans for their communities. They can analyze the community's unique flood problems, establish objectives, select alternatives, and implement the plan that will keep flood damages at a minimum.

NON-STRUCTURAL METHODS

Non-structural methods to reduce flood damages are those which do not depend on controlling or altering the flow of water. Non-structural methods emphasize controlling activities which could result in increased flood damages rather than trying to control the water. As a rule, non-structural methods are cheaper to establish and, when maintained, provide better long-term protection from flood damages.

LAND USE PLANNING

The principal non-structural strategy for reducing flood damage is to effect better use of water and land resources. This goal is achieved through comprehensive planning for and management of floodplain areas. Planning and management, in practice, are based on technical data such as topography, drainage, soil composition, climate, and other natural characteristics. This data is then analyzed in light of the physical and social characteristics of the floodplain area.

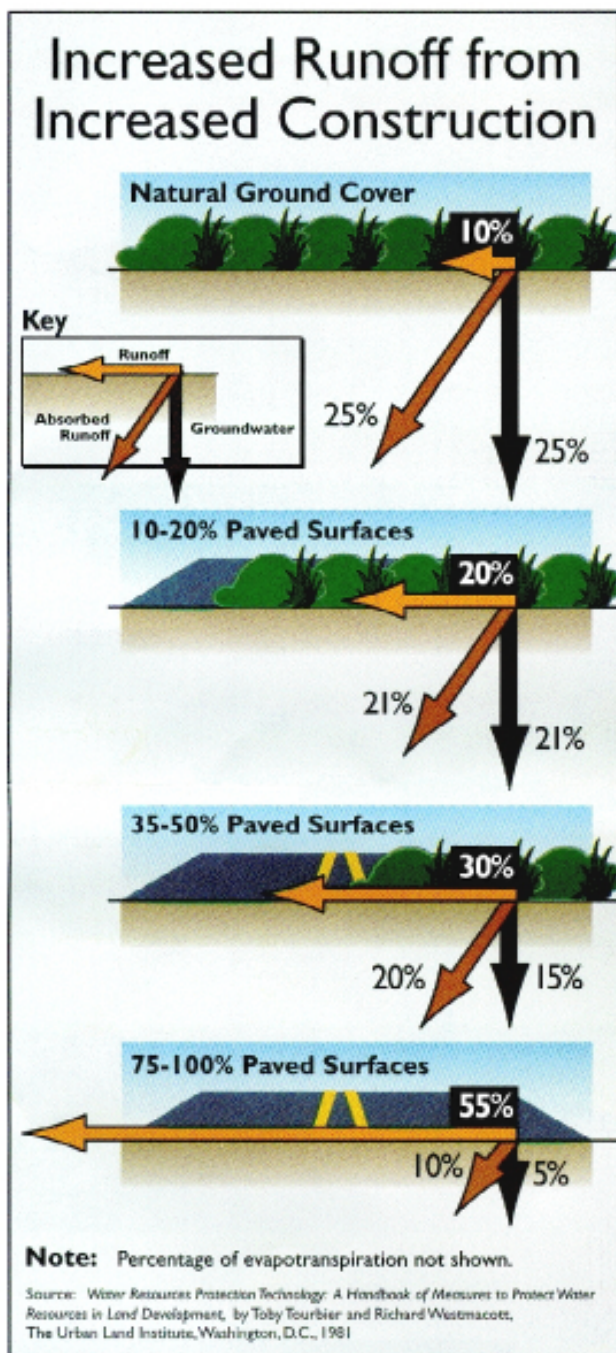
This analysis can then be used to determine appropriate locations for various types of development. Implementation then relies on regulations such as zoning ordinances, subdivision regulations, and health codes to ensure positive development practices.

What Is Hazard Mitigation?

Mitigation refers to activities that lessen potential for future flood damages. Examples include elevating structures above the predicted flood level, enhancing the natural flood storage of a floodplain with retention basins or updating floodplain ordinances to reflect the most recent flood data.



Photo by Dave Saville/FEMA News Photo



FLOODPLAIN REGULATIONS

Communities that participate in the National Flood Insurance Program (NFIP) are required to maintain and enforce floodplain regulations. The regulations do not prohibit development in the floodplain but rather are designed to ensure that existing and new development does not get flooded or cause increased flooding elsewhere.

Development in the floodway is restricted to those uses which will not increase flood heights. The portion of the

floodplain outside of the floodway can be more intensively developed providing that new uses and additions to existing uses are properly elevated or floodproofed to or above the 100-year flood elevation.

ZONING

In Illinois, many smaller communities and rural counties do not have zoning. Those that do, can use their zoning authority to discourage development in the floodplain. Flood prone areas could be zoned "recreational", "open space", or "natural areas". All of these uses would reduce flood damages that often occur when floodplains are zoned for residential or commercial uses. Zoning can also control the density of development in an area by controlling lot size. Zoning ordinances can prevent the expansion of nonconforming uses and can incorporate options which would limit the reconstruction of structures in a floodplain following a loss.

BUILDING CODES

Building codes are established to ensure safety through the regulation of building materials and building design. Unlike floodplain regulations, building codes are normally a uniform set of regulations which apply to the entire community regardless of location. However, some codes do include construction guidelines specific to flood prone areas. Many communities have adopted the International Building Codes (IBC) codes as their construction standards.

Several sections of the International Codes (I-Codes) include floodplain construction guidelines. However, these codes DO NOT meet the Illinois specific floodway regulations. Therefore, the I-Codes must be amended or the community must adopt a stand-alone floodplain ordinance to meet Illinois' more restrictive floodway regulations.

SUBDIVISION REGULATIONS

Subdivision regulations control the division of land. In most cases, the regulations require developers to prepare detailed "plats" or maps before the project can be permitted. The plats are then reviewed by the planning commission, village engineers, or building officials to ensure that the proposed development complies with all zoning regulations, health codes, building codes, etc...

In the floodplain area, a subdivision plat must clearly identify the base flood elevation and ensure that all buildings and public facilities are located outside of the floodplain or protected from potential flood damage.

Many of the newer subdivisions in Illinois tend to de-

velop along streams. The roads and lots in these subdivisions follow the contour of the stream. Individual lots in these subdivisions have a building portion on the higher ground with the lot extending back to a stream. An increasingly popular subdivision design in these circumstances is to plat deed restricted “outlots” within the mapped floodplain areas.

STORMWATER MANAGEMENT

Development occurring outside of the floodplain can also impact flood flows. Many areas in Illinois are experiencing rapid growth and development. As undeveloped areas are replaced by parking lots, streets, and buildings, water flows into streams more quickly. These changes to a watershed can result in increased stormwater runoff and more frequent floods. Growing communities are encouraged to adopt and implement stormwater regulations to prevent:

- *increases in downstream flooding due to new urbanization;
- *increases in the magnitude and frequency of small flood events;
- *increases in drainage-related damages due to inadequate design of local drainage systems;
- *the loss of beneficial stream uses due to degraded stormwater quality; and
- *the loss of beneficial stream uses due to adverse hydrologic and hydraulic impact of urbanization.

RELOCATION AND ACQUISITION

Often times when structures are flood damaged on a repetitive basis, the best mitigation option is acquisition or relocation. Areas where the flood prone structures were located can be converted to uses less susceptible to flooding such as parking lots, parks, or natural areas. While moving a structure or purchasing a property can be expensive, in the long run it can be less expensive than long-term, repetitive flood damages. State and Federal programs are available in certain situations to assist a community in buying flood prone properties. The Illinois Emergency Management Agency (IEMA) coordinates the state's mitigation activities. The IEMA contact information can be found in the appendix of this manual. (A-37)

FLOODPROOFING

Floodproofing can be any combination of structural or non-structural changes or adjustments incorporated in



the design, construction, or alteration of individual buildings or properties that will reduce flood damages. Flood insurance rates may also be reduced by these actions.

There are three general approaches to floodproofing existing structures:

1. Raising the structure so that floodwater cannot reach damageable portions of the building. When elevated, structures are normally jacked up and set on cribbing and a new or extended foundation is constructed underneath the structure. The elevation method (fill, stilts, blocks, or walls) is dependent on the condition of the building, the flood hazard, local floodplain regulations, and the owner's financial condition.
2. Constructing barriers to stop floodwater from entering the building. This method can be accomplished by erecting structures such as levees, floodwalls, berms, or ring dikes around a structure. In areas where flood waters are less than three feet, a flood prone structure can be retrofitted by coating the walls with waterproofing compounds or impermeable sheeting. Openings such as doors, windows, sewer lines, and vents are closed with permanent closures or removable shields, sandbags, valves etc.. A professional engineer should be consulted before dry floodproofing since the threat of collapse or damage from hydrostatic pressure is a major concern with this technique.
3. Modifying the structure and relocating the building contents to minimize flood damage. Relocating flood prone items can often greatly reduce overall flood damages. This method is dependent on adequate warning time and the action of someone who knows what to do. Considerations such as flood stage depth and rates are important considerations.

Purposely allowing areas that contain sources of electricity or hazardous materials to flood can also create a safety hazard. Lastly, because this method often times relies on flood waters entering the building, clean up after flooding should be a major consideration.

More detailed information on floodproofing and flood mitigation techniques can be obtained from the FEMA regional office, IDNR/OWR, or the Corps of Engineers.

STRUCTURAL METHODS

Structural methods were the traditional response to flooding for many years. Methods such as levees, dams, and floodwalls attempt to control flood waters and keep flooding away from people. They can be effective in situations where prior development has occurred and flood flows are relatively predictable. However, structural methods are, as a rule, extremely expensive and the cost of construction must be justified by the amount of flood protection offered. In addition, if structural methods are not properly maintained, damages caused by failure can be severe. Structural methods can also provide a false sense of security and promote floodplain development. For these reasons, structural methods alone are often not the answer for effective flood mitigation.

DAMS AND RESERVOIRS

The purpose of flood control dams and reservoirs is to store flood waters until stream flows are lower and the water can be released gradually without flood damage. Reservoirs can often serve a multi-function purpose of providing recreation areas, natural areas, or hydroelectric power. As would be expected, dams and reservoirs are generally very expensive to construct.

LEVEES AND FLOODWALLS

Levees and floodwalls contain or constrict floodwaters to the stream channel. As with other structural methods, levees and floodwalls can be very expensive to construct and the amount of protection offered must outweigh the cost of construction. Levees and floodwalls must also be maintained in order to ensure safety. Both levees and floodwalls are designed and constructed to protect against a designated protection level.

If floodwaters surpass that protection level, or if the levees fail, the results can be catastrophic.

CHANNEL MODIFICATIONS

Projects such as clearing brush, trees, and other obstructions can often be a simple, inexpensive method to reduce flooding. Projects such as straightening, re-



moving bends, deepening or widening waterways can often reduce immediate flood damages. However, the benefits are often short-term since modified channels can quickly silt in. Also, these methods could increase velocities and flood damages downstream as well as result in adverse environmental impacts. Whenever a project such as this is proposed, a professional engineer should be consulted, and state and federal regulatory agency review is generally required.

WATERSHED IMPROVEMENTS

In rural areas of Illinois, runoff from farm fields can impact flood flows. Watershed treatments such as tiling, terracing, vegetative cover, buffer zones, and grassed waterways can delay runoff to the stream channel. Watershed improvements can also reduce erosion and improve stream water quality. The U.S.D.A. Naturalization and Resource Conservation Service and the local Soil and Water Conservation District can provide assistance and, in some cases, funding for watershed treatment projects.

A NEW CONCEPT IN FLOOD MITIGATION: NO ADVERSE IMPACT (NAI)

The Association of State Floodplain Manager's No Adverse Impact (NAI) approach strives to ensure that the actions of one property owner do not increase the flood risk of other property owners. This approach will especially benefit those property owners that are not currently in regulated flood areas, but who could be in the future. The NAI concept, is similar to what State of Illinois' floodway regulations have long strived for.

This new approach would require those who alter flooding conditions to mitigate the impact of their actions on

property owners and adjacent communities. The NAI approach focuses on planning for and lessening flood impacts resulting from land use changes. It is essentially a “do no harm” policy that will significantly decrease the creation of new flood damages.

More information on NAI and a tool box of NAI applications can be found at www.floods.org.

POST FLOOD MITIGATION PROGRAMS

Most flood mitigation projects are undertaken in the wake of a flood disaster. However, mitigation planning should IDEALLY begin before the flood event. A community should prepare a mitigation plan that identifies the area of risk including individual structures and outline an appropriate response. This will allow your community to make informed and thoughtful decisions prior to the chaos and confusion that often exists during the flood fight and recovery process. Several mitigation programs are available to help flood victims. These programs are all developed to reduce flood losses and minimize the chance of future flood losses.

HAZARD MITIGATION GRANT PROGRAM (HMGP)

HMGP is activated following a Presidentially declared disaster. HMGP funds are based on 15% of the Federal Funds spent on the Public and Individual Assistance (disaster assistance) programs for each disaster. Using this program, the State of Illinois has spent close to \$100 million dollars and has acquired over 3,000 flood prone properties in the past ten years.

Individual homeowners and businesses may not apply directly to the program; however a community may apply on their behalf. Projects must provide a cost-efficient long-term solution to a problem. For example, buyout of properties that have been subjected to repetitive flood damage are a priority over buying sandbags and pumps to fight the flood. Non-structural solutions are the priority in Illinois; but HMGP funds have, in rare cases, been used for specific structural solution to flooding.

In order to qualify for an HMGP project, a local mitigation plan is required. The Illinois Emergency Management Agency (IEMA) helps communities prepare mitigation plans which meet all project approvals.

FLOOD MITIGATION ASSISTANCE PROGRAM (FMAP)

This program provides funding to assist States and communities in implementing measures to reduce or elimi-

nate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program (NFIP).

There are three types of grants available under FMA:

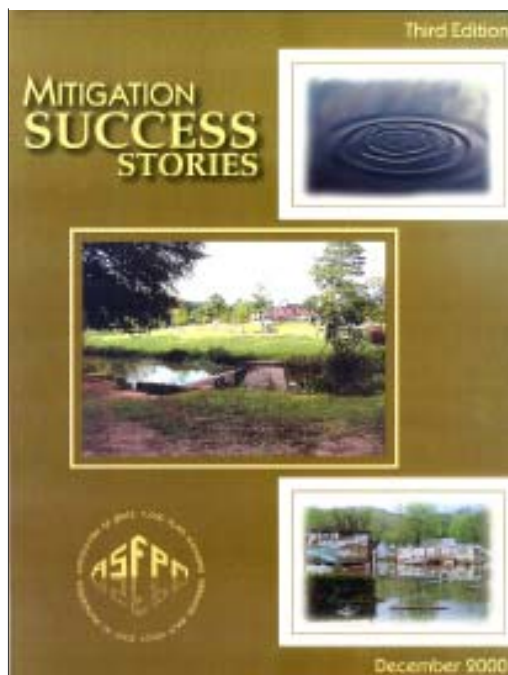
1. Planning, Project, and Technical Assistance Grants. FMA Planning Grants are available to States and communities to prepare Flood Mitigation Plans. NFIP-participating communities with approved Flood Mitigation Plans can apply for FMA
2. Project Grants. FMA Project Grants are available to States and NFIP participating communities to implement measures to reduce flood losses.
3. Technical Grants. Ten percent of the Project Grant is made available to States as a Technical Assistance Grant. These funds may be used by the State to help administer the program.

PREDISASTER MITIGATION PROGRAM (PDM)

This is a program that provides funding for mitigation projects and planning. These program funds are typically used towards the acquisition of flood prone property. The PDM is a new program and has been used on a limited basis in Illinois.

PUBLIC ASSISTANCE

Following a Presidentially declared disaster Public As-



sistance funds are provided to assist declared jurisdictions in repairing the damaged infrastructure. These funds are not designed to provide complete recovery...only immediate recovery needs. Flood Insurance and other mitigation programs are needed to recover from a flood disaster. If it is cost effective, additional funds may be contributed to mitigate against future damage to the infrastructure.

INCREASED COST OF COMPLIANCE (ICC)

The standard NFIP policy includes up to \$30,000 to floodproof, elevate, relocate or demolish the structure. This mitigation option is only available to those homeowners who carry flood insurance. To be eligible, the structure must be substantially damaged by a one time or multiple flood events. However, a community must adopt a repetitive loss provision in the local ordinance to be eligible for ICC based on multiple losses. (See page 7, Increased Cost of Compliance).

Chapter 8

Community Rating System

BACKGROUND

Since the National Flood Insurance Program (NFIP) was organized in 1968, the program has been successful in requiring new buildings to be protected from damage by the 100-year flood. However, the program had few incentives for communities to do more than enforce the minimum regulatory standards. Flood insurance rates had been the same in all participating communities, even though some do much more than regulate construction of new buildings to the national standards. Initially the program did little to recognize or encourage community activities to reduce flood damages to existing buildings, to manage development in areas not mapped by the NFIP, to protect new buildings beyond the minimum NFIP protection level, to help insurance agents obtain flood data, or to help people obtain flood insurance. Because these activities can have a great impact on the insurance premium base, flood damages, flood insurance claims, and federal disaster assistance payments, the Federal Insurance Administration (FIA) has implemented the Community Rating System (CRS).

THE CONCEPT

Experience since the turn of the century has shown that the fire insurance public protection class given to a community has been a very strong incentive for local officials to maintain or improve their fire protection programs. Local governing boards ensure that their fire alarm communications, water supply and distribution, and overall fire department facilities, including staffing, equipment, training, and other items meet or exceed the insurance industry's minimum criteria in order to maintain favorable fire insurance rate classes for their communities. The CRS was established to encourage, by the use of flood insurance premium adjustments, community and state activities beyond those required by the NFIP to: *reduce flood losses; *facilitate accurate insurance rating; and *promote the awareness of flood insurance.

COMMUNITY CLASSIFICATION

Flood insurance premium credits are available in communities based on their CRS classification. There are ten classes with Class 1 having the greatest premium credit (45%) and Class 10 having no premium credit. A community's CRS class is based on the number of credit points calculated for the activities that are undertaken to reduce flood losses, facilitate accurate insurance rating, and promote the awareness of flood insurance. A

community is automatically a Class 10 unless it applies for CRS classification and shows that the activities it is implementing warrant a better class. The amount of premium credit for each class is published annually by FIA. The CRS rewards those communities that are doing more than the minimum NFIP requirements. The system also provides an incentive for communities to initiate new flood protection activities.

OPERATION

Community application for CRS classification is voluntary. Any community in full compliance with the rules and regulations of the NFIP may apply for a CRS classification. The applicant community submits documentation that it is implementing one or more of the activities recognized in the CRS Schedule. The Schedule identifies 18 creditable activities, organized under four categories in Sections 300-600: Public Information, Mapping and Regulations, Flood Damage Reduction, and Flood Preparedness. The Schedule assigns credit points based on how well an activity affects the three goals of the CRS. Communities are welcome to propose alternative approaches in their applications. Some activities may be implemented by the state or regional district rather than at the local level. For example, Illinois has dam safety regulations that meet the credit criteria of activity 630-Dam Safety. Any community in Illinois receives Dam Safety credit points if the community applies for a CRS classification. The Regional Office of the Federal Emergency Management Agency (FEMA) and the Illinois Department of Natural Resources/ Office of Water Resources (IDNR/OWR) review and comment on the application. FIA verifies the information and the community's implementation of the activities. FIA sets the credit to be granted and notifies the community, the state, the insurance companies, and other appropriate parties. The community's activities and performance are reviewed periodically. If it is not properly or fully implementing the credited activities, its credit points and, possibly, its CRS classification will be revised. A community may add or drop creditable activities each year. Credit criteria for each activity may also change as more experience is gained in implementing, observing, and measuring the activities.

COSTS AND BENEFITS

No fee is charged for a community to apply for classification or to participate in the CRS. Because there may be a cost to implement the creditable activities, some communities may be concerned whether the cost of initiating a new activity will be offset by the flood insurance premium credits.

It is important to note that reduction in flood insurance rates is only one of the benefits communities receive

from undertaking the activities credited under the CRS. Others include increased public safety, reduction of damages to property and public infrastructure, avoidance of economic disruption and losses, reduction of human suffering, and protection of the environment. Communities should prepare and implement those activities that best deal with the local flood problem, not just those items that are listed in the Schedule. In considering whether to undertake a new activity, communities will want to consider all of the benefits the activity will provide (in addition to insurance premium credits) in order to determine whether it is cost effective.

ACTIVITIES CREDITED

300 PUBLIC INFORMATION ACTIVITIES

310 Elevation Certificates: Maintain FEMA's Elevation Certificate and make copies available to inquirers.

320 Map Determinations: Respond to inquiries for Flood Insurance Rate Map zone and flood data.

330 Outreach Projects: Advise residents about the flood hazard, flood insurance, and flood protection measures.

340 Hazard Disclosure: Advise potential purchasers of flood prone property about the hazard.

350 Flood Protection Library: Maintain and publicize a library and/or community website of references on various flood-related topics.

360 Flood Protection Assistance: Provide technical advice and/or assistance to property owners desiring to protect themselves from flooding.

400 MAPPING AND REGULATORY ACTIVITIES

410 Additional Flood Data: Develop floodplain maps, elevations, or other flood data where none exists.

420 Open Space Preservation: Keep vacant floodplain areas free from buildings and filling.

430 Higher Regulatory Standards: Require new development to be protected to a level greater than the NFIP minimum requirements.

440 Flood Data Maintenance: Make the community floodplain maps more current, useful, or accurate.

450 Stormwater Management: Regulate new development throughout the watershed to minimize their impact on surface drainage and runoff.

500 FLOOD DAMAGE REDUCTION ACTIVITIES

510 Repetitive Loss Projects: Develop and implement a plan to mitigate losses in repeatedly flooded areas.

520 Acquisition and Relocation: Purchase or relocate buildings and convert flood-prone properties to open space.

530 Retrofitting: Floodproof, elevate, or modify existing buildings to protect them from flood damages.

540 Drainage System Maintenance: Conduct regular inspections and maintain the capacities of channels and retention basins.

600 FLOOD PREPAREDNESS ACTIVITIES

610 Flood Warning Program: Provide early flood warning to the general public and special facilities.

620 Levee Safety: Maintain levees and emergency response plans for them.

630 Dam Safety: At the state level, regulate the construction and maintenance of dams. (Illinois does have an approved program.) More information or an application for the CRS program can be obtained from the FEMA Regional Office or from IDNR/OWR.

Chapter 9

The Local Floodplain Ordinance

THE BASIS FOR REGULATION

To participate in the National Flood Insurance Program (NFIP), a community must adopt and enforce a floodplain development ordinance. The ordinance forms the cornerstone of a community's floodplain regulatory program. The local ordinance is designed to both protect new buildings and prevent increased flood damages to existing structures. For this reason the ordinance places greater restrictions on development within floodplains than would normally be found in other portions of the community and in fact regulates a wider variety of activities than may be regulated in the remainder of the community (fills, fences, etc.).

THE INTENT OF REGULATION

The intent of floodplain regulation is not to prohibit floodplain development, but to guide development in a manner consistent with both nature's need to convey flood waters and a community's land use needs. The regulations are designed not to stop development but to stop flood damages caused by foolish development. The floodplain regulations required by the NFIP are designed to accomplish two basic objectives related to flood damage protection:

1. To prevent new developments from increasing flood damages to others (this objective is thoroughly discussed in Chapters 4, 5 and 6) ; and
2. To ensure that new buildings will be free from flood damage (this objective is discussed in detail in Chapter 5).

LIMITATIONS ON REGULATION

FEDERAL AND STATE GOVERNMENTS

Cities, villages and counties are created by the State. They have only those powers granted to them by state law or assumed under home rule powers. When these laws are passed, the state legislature may purposefully withhold certain powers. The state legislature did not grant cities and counties the authority to regulate state construction. Similarly, federal government development is exempt from local regulation (however, both the Federal and State governments have Executive Orders which regulate floodplain development).

Many local governments obtain funding from Federal or State sources to undertake projects. In these situations Federal and State Executive Orders must be followed. In brief, both Executive Orders requires that Federal and State agencies which plan, promote, regulate, or permit activities, as well as those which administer grants or loans in the State's floodplain areas, must ensure that all projects meet the standards of the state floodplain regulations or the National Flood Insurance Program (NFIP) whichever is more stringent. These standards require that new or substantially improved buildings as well as other development activities be protected from damage by the 100-year flood. In addition, no construction activities in the floodplain may cause increases in flood heights or damages to other properties.

PARK DISTRICTS, SCHOOL DISTRICTS AND OTHER TAX BODIES

Local governments such as school districts, sanitary districts, park districts, cities and counties were created by the legislature to perform specific duties. A city or county does not have the authority to regulate these taxing authorities where the regulation would conflict with or "frustrate" the functions of a public agency specifically granted by law. This rule is from a study of Illinois court cases made for the Illinois Department of Natural Resources, Office of Water Resources (IDNR/OWR).

In 1982, the Attorney General was asked whether a non-home rule county could enforce its floodplain ordinance within the boundaries of a drainage district and against the drainage district itself. He concluded that the county could not exercise its authority if it meant that the drainage district would be prevented from carrying out its statutory powers and duties. However, in most cases, the floodplain regulations do not prevent or "frustrate" a taxing body from carrying out its duties. For example, elevating a school, would not prevent the school district from educating children. The result may very well have been the opposite if the county had been a home rule government.

IDNR/OWR recommends that if a local government undertakes a development project that would violate the flood protection standards of the local ordinance, it should be required to show how its statutory authority exempts the project. Each situation will be different.

NFIP LOCAL ORDINANCE REQUIREMENTS

Section 60.3 of the NFIP regulations have specific guidelines which are required in local floodplain regulations.

The local community must, at a minimum, meet these guidelines if it intends to participate in the NFIP. The model ordinance in this chapter meets all state construction requirements and exceeds the minimum requirements of the NFIP. This model ordinance is to be used only for downstate Illinois communities. Regulations in the six Chicago metropolitan counties (Cook, DuPage, Lake, McHenry, Kane, and Will) area are more restrictive and model ordinances for those areas can be obtained from IDNR/OWR's Bartlett office.

The model ordinance in this chapter is tailored for cities with designated floodways [FEMA regulation 60.3(d)]. The ordinance is comprised of 15 sections and assumes a building permit system already exists in the community.

As the State's floodplain maps are modernized, all communities in Illinois will eventually have countywide floodplain mapping. Therefore, the Model ordinances in this section is designed for communities with countywide.

Model ordinances are available from IDNR/OWR in the following format:

60.3 (b) - (no detailed studies) for villages, cities, or counties

60.3 (c) - (detailed studies with no floodway) for villages, cities, or counties

60.3 (d) - (detailed studies and delineated floodways) for villages, cities, or counties

Any version of the State Model Floodplain Ordinance can be sent by email, disc, or paper copy. Simply contact IDNR/OWR. The model ordinances are also available on the IDNR/OWR web page.

ADDITIONAL LOCAL REQUIREMENTS

Communities are encouraged to take stronger measures than the minimum required for NFIP participation. For example:

*Some communities prohibit certain types of developments from the floodplain all together. Risky or hazardous developments such as schools, nursing homes, hospitals, public utilities, or industries using hazardous materials that could cause wide-spread public safety hazards, are good examples of development which should (if at all possible) be located outside of the floodplain.

*Other communities prohibit certain types of development (such as residential) within the floodway portion

of the floodplain since this is the area which conveys the majority of the floodwater and where water velocities and forces are the greatest and most destructive.

*NFIP regulations require communities to use the 100-year (or base) flood as the minimum standard. A few communities in Illinois have adopted the 500-year flood as the regulatory standard.

*The NFIP only requires building protection to the base flood elevation. The state model ordinance adopts a flood protection standard one foot above the base flood. Many communities in Illinois have adopted flood protection standards up to 3 feet above the base flood. This added level of protection is called freeboard. It represents a margin of safety against possible errors in the calculations of flood levels, or increases in flood heights caused by obstructions such as ice or log jams.

*Many communities track commutative losses on flood prone structures. At the point where damages have totaled 50% of the structures original market value, the structure must be elevated. A substantial damage threshold can be reduce (say 40%).

Any of these additional restrictions will not only reduce flood risks but may also result in lower insurance rates for structures in the floodplain. Communities which participate in the Community Rating System get additional points (and thus flood insurance premium reductions) for many of these higher regulatory standards.

ORDINANCE ADOPTION

65 ILCS 5/1-2-4 (State Bar Edition) requires publication of all new city or village ordinances that impose a fine or penalty (revisions or updates of an existing ordinance need not be published). There are three ways this requirement can be met:

1. The entire ordinance can be published, within 30 days after passage, in one or more newspapers published in the municipality. If no newspaper is published therein, then the ordinance can be published in one or more newspapers with a general circulation within the municipality;

2. In municipalities with less than 500 population, in which no newspaper is published, the ordinance can be posted in three prominent places within the municipality; or

3. The ordinance may be printed or published in book or pamphlet form published by authority of the corporate authorities. The statutes do not specify the minimum number of copies that should be made. Tenshould

suffice. Three copies must be kept on file with the clerk.

The clerk is required to record one copy of the ordinance in a local record book used exclusively for ordinances, 65 ILCS 5/1-2-5 (State Bar Edition). The ordinance becomes effective ten days after the publication date.

Copies of the adopted floodplain ordinance should be provided to both the Federal Emergency Management Agency (FEMA) regional office and IDNR/OWR for approval.

CONFLICTS WITH OTHER ORDINANCES

Communities with existing planning, zoning, subdivision, or building code ordinances should specifically amend those ordinances to account for any conflicting or more restrictive requirements in the floodplain regulations. This will avoid confusion and possible legal challenges.

In addition, some communities may have previously adopted floodplain ordinances. If your community is adopting a new ordinance, the other ordinances should be repealed (see Section 12 of the Model Ordinance).

THE STATE MODEL ORDINANCE

The remainder of this chapter is the State Model Ordinance. The text of the ordinance appears on the left hand side of the page, and a commentary is on the right hand side. The commentary explains the ordinance and describes how to fill in the blanks. If you have questions, please contact FEMA or IDNR/OWR for help in determining the appropriate terminology for your community for all items that are blank.

The state model ordinance in an easy-to-adopt format can also be provided in a computer disc or emailed to you.

60.3 (d) for communities with detailed mapping and countywide maps

AN ORDINANCE REGULATING DEVELOPMENT IN FLOODPLAIN AREAS

Be it ordained by the _____ governing board of the _____, Illinois as follows:

Section 1. Purpose

This ordinance is enacted pursuant to the police powers granted to this _____ by the Illinois Municipal Code (65 ILCS 5/1-2-1, 5/11-12-12, 5/11-30-2, 5/11-30-8 and 5/11-31-2) in order to accomplish the following purposes:

- A. To prevent unwise developments from increasing flood or drainage hazards to others;
- B. protect new buildings and major improvements to buildings from flood damage;
- C. to lessen the burden on the taxpayer for flood control, repairs to public facilities and utilities, as well as flood rescue and relief operations;
- D. to lessen the burden on the taxpayer for flood control, repairs to public facilities and utilities, and flood rescue and relief operations;
- E. maintain property values and a stable tax base by minimizing the potential for creating blight areas;
- F. make federally subsidized flood insurance available, and
- G. to preserve the natural characteristics and functions of watercourses and floodplains in order to moderate flood and stormwater impacts, improve water quality, reduce soil erosion, protect aquatic and riparian habitat, provide recreational opportunities, provide aesthetic benefits and enhance community and economic development.

The purpose section establishes the public purpose and benefit on which the legality of this exercise of the police power is based. In a number of instances, citizens have contested the legality and constitutionality of floodplain ordinances. In certain cases, the issue has been taken to the courts. Experience in various parts of the country show that restrictions, no matter how severe, are likely to be upheld by the courts in instances where threats to public health, safety and welfare are prevented.

County Statutory Authority is 55 ILCS 5/5-1041, and 5/5-1063. This model is based on local building code and subdivision review authority. Cities and counties already zoned should use the statutory authority for local zoning and subdivision review.

Section 2. Definitions

For the purposes of this ordinance, the following definitions are adopted:

Base Flood- The flood having a one percent (1%) probability of being equaled or exceeded in any given year. The base flood is also known as the 100-year flood. The base flood elevation at any location is as defined in Section 3 of this ordinance.

When interpreting this Ordinance, the definitions found in this section should be used. Any words not found in this section should take the standard definition found in the dictionary.

NFIP definitions are in 44 C.F.R. 591.

Base Flood Elevation (BFE)- The elevation in relation to mean sea level of the crest of the base flood.

Basement- That portion of a building having its floor sub-grade (below ground level) on all sides.

Building- A walled and roofed structure, including gas or liquid storage tank, that is principally above ground, including manufactured homes, prefabricated buildings and gas or liquid storage tanks. The term also includes recreational vehicles and travel trailers installed on a site for more than one hundred eighty (180) days per year.

The NFIP requires that references be made to “manufactured homes” rather than “mobile homes.”

Critical Facility- Any facility which is critical to the health and welfare of the population and, if flooded, would create an added dimension to the disaster. Damage to these critical facilities can impact the delivery of vital services, can cause greater damage to other sectors of the community, or can put special populations at risk.

Examples of critical facilities where flood protection should be required include: emergency services facilities (such as fire and police stations), schools, hospitals retirement homes and senior care facilities, major roads and bridges, critical utility sites (telephone switching stations or electrical transformers, and hazardous material storage facilities (chemicals, petrochemicals, hazardous or toxic substances).

Development- Any man-made change to real estate including, but not necessarily limited to:

Demolition, construction, reconstruction, repair, placement of a building, or any structural alteration to a building;

substantial improvement of an existing building;

installation of a manufactured home on a site, preparing a site for a manufactured home, or installing a travel trailer on a site for more than one hundred eighty (180) days per year;

installation of utilities, construction of roads, bridges, culverts or similar projects;

construction or erection of levees, dams walls or fences;

drilling, mining, filling, dredging, grading, excavating, paving, or other alterations of the ground surface;

storage of materials including the placement of gas and liquid storage tanks, and channel modifications or any other activity that might change the direction, height, or velocity of flood or surface waters.

“Development” does not include routine maintenance of existing buildings and facilities, resurfacing roads, or gardening, plowing, and similar practices that do not

involve filing, grading, or construction of levees.

Existing Manufactured Home Park or Subdivision-

A manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed or buildings to be constructed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before the effective date of the floodplain management regulations adopted by a community.

Expansion to an Existing Manufactured Home Park or Subdivision-

The preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

FEMA- Federal Emergency Management Agency

FEMA regulations can be found at 44 C.F.R. 59-79. This incorporation does not include later editions or amendments.

Flood- A general and temporary condition of partial or complete inundation of normally dry land areas from the overflow, the unusual and rapid accumulation, or the runoff of surface waters from any source.

Flood Fringe- That portion of the floodplain outside of the regulatory floodway.

Flood Insurance Rate Map- A map prepared by the Federal Emergency Management Agency that depicts the floodplain or special flood hazard area (SFHS) within a community. This map includes insurance rate zones and may or may not depict floodways and show base flood elevations.

Flood Insurance Study- An examination, evaluation and determination of flood hazards and, if appropriate, corresponding water surface elevations.

Floodplain and Special Flood Hazard Area (SFHA)-

These two terms are synonymous. Those lands within the jurisdiction of the (**insert the name of the village or city*), the extraterritorial jurisdiction of the (**insert the name of the village or city*), or that may be annexed into the (**insert the name of the village or city*), that are subject to inundation by the base flood. The floodplains of the (**insert the name of the village or city*) are generally identified as such on panel number(s) (**insert floodplain maps panel number(s)*) of the countywide Flood Insurance Rate Map of (**insert the name of the county*) prepared by the Federal Emergency Management Agency and dated (**insert countywide floodplain map date*). Floodplain also includes those areas of known flooding as identified by the community.

Contact IDNR/OWR for the dates of your floodplain maps or study.

The insert points explain who, what, or where should be inserted into each individual ordinance. This is one of the most important parts of the ordinance as it references the maps and the effective date for the maps

The floodplains of those parts of unincorporated (**insert name of county*) County that are within the extra-territorial jurisdiction of the (**insert name of city or village*) or that may be annexed into the (**insert name of city or village*) are generally identified as such on the Flood Insurance Rate map prepared for (**insert name of county*) County by the Federal Emergency Management Agency and dated (**insert countywide floodplain map date*).

Floodproofing- Any combination of structural or nonstructural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate, property and their contents.

Floodproofing Certificate- A form published by the Federal Emergency management agency that is used to certify that a building has been designed and constructed to be structurally dry flood proofed to the flood protection elevation.

Flood Protection Elevation (FPE)- The elevation of the base flood plus one foot of freeboard at any given location in the floodplain.

Floodway- That portion of the floodplain required to store and convey the base flood. The floodway for the floodplains of (**insert any rivers or streams with identified floodways*) shall be as delineated on the countywide Flood Insurance Rate Map of (**insert the name of the county*) prepared by FEMA and dated (**insert the date of the Floodplain Map*). The floodways for each of the remaining floodplains of the (**insert the name of the village or city*) shall be according to the best data available from the Federal, State, or other sources.

Freeboard- An increment of elevation added to the base flood elevation to provide a factor of safety for uncertainties in calculations, future watershed development, unknown localized conditions, wave actions and unpredictable effects such as those caused by ice or debris jams.

Historic Structure- Any structure that is:

Listed individually in the National Register of Historic Places or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register.

Certified or preliminarily determined by the Secretary of the Interior as contributing to the historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district.

Individually listed on the state inventory of historic places by the Illinois Historic Preservation Agency.

The floodway is a high hazard area where zoning ordinances and other land use controls should be used to prevent development to avoid flood damages and to permit the free passage of floodwaters.. The accurate determination of floodways and their limits is of critical importance. It is a complex procedure, requiring detailed engineering studies and the development of considerable hydraulic data.

*See discussion of Floodway and Flood Fringe on p. 12 of the **Local Floodplain Administrator's Manual***

NFIP regulations require protection to or above the base flood elevation. One foot of freeboard is recommended by IDNR/OWR. A community may use higher freeboard requirements if it desires.

Individually listed on a local inventory of historic places that has been certified by the Illinois Historic Preservation Agency.

IDNR/OWR- Illinois Department of Natural Resources/ Office of Water Resources.

Lowest Floor- the lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor. Provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of Section 7 of this ordinance.

Manufactured Home- A structure transportable in one or more sections, that is built on a permanent chassis and is designed to be used with or without a permanent foundation when connected to required utilities.

Manufactured Home Park or Subdivision- A parcel (or contiguous parcels) of land divided into two or more lots for rent or sale.

New Construction- Structures for which the start of construction commenced on or after the effective date of floodplain management regulations adopted by a community and includes any subsequent improvements of such structures.

New Manufactured Home Park or Subdivision- A manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed or buildings to be constructed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after the effective date of the floodplain management regulations adopted by a community.

You may or may not have an ordinance that is more restrictive when it comes to Mobile or Manufactured homes. The NFIP requires certain minimum standards for manufactured homes found at 44 C.F.R. 60.3(c)(6) & 60.3(c)(12). See section 7(D) of this ordinance.

NFIP- National Flood Insurance Program.

Recreational Vehicle or Travel Trailer- A vehicle which is:

built on a single chassis;

four hundred (400) square feet or less in size;

designed to be self-propelled or permanently towable by a light duty truck and designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel or seasonal use.

Repetitive Loss- Flood related damages sustained by a structure on two separate occasions during a ten year period for which the cost of repairs at the time of

each such flood event on the average equals or exceeds twenty-five percent (25%) of the market value of the structure before the damage occurred.

SFHA- See definition of floodplain.

Start of Construction- Includes substantial improvement and means the date the building permit was issued. This, provided the actual start of construction, repair, reconstruction, rehabilitation, addition placement or other improvement, was within one hundred eighty (180) days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns or any work beyond the stage of excavation or placement of a manufactured home on a foundation. For a substantial improvement, actual start of construction means the first alteration of any wall, ceiling, floor or other structural part of a building whether or not that alteration affects the external dimensions of the building.

Structure (see "Building")

Substantial Damage- Damage of any origin sustained by a structure whereby the cumulative percentage of damage (**pick either: "subsequent to the adoption of this ordinance", "during the life of the building" or "during a ten (10) year period"*) equals or exceeds fifty percent (50%) of the market value of the structure before the damage occurred regardless of actual repair work performed. Volunteer labor and materials must be included in this determination. The term includes "Repetitive Loss Buildings" (see definition).

It is at the community's discretion to choose what time period should be used.

Substantial Improvement- Any reconstruction, rehabilitation, addition or improvement of a structure taking place (**pick either: "subsequent to the adoption of this ordinance", "during the life of the building" or "during a ten (10) year period"*) in which the cumulative percentage of improvements equals or exceeds fifty percent (50%) of the market value of the structure before the improvement or repair is started. "Substantial improvement" is considered to occur when the first alteration of any wall, ceiling, floor or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure. This term includes structures which have incurred repetitive loss or substantial damage, regardless of the actual repair work done.

The term does not include:

Any project for improvement of a structure to comply with existing state or local health, sanitary, or safety code specifications which are solely necessary to assure safe living conditions, or

any alteration of a structure listed on the National Register of Historic Places or the Illinois Register of Historic Places.

II. Violation- The failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the required federal, state, and/or local permits and elevation certification is presumed to be in violation until such time as the documentation is provided.

Section 3. Base Flood Elevation.

This ordinance's protection standard is the base flood. The best available base flood data are listed below. Whenever a party disagrees with the best available data, the party shall finance the detailed engineering study needed to replace the existing data with better data and submit it to the FEMA and IDNR/OWR for approval prior to any development of the site.

The base flood elevation for the floodplains of (**insert name of all studied rivers, creeks and streams*) shall be as delineated on the 100-year flood profiles in the countywide Flood Insurance Study of (**insert name of county*) prepared by the Federal Emergency Management Agency and (**insert date of Flood Insurance Study*).

The base flood elevation for each floodplain delineated as an "AH Zone" or AO Zone" shall be that elevation (or depth) delineated on the county wide Flood Insurance Rate Map of (**insert name of county*).

The base flood elevation for each of the remaining floodplains delineated as a "A Zone" on the countywide Flood Insurance Rate Map of (**insert the name of the county*) shall be according to the best data available from federal, state or sources. Should no other data exist, an engineering study must be financed by the applicant to determine base flood elevations.

The base flood elevation for the floodplains of those parts of unincorporated (**insert the name of the surrounding county*) County that are within the extraterritorial jurisdiction of the (**insert the name of the village or city*), or that may be annexed into the (**insert the name of the village or city*), shall be as delineated on the 100-year flood profiles in the Flood Insurance Study of (**insert the name of the surrounding county*) County prepared by the Federal Emergency Management Agency and dated (**insert the date of the County Flood Insurance Study*).

This section explains what data are to be used in determining base flood elevations for floodplain properties.

NFIP requirement: 44 C.F.R. 60.3(b).

*Base Flood Elevation discussion is on p. 11 of the **Local Floodplain Administrator's Manual***

Contact IDNR/OWR or FEMA for correct map and study dates.

Contact IDNR/OWR to determine which paragraphs (a, b, c, or d) are applicable for your community. Many communities may only have to adopt portions of this section depending on their unique circumstances.

See p. 13 of the Local Floodplain Administrator's Manual on how to read a flood profile.

NFIP Requirement: 44 C.F.R. 60.3(b)(4)

Section 4. Duties of the *(*insert title of local official responsible for this ordinance)*

The *(*insert title of local official responsible for this ordinance)* shall be responsible for the general administration of this ordinance and ensure that all development activities within the floodplains under the jurisdiction of the *(*insert the name of the village or city)* meet the requirements of this ordinance. Specifically, the *(*insert title of local official responsible for this ordinance)* shall:

Process development permits in accordance with Section 5;

ensure that all development in a floodway (or a floodplain with no delineated floodway) meets the damage prevention requirements of Section 6;

ensure that the building protection requirements for all buildings subject to Section 7 are met and maintain a record of the “as-built” elevation of the lowest floor (including basement) or floodproof certificate;

assure that all subdivisions and annexations meet the requirements of Section 8;

ensure that water supply and waste disposal systems meet the Public Health standards of Section 9;

if a variance is requested, ensure that the requirements of Section 11 are met and maintain documentation of any variances granted;

inspect all development projects and take any and all penalty actions outlined in Section 13 as a necessary to ensure compliance with this ordinance;

assure that applicants are aware of and obtain any and all other required local, state, and federal permits;

notify IDNR/OWR and any neighboring communities prior to any alteration or relocation of a watercourse;

provide information and assistance to citizens upon request about permit procedures and floodplain construction techniques;

cooperate with state and federal floodplain management agencies to coordinate base flood data and to improve the administration of this ordinance;

maintain for public inspection base flood data, floodplain maps, copies of state and federal permits, and documentation of compliance for development activities subject to this ordinance;

perform site inspections to ensure compliance with this

This section summarizes the duties of the local floodplain regulatory official.

List the title of the official responsible for administering the floodplain ordinance (e.g. building official or zoning administrator).

Within Illinois, most communities have extraterritorial jurisdiction 1-1/2 miles beyond the corporate limits.

NFIP Requirements: 44C.F.R. 60.3(b)(5)(iii) and 59.22(a)(9)(iii).

NFIP Requirements: 44 C.F.R. 60.3(a)(2).

NFIP Requirements: 44 C.F.R. 60.3(b)(5).

ordinance and make substantial damage determinations for structures within the floodplain, and

maintain the accuracy of floodplain maps including notifying IDNR/OWR and/or submitting information to FEMA within six months whenever a modification of the floodplain may change the base flood elevation or result in a change to the floodplain map.

Section 5. Development Permit.

No person, firm, corporation, or governmental body not exempted by law shall commence any development in the floodplain without first obtaining a development permit from the *(*insert title of local official responsible for this ordinance)*. The *(*insert title of local official responsible for this ordinance)* shall not issue a development permit if the proposed development does not meet the requirements of this ordinance.

The application for development permit shall be accompanied by.

drawings of the site, drawn to scale showing property line dimensions;

existing grade elevations and all changes in grade resulting from excavation or filling;

the location and dimensions of all buildings and additions to buildings;

the elevation of the lowest floor (including basement) of all proposed buildings subject to the requirements of Section 7 of this ordinance, and

cost of project or improvements as estimated by a licensed engineer or architect. A signed estimate by a contractor may also meet this requirement.

Upon receipt of an application for a development permit, the *(*insert title of local official responsible for this ordinance)* shall compare the elevation of the site to the base flood elevation. Any development located on land that can be shown by the base flood elevation. Any development located on land that can be shown by survey data to be higher than the current base flood elevation and which has not been filled after the date of the site's first Flood Insurance Rate Map is not in the floodplain and therefore not subject to the requirements of this ordinance. Conversely, any development located on land shown to be below the base flood elevation and hydraulically connected, but not shown on the current Flood Insurance Rate Map, is subject to the provisions of this ordinance.

The *(*insert title of local official responsible for this ordinance)* shall maintain documentation of the existing

This section explains floodplain permit requirements which must be met as required by the NFIP 44 C.F.R. 60.3(b)(1).

*The (*blanks) should name the local official identified in Section 5.*

Although survey data may show the development site to be entirely above the base flood elevation, a Letter of Map Amendment (LOMA) will still be required to remove the site from the mapped floodplain for insurance requirements.

ground elevation at the development site and certification that this ground elevation existed prior to the date of the site's first Flood Insurance Rate Map identification.

The (**insert title of local official responsible for this ordinance*) shall be responsible for obtaining from the applicant copies of all other federal, state, and local permits, approvals or permit-not-required letters that may be required for this type of activity. The (**insert title of local official responsible for this ordinance*) shall not issue a permit unless all other federal, state, and local permits have been obtained.

Section 6. Preventing Increased Flood Heights and Resulting Damages.

Within any floodway identified on the countywide Flood Insurance Rate Map, and within all other floodplains where a floodway has not been delineated, the following standards shall apply:

Except as provided in Section 6(B), no development shall be allowed which, acting in combination with existing and anticipated development will cause any increase in flood heights or velocities or threat to public health and safety. The following specific development activities shall be considered as meeting this requirement:

Bridge and culvert crossings of streams in rural areas meeting the following conditions of the Illinois Department of Natural Resources, Office of Water Resources Statewide Permit Number 2:

the crossing will not result in an increase in water surface profile elevation in excess of 1.0 feet, and

the crossing will not result in an increase in water surface profile elevation in excess of one half (0.5) feet at a point one thousand (1,000) feet upstream of the proposed structure.

There are no buildings in the area impacted by the increases in water surface profile.

The proposed bridge or culvert crossing will not involve straightening, enlarging, or relocating the existing channel.

The design must be certified by a registered professional engineer in the State of Illinois and the designs must meet the conditions of an IDNR/OWR permit.

The design must be certified by a second registered professional engineer.

Barge fleeting facilities meeting the following conditions

This section sets the minimum requirements for all developments in a floodway or in a floodplain where no floodway has been identified.

NFIP requirements: 44 C.F.R. 60.3(a)(4)(1), 60.3(c)(10), 60.3 (d)(2) and 60.3(d)(3).

Statutory authority of IDNR/OWR to regulate floodway development is found in: 615 ILCS 5/5 thru 29a.

Floodways in Illinois are delineated based on one tenth (0.1) of a foot increase in flood heights for the affected reach of the stream. The state permit process ensures that development will not increase flood damages or the potential for flood damages in that reach of stream.

Copies of IDNR/OWR statewide permits should be maintained by all local floodplain administrators. Copies can be obtained by calling or writing IDNR/OWR.

Many activities in floodways will require a permit from the U.S. Army Corps of Engineers. In particular, the Corps regulates fill activities in "waters of the United States," which include most stream channels and wetlands. As a rule, a local development permit should not be issued for a fill or related activity in the floodway until the applicant has received a permit or signoff from the Corps.

*Copies of IDNR/OWR and Corps of Engineers joint permit applications can be obtained by calling or writing IDNR/OWR. See page A-37 of the **Local Floodplain Administrator's Manual** for address and telephone number.*

of IDNR/OWR Statewide Permit Number 3:

The permit is only applicable when deadmen, pier cells, or other similar anchorage devices have been permitted by the U.S. Army Corps of Engineers.

Aerial utility crossings meeting the following conditions of IDNR/OWR Statewide Permit Number 4;

The utility line must be constructed above the existing 100-year flood elevation or attached to an existing bridge.

A utility line attached to an existing bridge shall be constructed above the low cord elevation of the bridge.

No supporting towers or poles shall be located in a river, lake or stream.

Supporting towers including foundation and poles shall be designed and located so as to not cause an obstruction of flood flows by trapping debris.

Copies of IDNR/OWR statewide permits should be maintained by all local floodplain administrators. Copies can be obtained by calling or writing IDNR/OWR.

All disturbed areas shall be returned to pre-construction grades and re-vegetated.

All Illinois Commerce Commission, National Electrical Safety Code, and federal requirements must be met.

Minor boat docks meeting the following conditions of IDNR/OWR Statewide Permit Number 5:

The boat dock must not extend more than fifty (50) feet into a waterway and no more than one quarter (1/4) of the width of the waterway and shall not extend beyond the navigational limited established by the IDNR and Corps of Engineers.

The width of the boat dock shall not be more than ten (10) feet.

For L-Shaped or T-shaped docks, the length of that portion parallel to the shoreline must not exceed fifty percent (50%) of the landowner's shoreline frontage nor fifty (50) feet.

Docks must be aligned so as not to cross the projection of property lines into the waterway or come within ten (10) feet of the projected property line.

Dock posts must be marked by reflective devices.

The boat dock must be securely anchored to prevent detachment during times of high wind or water.

Metal drums or containers may not be used as buoyancy units unless they are filled with floatation foam. Containers which previously stored pesticides, herbicides, or any other toxic chemicals are not permissible.

This permit does not authorize any other related con-

struction activity such as shore protection or fill.

Non-floating boat docks must be constructed in a manner which will minimize obstruction to flow.

At any future date, the permittee must agree to make necessary modifications to the dock as determined by the IDNR or Corp of Engineers

Minor, non-obstructive activities meeting the following conditions of IDNR/OWR Statewide Permit Number 6:

the following activities (not involving fill or positive change in grade) are covered by this permit:

The construction of underground utility lines, wells, or septic tanks not crossing a lake or stream.

The construction of light poles, sign posts, and similar structures.

The construction of sidewalks, driveways, athletic fields (excluding fences), patios, and similar structures.

The construction of properly anchored, unwall, open structures such as playground equipment, pavilions, and carports.

The placement of properly anchored buildings not exceeding seventy (70) square feet in size, nor ten (10) square feet in any dimension. Only one such building on a property is authorized by this statewide permit.

The raising of existing buildings, provided no changes are made to the outside dimensions of the building and the placement of fill is not involved.

Outfall Structures and drainage ditch outlets meeting the following conditions of IDNR/OWR Statewide Permit Number 7:

Any outfall structure, including any headwall or end-section, shall not extend riverward or lakeward of the existing adjacent natural bank slope or adjacent bank protection.

The velocity of the discharge shall not exceed the scour velocity of the channel soil, unless channel erosion would be prevented by the use of riprap or other design measures.

Outlets from drainage ditches shall not be opened to a stream until the ditch is vegetated or otherwise stabilized to minimize stream sedimentation.

Disturbance of streamside vegetation shall be kept to a minimum during construction to prevent erosion and sedimentation. All disturbed floodway areas, including the stream banks, shall be restored to their original contours and seeded or otherwise stabilized upon comple-

Copies of IDNR/OWR statewide permits should be maintained by all local floodplain administrators. Copies can be obtained by calling or writing IDNR/OWR.

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tion of construction.

Underground pipeline and utility crossings meeting the conditions of IDNR/OWR Statewide Permit Number 8:

In all cases, the crossing shall be placed beneath the bed of the river, lake or stream and, unless the crossing is encased in concrete or entrenched in bedrock, a minimum of three (3) feet of cover shall be provided. The river, lake or stream bed shall be returned to its original condition.

Disturbance of streamside vegetation shall be kept to a minimum during construction to prevent erosion and sedimentation. All disturbed floodway areas, including stream banks, shall be restored to their original contours and seeded or otherwise stabilized upon completion of construction.

Any utility crossing carrying material which may cause water pollution, as defined by the Environmental Protection Act (415 ILCS 5), shall be provided with shut-off valves on each side of the body of water to be crossed.

If blasting is to be utilized in the construction of the crossing, the permittee shall notify the IDNR/OWR at least ten (10) days prior to the blasting date to allow monitoring of any related fish kills.

Bank stabilization projects meeting the conditions of IDNR/OWR Statewide Permit Number 9:

Only the following materials may be utilized in urban areas: stone and concrete riprap, steel sheet piling, cellular blocks, fabric-formed concrete, gabion baskets, rock and wire mattresses, sand/cement filled bags, geotechnical fabric materials, natural vegetation and treated timber. Urban areas are defined as: areas of the State where residential, commercial, or industrial development currently exists or, based on land use plans or controls, is expected to occur within ten (10) years. (The Department should be consulted if there is a question of whether or not an area is considered urban).

In addition to the materials listed in Section 6(8)(a), other materials (e.g. tire revetments) may be utilized in rural areas provided all other conditions of this permit are met.

The following materials shall **not** be used in any case: auto bodies, garbage or debris, scrap lumber, metal refuse, roofing materials, asphalt or other bituminous materials, or any material which would cause water pollution as defined by the Environmental Protection Act (415 ILCS 5).

The affected length of shoreline, stream bank, or channel to be protected shall not exceed, either singularly or cumulatively, one thousand (1000) feet.

Copies of IDNR/OWR statewide permits should be maintained by all local floodplain administrators. Copies can be obtained by calling or writing IDNR/OWR.

All material utilized shall be properly sized or anchored to resist anticipated forces of current and wave action.

Materials shall be placed in a way which would not cause erosion or the accumulation of debris on properties adjacent to or opposite the project.

Materials shall not be placed higher than the existing top of the bank.

Materials shall be placed so that the modified bank full-width and cross-sectional area of the channel will conform to or be no more restrictive than that of the natural channel upstream and downstream of the site.

For projects involving continuous placement of riprap along the bank, toe of the bank or other similar applications, in no case shall the cross-sectional area of the natural channel be reduced by more than ten percent (10%) nor the volume of material placed exceed two (2) cubic yards per lineal foot of the stream bank or shoreline. The bank may be graded to obtain a flatter slope and to lessen the quantity of material required.

If broken concrete is used, all protruding materials such as reinforcing rods shall be cut flush with the surface of the concrete and removed from the construction area.

Copies of IDNR/OWR statewide permits should be maintained by all local floodplain administrators. Copies can be obtained by calling or writing IDNR/OWR.

Disturbance of vegetation shall be kept to a minimum during construction to prevent erosion and sedimentation. All disturbed areas shall be seeded or otherwise stabilized upon completion of construction.

In the case of seawalls and gabion structures on lakes, the structure shall be constructed at or landward of the water line as determined by the normal pool elevation, unless:

It is constructed in alignment with an existing seawall(s) or gabion structure(s), and

The volume of material placed, including the structure, would not exceed two (2) cubic yards per lineal foot.

Excess material excavated during the construction of the bank or shoreline protection shall be placed in accordance with local, state, and federal laws and rules, shall not be placed in a floodway.

Accessory structures and additions to existing residential buildings meeting the conditions of IDNR/OWR Statewide Permit Number 10:

The accessory structure or building addition must comply with the requirements of the local floodplain ordinance.

The principle structure to which the project is being added must have been in existence on the effective date of this permit (July 25, 1988).

The accessory structure or addition must not exceed five hundred (500) square feet in size and must not deflect floodwaters onto another property, and

must not involve the placement of any fill material.

No construction shall be undertaken in, or within fifty (50) feet of the bank of the stream channel.

The accessory structure or addition must be properly anchored to prevent its movement during flood conditions.

Only one accessory structure or addition to an existing structure shall be authorized by this permit.

Plans for any subsequent addition must be submitted to IDNR/OWR for review.

Disturbances of vegetation shall be kept to a minimum during construction to prevent erosion and sedimentation. All disturbed floodway areas shall be seeded or otherwise stabilized upon completion of construction.

Minor maintenance dredging activities meeting the following conditions of IDNR/OWR Statewide Permit Number 11:

The affected length of the stream shall not wither singularly or cumulatively exceed one thousand (1000) feet.

The project shall not include the construction of any new channel; all work must be confined to the existing channel or to reestablishing flows in the natural stream channel, and

the cross-sectional area of the dredged channel shall conform to that of the natural channel upstream and down stream of the site.

Dredged or spoil material shall not be disposed of in a wetland and shall be either:

Removed from the floodway;

used to stabilize an existing bank provided no materials would be placed higher than the existing top of bank and provided the cross-sectional area of the natural channel would not be reduced by more than ten percent (10%), nor the volume of material placed exceed two (2) cubic yards per lineal foot of streambank;

used to fill an existing washed out or scoured floodplain area such that the average natural floodplain elevation is not increased;

used to stabilize an existing levee provided the height of the levee would not be increased nor its alignment changed;

Copies of IDNR/OWR statewide permits should be maintained by all local floodplain administrators. Copies can be obtained by calling or writing IDNR/OWR.

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placed in a disposal site previously approved by the Department in accordance with the conditions of the approval, or

used for beach nourishment, provided the material meets all applicable water quality standards.

Disturbance of streamside vegetation shall be kept to a minimum during construction to prevent erosion and sedimentation. All disturbed floodway areas, including the stream banks, shall be seeded or otherwise stabilized upon completion of construction.

Bridge and culvert replacement structures and bridge widening meeting the following conditions of IDNR/OWR statewide Permit Number 12:

A registered professional engineer shall determine and document that the existing structure has not been the cause of demonstrable flood damage. Such documentation shall include, at a minimum, confirmation that:

No buildings or structures have been impacted by the backwater induced by the existing structure, and

there is no record of complaints of flood damages associated with the existing structure.

A registered professional engineer shall determine that the new structure will provide the same or greater effective waterway opening as the existing structure. For bridge widening projects the existing piers and the proposed pier extensions must be in line with the direction of the approaching flow upstream of the bridge.

The project shall not include any appreciable raising of the approach roads. (This condition does not apply if all points on the approaches exist at an elevation equal to or higher than the 100-year frequency flood headwater elevation as determined by a FEMA flood insurance study completed or approved by IDNR/OWR).

The project shall not involve the straightening, enlargement or relocation of the existing channel of the river or stream except as permitted by the Department's Statewide Permit Number 9 (Minor Shoreline, channel and Streambank Protection Activities) or Statewide Permit Number 11 (Minor Maintenance Dredging Activities).

The permittee shall maintain records of projects authorized by this permit necessary to document compliance with the above conditions.

Temporary construction activities meeting the following conditions of IDNR/OWR statewide Permit Number 13:

No temporary construction activity shall be commenced until the individual permittee determines that the permanent structure (if any) for which the work is being performed has received all required federal, state and

Copies of IDNR/OWR statewide permits should be maintained by all local floodplain administrators. Copies can be obtained by calling or writing IDNR/OWR.

local authorizations.

The term “temporary” shall mean not more than one construction season. All temporary construction materials must be removed from the stream and floodway within one year of their placement and the area returned to the conditions existing prior to the beginning of construction. Any desired subsequent or repetitive material placement shall not occur without the review and approval of the IDNR/OWR.

The temporary project shall be constructed such that it will not cause erosion or damage due to increases in water surface profiles to adjacent properties. For locations where there are structures in the upstream floodplain, the temporary project shall be constructed such that all water surface profile increases, due to the temporary project, are contained within the channel banks.

This permit does not authorize the placement or construction of any solid embankment or wall such as a dam, roadway, levee, or dike across any channel or floodway.

No temporary structure shall be placed within any river or stream channel until a registered professional engineer determines and documents that the temporary structure will meet the requirements of Special Condition Number 3 of this statewide permit. Such documentation shall include, at a minimum, confirmation that no buildings or structures will be impacted by the backwater induced by the temporary structure.

The permittee shall maintain records of projects authorized by this permit necessary to document compliance with the above condition.

Disturbance of vegetation shall be kept to a minimum during construction to prevent erosion and sedimentation. All disturbed areas shall be seeded or otherwise stabilized upon completion of the removal of the temporary construction.

Materials used for the project shall not cause water pollution as defined by the Environmental Protection Act (415 ILCS 5).

Any Development determined by IDNR/OWR to be located entirely within a flood fringe area shall be exempt from State Floodway permit requirements.

Other development activities not listed in 6(A) may be permitted only if:

permit has been issued for the work by IDNR/OWR (or written documentation is provided that an IDNR/OWR permit is not required), and

sufficient data has been provided to FEMA when nec-

Copies of IDNR/OWR statewide permits should be maintained by all local floodplain administrators. Copies can be obtained by calling or writing IDNR/OWR.

NOTE: *The floodways for a substantial number of streams in Illinois have not been identified on regulatory maps. Where no floodway has been identified, a state permit or “letter of permit not required” must be obtained prior to local permitting of any floodplain development activity.*

essary, and approval obtained from FEMA for a revision of the regulatory map and base flood elevation.

Section 7. Protecting Buildings.

In addition to the damage prevention requirements of Section 6 of this ordinance, all buildings located in the floodplain shall be protected from flood damage below the flood protection elevation. This building protection requirement applies to the following situations:

1. Construction or placement of a new building or addition to an existing building valued at more than one thousand dollars (\$1,000) or seventy (70) square feet.
2. Substantial improvements made to an existing building. Alteration shall be figured cumulatively (**pick either: "subsequent to the adoption of this ordinance", "during the life of the building" or "during a 10- year period"*). If substantially improved, the entire structure must meet the flood protection standards of this section.
3. Repairs made to a substantially damaged building. These repairs shall be figured cumulatively (**pick either: "subsequent to the adoption of this ordinance", "during the life of the building" or "during a 10-year period"*). If substantially damaged the entire structure must meet the flood protection standards of this section.
4. Structural alterations made to an existing building that increase the floor area by more than twenty percent (20%) or the market value by fifty percent (50%). If substantially improved, the entire structure must meet the flood protection standards of this section.
5. Installing a manufactured home on a new site or a new manufactured home on an existing site. (The building protection requirements do not apply to returning a manufactured home to the same site it lawfully occupied before it was removed to avoid flood damage).
6. Installing a travel trailer or recreational vehicle on a site for more than one hundred eighty (180) days per year, and
7. repetitive loss to an existing building as defined in Section 2(CC).

Residential or non-residential buildings can meet the building protection requirements by one of the following methods:

the building may be constructed on permanent land fill in accordance with the following:

- a. The lowest floor (including basement) shall be at or above the flood protection elevation.

*This section sets minimum development standards for buildings with **all** floodplains. This section should be the primary reference for local administrators in their regulation of building construction in the floodplain.*

The state model ordinance establishes a threshold to exclude buildings and improvements to existing buildings valued at less than \$1000 from the flood protection requirement. Although FEMA regulations do not provide such a threshold, the state model has adopted the \$1000 threshold to provide for a more realistic enforcement of the ordinance.

See definition of "substantial improvement" in Section 2(r).

IDNR/OWR recommends that structural alterations made to any existing building that increase the floor area by more than 20% meet the flood protection elevation requirement. This exceeds minimum FEMA requirements.

NFIP Requirements: 44C.F.R. 60.3(c)(2). See discussion on p. 40 **Local Floodplain Administrators Manual**.

IDNR/OWR recommends that structural alterations made to any existing building that increase the floor area by more than 20% meet the flood protection elevation requirement. This exceeds minimum FEMA requirements.

NFIP Requirements: 44C.F.R. 60.3(c)(2). See discussion on p. 38 **Local Floodplain Administrators Manual**.

NFIP Requirement: 44 C.F.R. 60.3(c)(3)

b. The fill shall be placed in layers no greater than six inches before compaction and should extend at least ten feet beyond the foundation before sloping below the flood protection elevation.

c. The fill shall be protected against erosion and scour during flooding by vegetative cover, riprap, or other structural measure.

d. The fill shall be composed of rock or soil and not incorporated debris or refuse material, and

e. the fill shall not adversely affect the flow of surface drainage from or onto neighboring properties and when necessary, stormwater management techniques such as swales or basins shall be incorporated.

2. The building may be elevated on solid walls in accordance with the following:

a. The building or improvements shall be elevated on stilts, piles, walls, crawlspace, or other foundation that is permanently open to flood waters.

b. The lowest floor and all electrical, heating, ventilating, plumbing, and air conditioning equipment and utility meters shall be located at or above the flood protection elevation.

c. If walls are used, all enclosed areas below the flood protection elevation shall address hydrostatic pressures by allowing the automatic entry and exit of flood waters. Designs must either be certified by a registered professional engineer or by having a minimum of one permanent opening on each wall no more than one (1) foot above grade with a minimum of two openings. The openings shall provide a total net area of not less than one (1) square inch for every one square foot of enclosed area subject to flooding below the base flood elevation, and

d. the foundation and supporting members shall be anchored, designed, and certified so as to minimize exposure to hydrodynamic forces such as current, waves, ice, and floating debris.

i. All structural components below the flood protection elevation shall be constructed of materials resistant to flood damage.

ii. Water and sewer pipes, electrical and telephone lines, submersible pumps, and other service facilities may be located below the flood protection elevation provided they are waterproofed.

iii. The area below the flood protection elevation shall be used solely for parking or building access and not later modified or occupied as habitable space, or

NFIP regulation: 44 C.F.R. 60.3(a)(3)(iv)

It is essential that throughout any construction periods that stringent flood-resistant methods and practices are taken to lessen the effects of flooding on a structure.

It is important that structures in flood prone areas are adequately anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.

Flood-resistant material includes any building product capable of withstanding direct and prolonged contact with floodwaters without sustaining significant damage. Prolonged contact means at least 72 hours. Significant damage is any damage requiring more than low-cost cosmetic repair (such as painting). All structural and non-structural building materials at or below the Base Flood Elevation (BFE) must be flood resistant.

NFIP Requirements: 44 C.F.R. 60.3(a)(3)(i), 60.3(a)(3)(ii) & 60.3(c)(5)

iv. in lieu of the above criteria, the design methods to comply with these requirements may be certified by a registered professional engineer or architect.

The building may be constructed with a crawlspace located below the flood protection elevation provided that the following conditions are met:

The building must be designed and adequately anchored to resist flotation, collapse, and lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.

Any enclosed area below the flood protection elevation shall have openings that equalize hydrostatic pressures by allowing for the automatic entry and exit of floodwaters. A minimum of one opening on each wall having a total net area of not less than one (1) square inch per one (1) square foot of enclosed area. The openings shall be no more than one foot above grade.

The interior grade of the crawlspace below the flood protection elevation must not be more than two (2) feet below the lowest adjacent exterior grade.

The interior height of the crawlspace measured from the interior grade of the crawl to the top of the foundations wall must not exceed four (4) feet at any point.

An adequate drainage system must be installed to remove floodwaters from the interior area of the crawlspace within a reasonable period of time after a flood event.

Portions of the building below the flood protection elevation must be constructed with materials resistant to flood damage, and

utility systems within the crawlspace must be elevated above the flood protection elevation.

Non-residential buildings may be structurally dry floodproofed (in lieu of elevation) provided a registered professional engineer or architect certifies that:

Below the flood protection elevation the structure and attendant utility facilities are watertight and capable of resisting the effects of the base flood.

The building design accounts for flood velocities, duration, rate of rise, hydrostatic and hydrodynamic forces, the effects of buoyancy, and the impact from debris and ice.

Floodproofing measures will be incorporated into the building design and operable without human intervention and without an outside source of electricity.

For crawlspace and flood vent information

*see FEMA Technical Bulletin 11-01; **Crawlspace Construction for Buildings Located in Special Flood Hazard Areas.** Found at FEMA.gov*

NFIP Regulation 60.3(c)(3)(ii).

Levees, berms, floodwalls and similar works are not considered floodproofing for the purpose of this subsection.

Manufactured homes or travel trailers to be permanently installed on site shall be:

Elevated to or above the flood protection elevation in accordance with Section 7(B), and

anchored to resist flotation, collapse, or lateral movement by being tied down in accordance with the rules and regulations for the Illinois Mobile Home Tie-Down Act issued pursuant to 77 Ill. Adm. Code § 870.

Travel trailers and recreational vehicles on site for more than one hundred eighty (180) days per year shall meet the elevation requirements of section 7(D) unless the following conditions are met:

The vehicle must be either self-propelled or towable by a light duty truck.

The hitch must remain on the vehicle at all times.

the vehicle must not be attached to external structures such as decks and porches

The vehicle must be designed solely for recreation, camping, travel, or seasonal use rather than as a permanent dwelling.

The vehicles largest horizontal projections must be no larger than four hundred (400) square feet.

The vehicle's wheels must remain on axles and inflated,

Air conditioning units must be attached to the frame so as to be safe for movement of the floodplain.

Propane tanks as well as electrical and sewage connections must be quick-disconnect and above the 100-year flood elevation.

The vehicle must be licensed and titled as a recreational vehicle or park model, and

must either:

entirely be supported by jacks, or

have a hitch jack permanently mounted, have the tires touching the ground and be supported by block in a manner that will allow the block to be easily removed by used of the hitch jack.

Garages, sheds or other minor accessory structures constructed ancillary to an existing residential use may be permitted provided the following conditions are met:

The garage or shed must be non-habitable.

NFIP Requirements: 44 C.F.R. 60.3(b)(8). The regulations for manufactured homes located in existing manufactured home parks may be made less restrictive in certain situations. Contact IDNR/OWR or FEMA for specific information.

NFIP Requirement:

44 C.F.R. 60.3(c)(14)

Travel trailers and R.V.'s are to meet the same elevation and anchoring requirements for "manufactured homes" in paragraph 60.3(c)(6) of the NFIP requirements.

NFIP Requirement: 44C.F.R. 60.3(c)(4). For discussion of detached garages and other non-habitable buildings see p. 39 of the **Local Floodplain Administrator's Manual**

The garage or shed must be used only for the storage of vehicles and tools and cannot be modified later into another use.

The garage or shed must be located outside of the floodway or have the appropriate state and/or federal permits.

The garage or shed must be on a single family lot and be accessory to an existing principle structure on the same lot.

Below the base flood elevation, the garage or shed must be built of materials not susceptible to flood damage.

All utilities, plumbing, heating, air conditioning and electrical must be elevated above the flood protection elevation.

The garage or shed must have at least one permanent opening on each wall not more than one (1) foot above grade with one (1) square inch of opening for every one (1) square foot of floor area.

The garage or shed must be less than ten thousand dollars (\$10,000) in market value or replacement cost whichever is greater or less than five hundred (500) square feet.

The structure shall be anchored to resist floatation and overturning.

All flammable or toxic materials (gasoline, paint, insecticides, fertilizers, etc.) shall be stored above the flood protection elevation.

The lowest floor elevation should be documented and the owner advised of the flood insurance implications.

Section 8. Subdivision Requirements

The (*insert name of the village or city governing board) shall take into account hazards, to the extent that they are known, in all official actions related to land management use and development.

New subdivisions, manufactured home parks, annexation agreements, planned unit developments, and additions to manufactured home parks and subdivisions shall meet the damage prevention and building protections standards of Sections 6 and 7 of this ordinance. Any proposal for such development shall include the following data:

1. The base flood elevation and the boundary of the floodplain, where the base flood elevation is not available from an existing study, the applicant shall be responsible for calculating the base flood elevation;
2. the boundary of the floodway when applicable, and

This section sets minimum subdivision design review and recording standards when subdivisions are located within a floodplain. It also provides guidance for other activities defined as "development" which may occur in a floodplain. NFIP Requirement: 44C.F.R. 60.1(c).

NFIP Requirement: 44C.F.R. 60.3(b)(3) only applies to subdivisions greater than 5 acres or 50 lots.

All new plats recorded must show the location of any floodplains and must be signed, sealed, and certified by an Illinois Registered Land Surveyor as per the requirements of Public Act 85-267.

3. a signed statement by a Registered Professional Engineer that the proposed plat or plan accounts for changes in the drainage of surface waters in accordance with the Plat Act (765 ILCS 205/2).

NFIP Minimum Requirement: 44 C.F.R. 60.3(a)(6)(ii)

Illinois requires more restrictive requirements for surface drainage under the Plat Act.

Streets, blocks lots, parks and other public grounds shall be located and laid out in such a manner as to preserve and utilize natural streams and channels. Wherever possible the floodplains shall be included within parks or other public grounds.

Section 9. Public Health and Other Standards

Public health standards must be met for all floodplain development. In addition to the requirements of Sections 6 and 7 of this ordinance the following standards apply:

This Section outlines the public health standards that are required in floodplain development.

No development in the floodplain shall include locating or storing chemicals, explosives, buoyant materials, flammable liquids, pollutants, or other hazardous or toxic materials below the flood protection elevation unless such materials are stored in a floodproofed and anchored storage tank and certified by a professional engineer or floodproofed building constructed according to the requirements of Section 7 of this ordinance.

NFIP Requirement: 44 C.F.R. 60.3(a)(4)(ii).

Public utilities and facilities such as sewer, gas and electric shall be located and constructed to minimize or eliminate flood damage.

NFIP Requirements:

Public sanitary sewer systems and water supply systems shall be located and constructed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters.

44 C.F.R. 60.3(a)(5) and 60.3(a)(4)

New and replacement on-site sanitary sewer lines or waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding. Manholes or other above ground openings located below the flood protection elevation shall be watertight.

NFIP Requirement:

44 C.F.R. 60.3(a)(6)(ii)

Critical Facilities shall be located outside of the floodplain. Where this is not practicable, Critical Facilities (as well as ingress and egress) shall be developed with the lowest floor elevation equal to or greater than the 500-year frequency flood elevation or structurally dry floodproofed to at least the 500-year frequency flood elevations.

All other activities defined as development shall be designed so as not to alter flood flows or increase potential flood damages.

See definition of "development" found in Section 2: Definitions.

Section 10. Carrying Capacity and Notification.

For all projects involving channel modification, fill, or stream maintenance (including levees), the flood carrying capacity of the watercourse shall be maintained.

In addition, the (*insert name of city or village) shall notify adjacent communities in writing thirty (30) days prior to the issuance of a permit for the alteration or relocation of the watercourse.

Section 11.. Variances.

Whenever the standards of this ordinance place undue hardship on a specific development proposal, the applicant may apply to the (*insert name of the elected or appointed board of appeals) for a variance. The (*insert the name of the elected or appointed board of appeals) shall review the applicant's request for a variance and shall submit its recommendation to the (*insert the name of the village or city governing board). The (*insert the name of the village or city governing board) may attach such conditions to granting of a variance as it deems necessary to further the intent of this ordinance.

No variance shall be granted unless the applicant demonstrates that all of the following conditions are met:

The development activity cannot be located outside the floodplain.

An exceptional hardship would result if the variance were not granted.

The relief requested is the minimum necessary.

There will be no additional threat to public health, safety or creation of a nuisance.

There will be no additional public expense for flood protection, rescue or relief operations, policing, or repairs to roads, utilities, or other public facilities.

The applicant's circumstances are unique and do not establish a pattern inconsistent with the intent of the NFIP, and

all other state and federal permits have been obtained.

The (*insert the name of the elected or appointed board of appeals) shall notify an applicant in writing that a variance from the requirements of the building protections standards of Section 7 that would lessen the degree of protection to a building will:

Result in increased premium rates for flood insurance up to twenty-five dollars (\$25) per one hundred dollars

Alterations of a watercourse are defined in the NFIP Policy index found at FEMA.gov. There are two requirements for maintaining the flood carrying capacity of an altered watercourse. The altered or relocated watercourse must have the same or greater capacity as the original watercourse. Additionally, once the alteration is made, the capacity of the altered or relocated watercourse must be maintained over time. 44 C.F.R. 60.3(b)(7).

If a development permit application proposes a stream alteration, the local official must notify adjacent communities, the Illinois Department of Natural Resources, and provide a copy to the FEMA Regional Office. If an adverse impact is suspected, the neighboring community will be able to voice its concerns prior to any modification. 44 C.F.R. 60.3(b)(6).

This section explains the procedures and criteria for granting a floodplain development variance.

NFIP guidelines: 44C.F.R. 60.6(a)(1-7).

The blanks should be filled with the title of the body reviewing requests for variances (e.g. planning commission, zoning board of appeals, etc.). These procedures should tie into any existing zoning or building code variance procedures.

Communities in the NFIP are required to maintain a record of all variance actions, including justification for their issuance, and report them to FEMA. FEMA may review variances and suspend a community from the NFIP if the review "indicates a pattern inconsistent with the objectives of sound floodplain management..."

Variances should be granted only in unique circumstances and thought should be given to each request to avoid setting a wrong precedent or pattern.

65 ILCS 5/11-13-4 and 5/11-13-5 establishes specific municipal zoning variance criteria.

(\$100) of insurance coverage;

increase the risk to life and property, and

require that the applicant proceed with knowledge of these risks and that the applicant acknowledge in writing the assumption of the risk and liability.

Variances to the building protection requirements of Section 7 of this ordinance which are requested in connection with reconstruction, repair, or alteration of a historic site or historic structure as defined in "Historic Structures", may be granted using criteria more permissive than the requirements of Sections 6 and 7 of this ordinance subject to the conditions that:

The repair or rehabilitation is the minimum necessary to preserve the historic character and design of the structure.

The repair or rehabilitation will not result in the structure being removed as a certified historic structure.

Section 12. Disclaimer of Liability.

The degree of protection required by this ordinance is considered reasonable for regulatory purposes and is based on available information derived from engineering and scientific methods of study. Larger floods may occur or flood heights may be increased by man-made or natural causes. This ordinance does not imply that development either inside or outside of the floodplain will be free from flooding or damage. This ordinance does not create liability on the part of the *(*insert the name of the village or city)* or any officer or employee thereof for any flood damage that results from proper reliance on this ordinance or any administrative decision made lawfully thereunder.

This section explains that this ordinance does not guarantee that flood damage will not occur, and that the municipality, county or enforcing official is not liable for decisions made lawfully under this ordinance

Section 13. Penalty.

Failure to obtain a permit for development in the floodplain or failure to comply with the conditions of a permit or a variance shall be deemed to be a violation of this ordinance. Upon due investigation, the *(*insert the title of the Official, Office or Agency, or Municipal Attorney)* may determine that a violation of the minimum standards of this ordinance exists. The *(*insert the title of the Official, Office or Agency, or Municipal Attorney)* shall notify the owner in writing of such violation.

If such owner fails after ten (10) days notice to correct the violation:

The *(*insert village or city name)* shall make application to the circuit court for an injunction requiring conformance with this ordinance or make such other order as the court deems necessary to secure compliance

This section explains the penalty for not abiding by this ordinance and explains what actions the enforcement official may take in seeking compliance.

List the individual responsible for administering the floodplain ordinance.

A community may wish to treat a violation as a misdemeanor in order to reinforce the necessity for compliance. The IDNR/OWR manual "Floodplain Compliance" provides assistance in enforcement matters.

The fine amounts are the minimum recommended by IDNR/OWR. Consideration should be given to increasing these suggested fine amounts based on the local potential for increased off-site damages and public health risks.

List the official responsible for administering the floodplain ordinance.

with the ordinance.

Any person who violates this ordinance shall upon conviction thereof be fined not less than fifty dollars (\$50) or more than seven hundred fifty (\$750) for each offense.

A separate offense shall be deemed committed upon each day during or on which a violation occurs or continues, and

the (**insert village or city name*) shall record a notice of violation on the title of the property.

The (**insert the title of the Official, Office or Agency, or Municipal Attorney*) shall inform the owner that any such violation is considered a willful act to increase flood damages and therefore may cause coverage by a Standard Flood Insurance Policy to be suspended.

The (**insert the title of the Official, Office or Agency, or Municipal Attorney*) is authorized to issue an order requiring the suspension of the subject development. The stop-work order shall be in writing, indicate the reason for the issuance, and shall order the action, if necessary, to resolve the circumstances requiring the stop-work order. The stop-work order constitutes a suspension of the permit.

No site development permit shall be permanently suspended or revoked until a hearing is held by the (**Board of Appeals*). Written notice of such hearing shall be served on the permittee and shall state:

The grounds for the complaint, reasons for suspension or revocation, and

the time and place of the hearing.

At such hearing the permittee shall be given an opportunity to present evidence on their behalf. At the conclusion of the hearing, the (**Board of Appeals*) shall determine whether the permit shall be suspended or revoked.

Nothing herein shall prevent the (**insert village or city name*) from taking such other lawful action to prevent or remedy any violations. All costs connected therewith shall accrue to the person or persons responsible.

Section 14. Abrogation and Greater Restrictions.

This ordinance repeals and replaces other ordinances adopted by the (**insert the name of the village or city governing board*) to fulfill the requirements of the National Flood Insurance Program including: (**insert date of prior floodplain ordinance*). However, this ordinance does not repeal the original resolution or ordinance adopted to achieve eligibility in the program. Nor does this ordinance repeal, abrogate, or impair any existing

This section repeals any prior NFIP ordinance that may have been in effect for the community. It does not however, override the original accord the community made with the NFIP. It also does not take priority over more restrictive laws set forth by the community.

easements, covenants, or deed restrictions. Where this ordinance and other ordinance easements, covenants or deed restrictions conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

Section 15. Severability.

The provisions and sections of this ordinance shall be deemed separable and the invalidity of any portion of this ordinance shall not affect the validity of the remainder.

This section explains that if one part of this ordinance is ruled to be invalid by the courts, the remainder of the ordinance stays in effect.

Section 16. Effective Date.

This ordinance shall be in full force and effect from and after its passage, approval, and publication as required by law.

Passed by the (**insert the name fo the village or city governing board*) of the (**insert village or city name*), Illinois, this (**insert date*) day of (**insert month*), 20(**insert year*).

This section establishes the date when the ordinance goes into effect and contains sections which the authorized officials must sign to approve the passage of the ordinance. Once an ordinance is adopted, a signed copy must be sent to:

The Illinois Department of Natural Resources, Office of Water Resources: State NFIP Coordinator, One Natural Resources Way, Springfield, IL 62702-1271

(Clerk)

Approved by me this (**insert date*) day of (**insert month*), 20(**insert year*).

(Mayor)

Attested and filed in my office this (**insert date*) day of (**insert month*), 20(**insert year*).

(Clerk)

APPENDICES

Glossary

A-Zone: See “Zone A”.

Anchoring: Special connections made to ensure that a building will not float off or be pushed off its foundation during a flood. Anchoring must also ensure that the structure will not be dislodged by debris.

Appeal: A request to higher authority such as a Board of Appeals or a City Council to overrule a permit denial because the applicant claims that the ordinance has been incorrectly interpreted.

Area of State Concern: That portion of floodplains where state permits are required. Communities that do not have identified floodways but do have floodplain areas where significant development pressure is occurring may ask IDNR/OWR to prepare an Area of State Concern Map for them.

Base Flood: The flood having a one percent chance of being equaled or exceeded in any given year (often called the 100-year or one percent chance flood)

BFE (Base Flood Elevation): The elevation of the crest of the base (or 100-year) flood.

Basement: Any fully enclosed area of a building below grade on all sides.

Best Available Data: The most recent hydraulic and hydrologic information to show what the 100-year flood elevations and floodplain boundaries are for a particular area. Typically, the best available data is obtained from a federal, state, or local source. In Illinois, the Illinois State Water Survey is the best source for this type of data.

Building: A structure that is principally above ground and is enclosed by walls and a roof including manufactured homes and prefabricated buildings. The term also includes recreational vehicles and travel trailers which are permanently installed on a site for more than 180 days.

Building Official: The person responsible for administering and enforcing a community's floodplain ordinance. Depending on the local ordinance, this person could be the city engineer, zoning administrator, building inspector, mayor, clerk, or other official.

CFR: Code of Federal Regulations. A master coding system to identify the federal agency regulations that have been published in the Federal Register. 44 CFR includes all the regulations published by the Federal

Emergency Management Agency.

Crawlspace: An enclosed area below the lowest elevated floor. By FEMA definition, a crawlspace cannot exceed 4 feet in height of which only 2 feet can be sub grade. The area must also have permanent openings and an interior drainage system.

Critical Facility: Any public or private facility which, if flooded, would create an added dimension to the disaster or would increase the hazard to life and health. Examples are public buildings, emergency operations and communications centers, health care facilities and nursing homes, schools, and toxic waste treatment, handling or storage facilities.

Cross Section: Survey information that records the dimensions of a channel and floodplain at right angles to flow.

CRS (Community Rating System): A program of the Federal Insurance Administration where communities who regulate floodplain areas above and beyond minimum NFIP requirements are rewarded for their efforts through reduced flood insurance premiums for the citizens of that community.

Datum: A point of reference used to insure that all elevation records are properly related. Many communities had their own datum developed before there was a national standard. All flood insurance studies currently use National Geodetic Vertical Datum (NGVD) .

Development: Any man-made change to the ground that may affect flood flows. Development includes buildings, filling, channel changes, dredging, grading, excavating and storage of materials. A detailed description of development is found in Chapter 6 of this manual.

Discharge: The amount of water that passes a point. Discharge is usually measured in cubic feet per second. For flood studies the peak flood discharge is the greatest amount of water that will pass a point at the crest of the flood.

Elevation Certificate: A form supplied by the Federal Emergency Management Agency (FEMA) and used to document the lowest floor elevation of a building.

Federal Register: A daily publication of the federal government used to publicize federal agencies' rules.

FEMA: Federal Emergency Management Agency. FEMA is the federal Agency which administers the NFIP.

FHBM: See “Flood Hazard Boundary Map”.

FIA: Federal Insurance Administration. FIA is the part of FEMA which is responsible for the NFIP.

FIRM: See “Flood Insurance Rate Map”. **FIS:** Flood Insurance Study. A booklet which provides detailed in-

formation on a community's flood hazard areas. The FIS normally includes topographic information, floodplain and floodway data charts, study information, and stream profiles.

Flood Hazard Boundary Map (FHBM): An approximate NFIP map produced for communities that are not in the regular program or communities that have limited development potential.

Flood Insurance Rate: The map provided to communities in the Regular Phase of the NFIP. It delineates a Special Flood Hazard Area or floodplain where regulations apply. FIRMs often provide the base flood elevations at specific sites.

Flood Mitigation Assistance Program (FMAP) - A FEMA program available to produce mitigation plans and help mitigate the structures from future flood losses.

Floodplain: Land areas subject to flooding.

Floodproofing: Protection measures made to a building that is not elevated above the flood level to ensure that floodwaters do not damage it. Dry floodproofing consists of ensuring that the walls and floor are watertight and capable of withstanding hydrostatic pressures and hydrodynamic forces. Wet floodproofing permits water to enter the building and seek its own level to alleviate hydrostatic pressure.

Floodway: The channel of a river and the portion of the floodplain that carries most of the flood. Regulations require that the floodway be kept open so that flood flows are not obstructed or diverted onto other properties.

Floodway Data Table: The table provided in the flood insurance study which provides detailed information for each cross section on streams studied in detail.

404 Permit: A permit required by Section 404 of the Clean Water Act to protect rivers and adjacent wetlands from being filled. This permit program is administered by the U.S. Army Corps of Engineers.

FPE: Flood Protection Elevation. The elevation to which a building must be protected from flood damage through elevation or floodproofing. In Illinois, the FPE is usually the 100 year flood elevation plus one foot of additional freeboard. Communities are encouraged to adopt higher flood protection elevations where appropriate.

Flood Fringe: The part of the floodplain outside of the floodway. State permits are not required for development in flood fringes.

Freeboard: An extra margin of safety added to the base flood elevation to protect structures from waves, debris, or other unpredictable hazards that accompany the base flood. The base flood elevation plus the freeboard

equals the flood protection elevation.

Hazard Mitigation Grant Program (HMGP): A FEMA program available to communities following a federally declared disaster to help mitigate structures from future flood losses. HMGP typically pays 75% of the costs associated with mitigation projects. State or local governments provide the matching 25%.

Hydraulics: The study of moving water. The hydraulic analysis in a flood insurance study calculates how high and how fast a flood discharge flows.

Hydrodynamic Forces: The forces on a structure from current, waves, debris, ice, etc.

Hydrology: The science dealing with the waters of the earth. A hydrologic study calculates flood discharges.

Hydrostatic Pressure: The pressure standing water places on the walls and floor of a structure. Hydrostatic pressure of 3-4 feet of standing water can collapse walls or buckle basement floors.

IDNR/OWR: Illinois Department of Natural Resources/Office of Water Resources.

ILCS: Illinois Compiled Statutes.

Increased Cost of Compliance (ICC): A FEMA program available to individual insurance policy holders after a flood claim to help mitigate the structure from future flood losses. Up to \$30,000 of ICC funds can be used to floodproof, relocate, elevate, or demolish a flood damaged structure.

LOMA: Letter of Map Amendment. A LOMR typically involves a parcel of land with is naturally higher (no fill) than the base flood and was inadvertently included in the floodplain. FEMA will issue a LOMA for a structure or parcel of land, thereby waiving the mandatory flood insurance purchase requirements of most lending institutions.

LOMR: Letter of Map Revision. FEMA will issue a LOMR when changes to the effective floodplain map such as floodplain boundaries, floodway or base flood elevations have been made. A LOMR typically involves some sort of physical modification of the floodplain.

Lowest Floor: The lowest floor of the lowest enclosed area (including basement) of a building. An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor provided such enclosure is built in accordance with the floodplain ordinance.

NFIP: National Flood Insurance Program.

NGVD: National Geodetic Vertical Datum; the national datum used by the National Flood Insurance Program. NGVD is based on mean sea level and also has been

called “1929 Mean Sea Level.”

Ponding: A flooding condition caused when rain runoff drains to a location that has no ready outlet. Ponding water usually stands until it is able to seep into the ground. Ponding is a common problem in leveed areas, flat areas, and in communities where construction of streets and other development has blocked the natural outlets.

Profile: A graph showing the water surface elevations of a flood at any particular location along the stream.

“Q”: An abbreviation used by engineers to stand for discharge.

Recreational Vehicle (R.V.): Means a vehicle which is:

- (a) built on a single chassis;
- (b) 400 square feet or less when measured at the largest horizontal projection;
- (c) designed to be self-propelled or permanently towable by a light duty truck; and
- (d) designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

Repetitive Loss: Flood related damages sustained by a structure on two separate occasions during any ten year period for which the cost of repairs at the time of each such flood event on the average equals or exceeds 25% of the market value of the structure before the damage occurred.

Registered Professional Engineer: An engineer who has been tested and registered by the Illinois Department of Registration and Education.

Riverine: Of or produced by a river. Riverine floodplains have readily identifiable channels and are regulated differently than floodplains caused by ponding, sheet flow or lake shore flooding.

SFHA: Special Flood Hazard Area. The term used by the National Flood Insurance Program for the floodplain identified on the flood insurance maps.

Section 1316: A section in the National Flood Insurance Act of 1968 that authorizes local officials to request that FIA deny flood insurance coverage on a building built contrary to a local ordinance.

Substantial Damage: Damage of any origin (flood, fire, earthquake, etc.) sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

Many communities track these damages cumulatively.

Substantial Improvement: Means any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the “start of construction” or the improvement. This term includes structures which have incurred “substantial damage”, regardless of the actual repair work performed. If a building is substantially improved, then the entire building must be protected from the base flood.

Topographic Map: A map showing elevation contour lines.

Travel Trailer: See “Recreational Vehicle”

Uplift: Hydrostatic pressure placed on a floor as water below the floor tries to rise.

Use Permit: A permit issued after a development project is complete and the property has passed all the necessary inspections. Depending on the local ordinance provisions, a building cannot be occupied nor can a site be used unless a use permit or a certificate of use and occupancy is issued by the building official.

Variance: A request to be relieved of one or more ordinance requirements because the ordinance affects the property in a unique and special way.

Zone A: The 100-year floodplain as shown on NFIP maps. There are five types of A Zones:

A Floodplains where no base flood elevation data is provided.

AE Floodplain where base flood elevations are provided.

A# Numbered A zones (e.g. A7 or A14), riverine floodplains where a flood insurance study has provided base flood elevations.

AO Floodplain with sheet flow or shallow flooding, base flood depths are provided. AH Floodplain characterized by shallow ponding, base flood depths are provided.

Zone B: The area depicted on Flood Insurance Rate Maps as between the limits of the 100-year and 500- year floods. As a rule, B-zones are not regulated in Illinois. B zones do not appear on newer floodplain maps.

Zone C: Areas of minimal flooding located outside of both the 100-year and 500-year flood zones. C zones do not appear on newer floodplain maps.

Zone X: Areas determined on newer floodplain maps to be outside of both the 100-year and 500-year flood zones (used instead of C-zones on newer FEMA maps)

(SAMPLE)
Village of _____

I. LOCATION OF BUILDING

OWNER'S NAME _____ DATE _____
ADDRESS _____
BUILDER'S NAME _____
ADDRESS/PHONE _____
BUILDING LOCATION _____

II. TYPE AND COST OF BUILDING

A. COMPLETED BUILDING VALUE \$ _____

B. TYPE OF IMPROVEMENT

- 1. New Building
- 2. Addition
- 3. Alt. Or Remod.
- 4. Repair-Replace
- 5. Demo. Res-Comm
- 12. Other _____

D. PROPOSED USED (for demo, use most recent use)

- | | |
|-----------------|------------------|
| RESIDENTIAL | COMMERCIAL. |
| 8. One Family | 13. Industrial |
| 9. Multi-Fam. | 14. Office |
| 10. Hotel-Motel | 15. Retail |
| 11. Gar-Carport | 16. Religious |
| | 17. School |
| | 18. Garage-Serv. |

Sta. _____

C. OWNERSHIP

- 6. Private (indiv. Corp., et
- 7. Public (fed, state, local)

- 19. Tank Tower
- 20. Other _____

III. CHARACTERISTICS OF BUILDING

E. TYPE FRAME

- 21. Wood
- 22. Masonry
- 23. Steel
- 24. Concrete
- 25. Other _____

G. SEWAGE DISPOSAL

- 30. Public
- 31. Private

J. DIMENSIONS

- 36. No. Stories _____
- 37. Sq. Ft. (total all floors) _____
- 38. Lot Size _____

F. TYPE HEAT

- 26. Gas
- 27. Oil.
- 28. Elec.
- 29. Other _____

I. No. PARK SPACES

- 34. Inside _____
- 35. Outside _____

K. RESIDENTIAL ONLY

- 39. No. Bedrooms ____
- 40. Baths _____
Full _____
Partial _____

IV. FLOODPLAIN INFORMATION

- 41. In 100-year floodplain Yes _____ No _____ (if yes, complete 44-48)
- 42. In floodway Yes _____ No _____ (if yes, complete 45)
- 43. State permit obtained Yes _____ No _____
- 44. Ground elevation _____
- 45. 100-year flood elevation _____
- 46. Elevation of lowest floor (including basement) _____

V. DRAW SITE PLAN USING 1" = 20' (use additional page if needed)

VI. ADMINISTRATION

47. Building Permit Fee \$ _____

48. I/We the undersigned, being the owner(s) in fee of the described property certify that the proposed work will comply with all applicable laws, codes, ordinances, and regulations of the village.

Signature of Applicant/

Owner _____

Address/

Phone _____ Date _____

49. I/We certify that the proposed work is authorized by owner of record and that I/We agree to comply with all applicable laws, codes, ordinances and regulations of the village.

Signature of Contractor/

Builder _____

Address/

Phone _____ Date _____

50. LOCAL ADMINISTRATOR'S SIGNATURE _____

Date _____

(SAMPLE)

APPLICATION FOR PERMIT TO DEVELOP IN A FLOODPLAIN AREA

The undersigned hereby makes application for a permit to develop in a designated floodplain area. The work to be performed is described below and in attachments hereto. The undersigned agrees that all such work shall be done in accordance with the requirements of the Floodplain Ordinance and with all other applicable local, state, and federal regulations. This application does not create liability on the part of the _____ or any officer or employee thereof for any flood damage that results from reliance on this application or any administrative decision made lawfully thereunder.

Owner's Name: _____ Builder's Name: _____

Address: _____ Address: _____

Telephone # _____ Telephone # _____

A. DESCRIPTION OF WORK. COMPLETE FOR ALL WORK.

1. Proposed Development Description:

_____ New Building	_____ Manufactured Home
_____ Improvement to Existing Building	Other _____
_____ Filling	_____ Fence

2. Size and location of proposed development (attached drawing):

3. Is the proposed development in an identified floodway (or floodplain with no identified floodway)?

Yes _____ No _____

4. If yes, has a state permit been obtained and attached?

Yes _____ No _____

5. As identified on the floodplain map what is the zone and panel number of the area of the proposed development?

Zone _____ Panel # _____

B. COMPLETE FOR NEW BUILDINGS ONLY:

1. Base Flood Elevation at site? _____ feet m.s.l.

2. Required Lowest floor elevation (including basement)? _____ feet m.s.l.

3. Elevation to which all attendant utilities, including all heating and electrical equipment will be protected from flood damage. _____ m.s.l.

C. COMPLETE FOR ALTERATIONS, ADDITIONS, OR IMPROVEMENTS TO EXISTING STRUCTURES ONLY:

1. What is the estimated market value of the existing structure? \$ _____
2. What is the cost of the proposed construction? \$ _____
3. If the cost of the proposed construction equals or exceeds 50% of the market value of the structure or 20% of the total floor area, then the substantial improvement provisions shall apply.

D. COMPLETE FOR NON-RESIDENTIAL FLOODPROOFED CONSTRUCTION ONLY:

1. Type of floodproofing method? _____

2. If the structure is floodproofed the required floodproofing elevation is _____ feet m.s.l.
3. Certification by registered professional engineer or architect attached? Yes _____ No _____

E. COMPLETE FOR SUBDIVISIONS AND PLANNED UNIT DEVELOPMENTS ONLY:

1. Will the subdivision or other development contain 50 lots or 5 acres? Yes _____ No _____
2. If yes, does the plat or proposal clearly identify base flood elevations? Yes _____ No _____

Applicant's Signature _____ Date _____, 20____

ADMINISTRATION

-
1. Permit fee \$ _____ Paid _____, 20____
 2. Permit issued _____, 20____
 3. Work inspected by _____ Date _____, 20____
 4. Certificate of compliance for as-built lowest floor elevation issued on _____, 20____
Elevation Certificate attached? Yes _____ No _____
As-Built Lowest Floor Elevation _____ - feet m.s.l.
 5. Permit denied _____, 20____
Reason _____

6. Local Administrator Signature _____

Date _____, 20____

(SAMPLE)

THIS PERMIT MUST BE POSTED IN PLAIN VIEW OF A PUBLIC ROAD

PERMIT

PERMIT NO. _____
Project _____
Location _____
Owner _____
Date Issued _____
By _____ Phone _____
BUILDING OFFICIAL

First Inspection:	Date: _____	Inspector: _____
Second Inspection:	Date: _____	Inspector: _____
Final Inspection:	Date: _____	Inspector: _____

Instructions:

1. Three inspections will be made. They should be requested in advance to allow sufficient time for scheduling by the Building Official.
2. Changes in plans or specifications as stated in original application shall not be made without approval of the Building Official.
3. Failure to comply with the above provisions and the provisions of Ordinance # _____ may result in the permit being revoked and the violator being fined not less than \$25.00 and no more than \$200.00 for each day of violation.

LOCAL FLOODPLAIN PERMITTING PROCEDURES

A STEP-BY-STEP GUIDE

STEP #1: IS IT FLOODPLAIN DEVELOPMENT?

Check to see if the project meets the definition of “development”

Development includes:

- construction, reconstruction, or placement of a building valued at over \$1,000;
- additions to existing buildings;
- substantial damage to existing buildings;
- substantial improvements to existing buildings
- manufactured homes
- travel trailers or RV's on site for more than 180 days;
- drilling, mining, filling, dredging, excavating, paving or grading;
- construction or erection of levees, dams, walls, or fences;
- storage of materials (including gas or liquid storage tanks);
- any other activity that might change the direction, height, or velocity of flood waters.

Note As a general rule of thumb, anything which alters the natural topography of the floodplain needs a permit review. Development does not include: minor maintenance of existing buildings and facilities, resurfacing roads, gardening, plowing, and similar agricultural practices that do not involve filling, grading, or construction or levees or berms.

STEP #2: FLOODPLAIN DETERMINATION

Check to see if the development site is in the floodplain. Refer to the Flood Insurance Rate Map. If the project site is obviously outside of the shaded A-Zone, floodplain regulations do not apply. If the project site is within the shaded A-Zone or is a borderline question, move on to step #3.

STEP #3: FLOODWAY DETERMINATION

Check to see if the development site is in the floodway. Refer to the Flood Insurance Rate Map or Flood Boundary and Floodway Map for the community.

If the project site is obviously outside of the floodway, proceed to step #4

If the project site is within the floodway, is borderline, or is within a floodplain where floodways have not been delineated. **STOP NOW!** State permits are required prior to local permit review.

Have the applicant contact IDNR/OWR for permit guidance. Do not issue local permits until the applicant brings in verification that state review and approval has taken place.

Note Certain projects are authorized by IDNR/OWR Statewide Permits. These Statewide Permits provide construction criteria for specific projects. If the project meets the terms and conditions, no additional IDNR/OWR review is necessary. A complete listing of Statewide Permits can be found at www.dnr.state.il.us/owr/resman/permitprogs or by calling IDNR/OWR for information.

STEP #4: LOCAL PERMIT APPLICATION

Have the owner fill out a local permit application.

A location or plat map of the site should be attached to every application. Plans of the proposed development should also be attached showing existing and proposed conditions, including all appropriate, measurement, dimensions and elevations.

STEP #5: BUILDINGS

Check to see if the project includes a new building, substantial improvement or substantial damage of an existing building.

A “building” is a structure that is principally above ground and is enclosed by walls and a roof including manufactured homes and prefabricated buildings. The term also includes recreational vehicles and travel trailers permanently installed on site.

“Substantial Improvement” means any reconstruction, rehabilitation, addition, or improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the improvement or repair is started, “Substantial improvement” is considered to occur when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure. The term does not, however, include either

(1) any project for improvement of a structure to comply with existing state or local health, sanitary, or safety code specifications which are solely necessary to assure safe living conditions or

(2) any alteration of a structure listed on the National Register of Historic Places or the Illinois Register of Historic Places.

Substantial Damage” means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damage condition would equal or exceed 50% of the market value of the structure before the damage occurred regardless of actual repair work performed. Volunteer labor and materials must be included in this determination. Substantial damage is often tracked cumulatively.

If the project meets any of these definitions, proceed to step 6.

If the project does not meet the definition of a building, proceed to step 9.

STEP #6: BASE FLOOD ELEVATIONS

Obtain the base flood elevation at the project site. Flood elevations can be obtained from several sources:

1. From the Flood Insurance Rate Map; or
2. From the Flood Profile in the Flood Insurance Study.

If these two sources do not exist:

3. Obtain the base flood elevation from a federal, state, or local source (commonly called “best available information”). In Illinois, the best source for this information is the Illinois State Water Survey. If there is no flood information available from these sources:

4. Require the applicant to hire an engineer and determine the base flood elevation.

A permit cannot be reviewed unless the flood protection elevation at the site is known.

STEP 7: LOWEST FLOOR ELEVATIONS

Review the construction plans to make sure that the lowest floor (including basement) of the proposed building is at or above the flood protection elevation. In most Illinois communities, the flood protection elevation is one foot above the base flood elevation. Building protection can be done by one of four methods:

1. Elevation on fill. This is the cheapest alternative if flood depths are relatively shallow. The following conditions must be met:

- the top of the fill must be at or above the flood protection elevation;

- the fill must be properly compacted;
- the fill must be protected from erosion and scour
- The fill must not cause drainage or flow on to neighboring properties.

2. Elevating on fully enclosed lower areas. This alternative is popular when flood depths are a bit higher and the owner wants to utilize the lower area. The following conditions must be met:

- materials used below the lowest floor are flood resistant;
- all electrical, heating, ventilating, plumbing and air condition equipment and utility meters must be located above the flood protection elevation;
- all water and sewer pipes, electrical and telephone lines located below the flood elevation are waterproof;
- all on-site waste disposal systems are designed to prevent discharge into flood waters;
- if walls are used, they must have permanent openings no more than one foot above grade (at least one square inch of openings for every square foot of enclosed area).
- the enclosed lower area can be used only for parking, minimal storage, or building access and not modified later into habitable space.

3. Elevating on stilts, piles, or poles. The alternative is necessary when flood depths are extreme or the structure is located within a floodway. In addition to all of the conditions listed above in #2, the following additional conditions must be met:

- the structure should be properly anchored to resist floatation or damage from flood velocity or debris.

4. Floodproofing. This is only an option for NON-RESIDENTIAL BUILDINGS. The plans for a floodproofed building must be prepared by a registered engineer who also must sign and seal the design. The certification must ensure that the structure will remain water tight (floodproofed) to at least the flood protection elevation. A FEMA Floodproofing Certificate is required.

Once you are satisfied that the design will meet the ordinance requirements and that the building will be free from flood damage, the permit can be issued. Make sure that the plans and any other documentation are made part of the application and maintained in your records.

STEP #8: INSPECTIONS

Make site inspections to ensure that the project is built according to the permitted plans. Document the final

as-built lowest floor elevation on either an NFIP Elevation Certificate or on a local elevation certification.

STEP #9: OTHER DEVELOPMENT ACTIVITIES

Other development activities must be designed so as not to alter flood flows or divert waters.

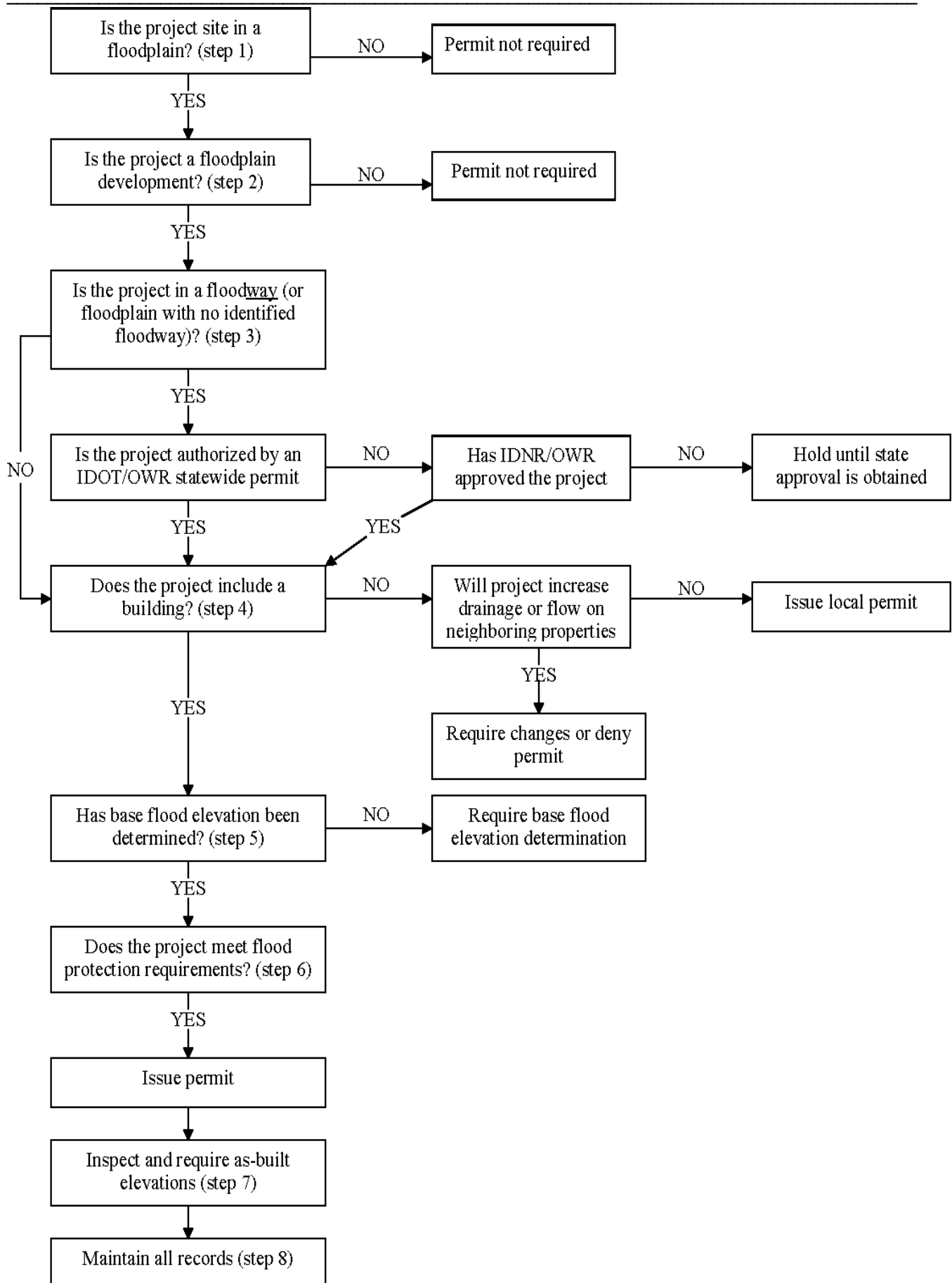
Inspect the site and look at the development activity. Ensure that it will not cause increased flooding onto neighboring property. This is especially important if the activity involves filling, fences, wall, levees, or berms. If the activity includes any electrical components, ensure that they are elevated above the flood protection elevation. IF the project includes any gas or liquid storage tanks, they too should be elevated or floodproofed.

STEP #10: MAINTAIN RECORDS

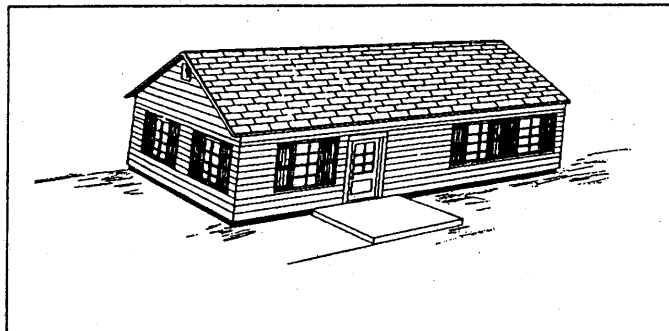
Maintain all records....even for completed or denied projects.

FOR ASSISTANCE

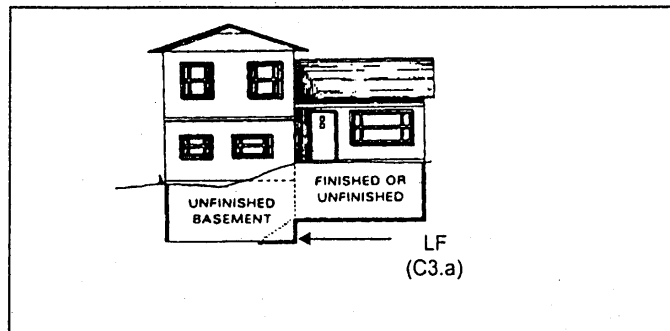
Illinois Department of Natural Resources/Office of Water Resources
(217) 782-3863
Federal Emergency Management Agency
(312) 408-5500



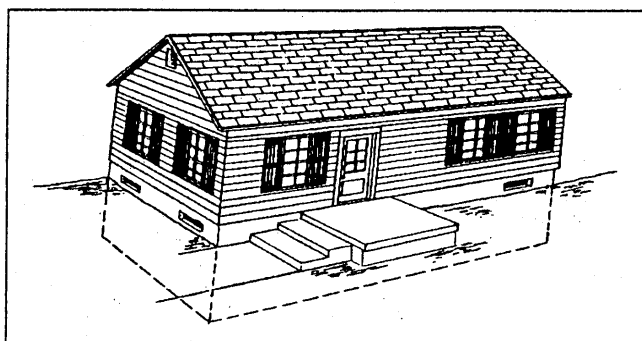
LOWEST FLOOR ELEVATIONS



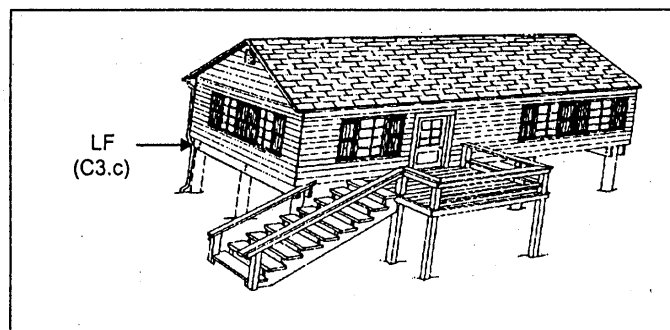
1. One or two story slab-on-grade



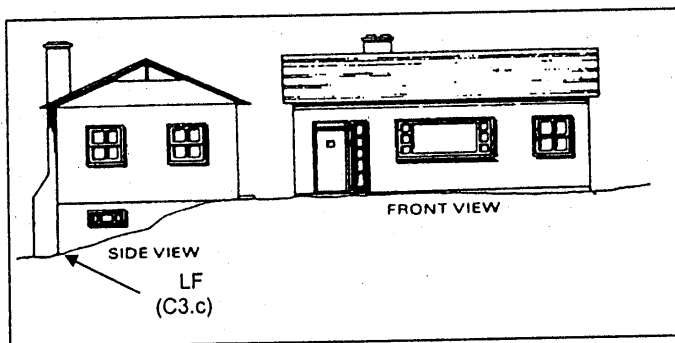
5. Split level with lowest level below grade on all sides



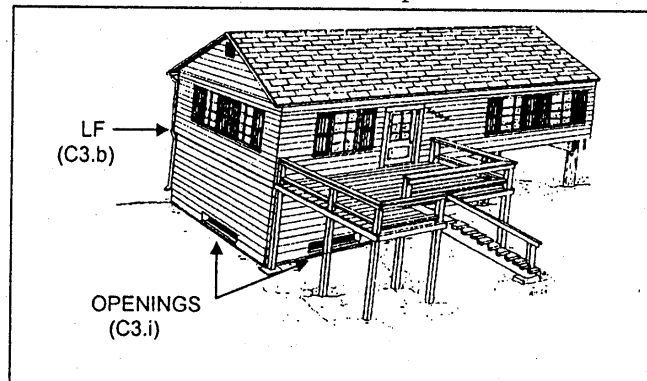
2. One or two story with basement



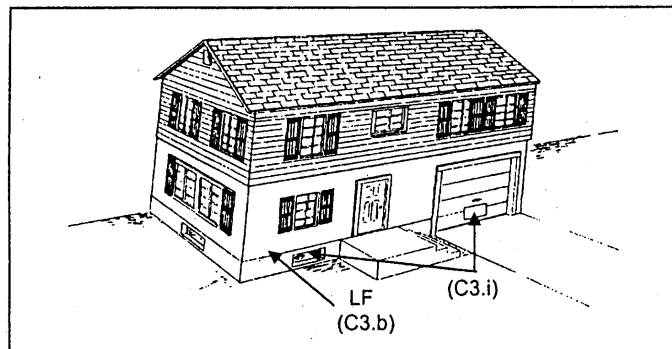
6. Elevated with lower level open.



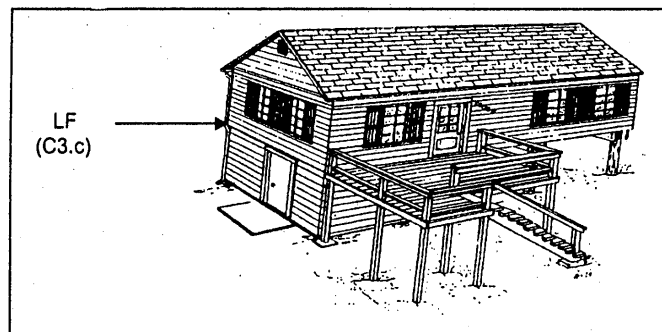
3. Walkout basement



7. Enclosed lower area **with** openings



4. Crawlspace



8. Enclosed lower area **without** openings

Variance and Appeal Record

A variance is a waiver of one or more of the specific standards of the floodplain ordinance. Variance requests should be considered very carefully. Once granted, a variance can establish a dangerous precedent. Therefore, a variance should be granted only for a unique situation on a specific site. Under no circumstance should the granting of variances establish a pattern that is inconsistent with the intent of the floodplain regulations. Such a pattern could result in the community's suspension from the National Flood Insurance Program (NFIP).

Name of Applicant: _____

Property Address: _____

Type of structure and intended use: _____

1. Is structure located in the floodway?

If no, continue.

If yes, proceed with caution but only if State and Federal permits have been obtained.

The variance applicant must meet state and federal floodway permit requirements. The applicant should have a state permit or a "permit not required letter" from the Illinois Department of Natural Resources/Office of Water Resources. If the applicant does not have this documentation, DO NOT grant the variance.

2. Can the development be located outside of the floodplain?

If yes, then the variance should not be granted.

If no, continue.

Every effort must be taken to ensure that the development does not take place in the floodplain. This may involve relocating the actual building site on the parcel or revising construction plans to minimize the chances of flooding. In some cases, this may involve using a separate parcel that is not located in a floodplain.

Explain why the development cannot be located outside of the floodplain _____

3. Has the applicant shown that there will be no additional threats to public safety, cause additional public expense, create nuisances, cause fraud or victimization of the public or conflict with existing laws or ordinances?

If no, then the variance should not be granted.

If yes, then continue.

Any building which is permitted below the flood protection elevation has an increased risk of flood damage. The building will add to the local government responsibilities for many years. Future owners of the property and the community as a whole are subject to all the cost, inconvenience, danger, and suffering that those increased flood risks may bring. In addition, future owners may purchase the property and be unaware that it is subject to flooding. Potential public expenses such as rescue costs, utility shut off costs, employee overtime, fuel costs, and road damage are all common during flood events.

Explain why the development will not increase flood heights, create additional threats to public safety, or cause additional public expense: _____

4. Has the applicant shown that the requirements of the floodplain ordinance will create an exceptional hardship?

If no, then the variance should not be granted.

If yes, continue.

The hardship that would result from failure to grant a requested variance must be exceptional, unusual, and peculiar to the property involved. Economic or financial hardship, inconvenience, aesthetic considerations, physical handicaps, personal preferences, the disapproval of one's neighbors, or homeowners association restrictions DO NOT, as a rule, qualify as exceptional hardship. As "heartless" and difficult as it may be, only physical characteristics and not personal matters (including additional cost) should be considered.

Please document what the exceptional hardship is: _____

5. Do the conditions of the proposed variance provide the maximum practical flood protection to the proposed construction?

The variance board should consider every available means to ensure that the structure is not susceptible to flooding. This may involve partially or fully elevating the structure, dry floodproofing the building, raising all utilities to or above the base flood elevation, using flood resistant materials, designing openings for water to flow through the structure, or using watertight sealant.

What is the applicant required to do in order to provide the maximum practical flood protection?

6. Is the requested variance or exception for the construction or restoration of a structure listed on the National Register of Historic Places or the State Historic Register?

If no, continue

If yes, Attach a letter or appropriate documentation from either agency that shows that structure is an historic building.

IF a variance is granted, the community is required to notify the applicant in writing that a variance will lessen the degree of protection and will:

7. Increase the risk to life and property.

When flooding does occur, many people will look to place the blame on others and attempt some sort of compensation through liability. Any variance applicant should be made fully aware that they are located in a documented flood hazard area and assume all of the risks.

8. Result in increased premium rates for flood insurance up to \$25.00 for \$100.00 of coverage.

Flood insurance for non-compliant structures is VERY expensive. Flood insurance costs may be so high that the owner will be unable to afford coverage.

Flood Insurance is required for any direct or federally insured loan. Although the present applicant may not be taking out a loan or want flood insurance, any potential future buyer will likely be required to carry flood insurance. The cost of the required flood insurance will make the home very difficult to sell.

Lastly, without flood insurance the homeowner may not be eligible for disaster assistance. Chances are high that if the structure is seriously damaged during flood, the result may be an abandoned or poorly repaired building creating an eyesore in your community.

AS AN APPLICANT REQUESTING A VARIANCE TO BUILD A STRUCTURE WITH THE LOWEST FLOOR ELEVATION BELOW THE BASE FLOOD ELEVATION (100-YEAR), THE UNDERSIGNED HEREBY ACKNOWLEDGES THAT THE REDUCED FLOOD ELEVATION WILL RESULT IN INCREASED PREMIUM RATES FOR FLOOD INSURANCE UP TO AMOUNTS AS HIGH AS \$25 PER \$100 OF INSURANCE COVERAGE, AND THAT CONSTRUCTION BELOW THE BASE FLOOD LEVEL INCREASES RISKS TO LIFE AND PROPERTY.

Applicant's Signature

Date

RECORD OF VARIANCE ACTIONS

Variance request submitted to _____ on
(community and appeal board)

(date)

In accordance with the criteria and guidelines of the floodplain regulations in Ordinance
No. _____ the _____ of _____
(appeal board) (community name)

hereby [] approves, [] denies the above request for variance.

By: _____, _____
(signature) (title)

(date)

Decisions of the board: _____

Special provisions of Variance Approval: _____

Administrator's Signature

Date

NON-CONVERSION AGREEMENT FOR ENCLOSURES BELOW THE BASE FLOOD ELEVATION

This DECLARATION made this ____ day of _____, 20__, by _____
_____ ("Owner") having an address at _____
_____.

WITNESSETH:

WHEREAS, the Owner is the record owner of all that real property located at _____
_____ in the City of _____ in the County of _____
_____, designated in the Tax Records as _____.

WHEREAS, the Owner has applied for a permit to place a structure on that property that has an enclosed area below the base flood elevation constructed in accordance with the requirements of Article _____ Section _____ of the Floodplain Management Ordinance of _____ ("Ordinance") and under Permit Number _____ ("Permit").

WHEREAS, the Owner agrees to record this DECLARATION and certifies and declares that the following covenants, conditions and restrictions are placed on the affected property as a condition of granting the Permit, and affects rights and obligations of the Owner and shall be binding on the Owner, his heirs, personal representatives, successors, future owners, and assigns.

UPON THE TERMS AND SUBJECT TO THE CONDITIONS, as follows:

The structure or part thereof to which these conditions apply is:

1. At this site, the Base Flood Elevation is _____ feet above mean sea level, National Geodetic Vertical Datum.
2. Enclosed areas below the Base Flood Elevation shall be used solely for parking of vehicles, limited storage, or access to the building.
3. All interior walls, ceilings and floors below the Base Flood Elevation shall be constructed of flood resistant materials.
4. Mechanical, electrical or plumbing devices shall not be installed below the Base Flood Elevation.
5. The walls of the enclosed areas below the Base Flood Elevation shall be equipped and remain equipped with permanent flow-thru openings as shown on the Permit.
6. The jurisdiction issuing the Permit and enforcing the Ordinance may take any appropriate legal action to correct any violation. Any alterations or changes from these conditions also may render the structure uninsurable or increase the cost for flood insurance.
7. A duly appointed representative of the City is authorized to enter the property for the purpose of inspecting the exterior and interior of the enclosed area to verify compliance with this Declaration. Such inspections will be conducted upon due notice to the Owner and , generally, only once each year. More frequent inspections may be conducted if a violation of the Permit is indicated.

8. Other conditions:

In witness whereof the undersigned set their hands and seals this _____ day of _____, 20 ____.

_____ (Seal)	_____ (Seal)
Owner	Witness



FEMA

NATIONAL FLOOD INSURANCE PROGRAM

ELEVATION CERTIFICATE

AND

INSTRUCTIONS

NATIONAL FLOOD INSURANCE PROGRAM

ELEVATION CERTIFICATE

PAPERWORK REDUCTION ACT NOTICE

Public reporting burden for the Elevation Certificate is estimated to average 3.5 hours per response. Burden means the time, effort, or financial resources expended by persons to generate, maintain, retain, disclose, or provide information to the Federal Emergency Management Agency (FEMA). You are not required to respond to the collection of information unless a valid OMB control number is displayed in the upper right corner of the form. You may send comments regarding the accuracy of the burden estimate and any suggestions for reducing the burden to: U.S. Department of Homeland Security, Federal Emergency Management Agency, Mitigation Division, 500 C Street SW, Washington DC 20472, Paperwork Reduction Project (1660-0008). NOTE: Do not send your completed form to this address. To obtain or retain benefits under the National Flood Insurance Program (NFIP), you must respond to this collection of information.

PURPOSE OF THE ELEVATION CERTIFICATE

The Elevation Certificate is an important administrative tool of the National Flood Insurance Program (NFIP). It is to be used to provide elevation information necessary to ensure compliance with community floodplain management ordinances, to determine the proper insurance premium rate, and to support a request for a Letter of Map Amendment (LOMA) or Letter of Map Revision based on fill (LOMR-F).

The Elevation Certificate is required in order to properly rate post-FIRM buildings, which are buildings constructed after publication of the Flood Insurance Rate Map (FIRM), located in flood insurance Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO. The Elevation Certificate is not required for pre-FIRM buildings unless the building is being rated under the optional post-FIRM flood insurance rules.

As part of the agreement for making flood insurance available in a community, the NFIP requires the community to adopt a floodplain management ordinance that specifies minimum requirements for reducing flood losses. One such requirement is for the community to obtain the elevation of the lowest floor (including basement) of all new and substantially improved buildings, and maintain a record of such information. The Elevation Certificate provides a way for a community to document compliance with the community's floodplain management ordinance.

Use of this certificate does not provide a waiver of the flood insurance purchase requirement. Only a LOMA or LOMR-F from the Federal Emergency Management Agency (FEMA) can amend the FIRM and remove the Federal mandate for a lending institution to require the purchase of flood insurance. However, the lending institution has the option of requiring flood insurance even if a LOMA/LOMR-F has been issued by FEMA. The Elevation Certificate may be used to support a LOMA or LOMR-F request. Lowest floor and lowest adjacent grade elevations certified by a surveyor or engineer will be required if the certificate is used to support a LOMA or LOMR-F request. A LOMA or LOMR-F request must be submitted with either a completed FEMA MT-EZ or MT-1 package, whichever is appropriate.

This certificate is used only to certify building elevations. A separate certificate is required for floodproofing. Under the NFIP, non-residential buildings can be floodproofed up to or above the Base Flood Elevation (BFE). A floodproofed building is a building that has been designed and constructed to be watertight (substantially impermeable to floodwaters) below the BFE. Floodproofing of residential buildings is not permitted under the NFIP unless FEMA has granted the community an exception for residential floodproofed basements. The community must adopt standards for design and construction of floodproofed basements before FEMA will grant a basement exception. For both floodproofed non-residential buildings and residential floodproofed basements in communities that have been granted an exception by FEMA, a floodproofing certificate is required.

Additional guidance can be found in the FEMA Floodplain Management Bulletin about using the Elevation Certificate, available on FEMA's website at www.fema.gov/fima/fpmbul.shtm. Click on "FEMA 467-1 Elevation Certificate Cover and Bulletin."

U.S. DEPARTMENT OF HOMELAND SECURITY
Federal Emergency Management Agency
National Flood Insurance Program

ELEVATION CERTIFICATE

OMB No. 1660-0008
Expires February 28, 2009

Important: Read the instructions on pages 1-8.

SECTION A - PROPERTY INFORMATION			For Insurance Company Use:
A1. Building Owner's Name _____			Policy Number _____
A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. _____			Company NAIC Number _____
City _____	State _____	ZIP Code _____	
A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.) _____			
A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.) _____			
A5. Latitude/Longitude: Lat. _____ Long. _____		Horizontal Datum: ☐ NAD 1927 ☐ NAD 1983	
A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.			
A7. Building Diagram Number _____			
A8. For a building with a crawl space or enclosure(s), provide:		A9. For a building with an attached garage, provide:	
a) Square footage of crawl space or enclosure(s) _____ sq ft		a) Square footage of attached garage _____ sq ft	
b) No. of permanent flood openings in the crawl space or enclosure(s) walls within 1.0 foot above adjacent grade _____		b) No. of permanent flood openings in the attached garage walls within 1.0 foot above adjacent grade _____	
c) Total net area of flood openings in A8.b _____ sq in		c) Total net area of flood openings in A9.b _____ sq in	

SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION					
B1. NFIP Community Name & Community Number _____		B2. County Name _____		B3. State _____	
B4. Map/Panel Number _____	B5. Suffix _____	B6. FIRM Index Date _____	B7. FIRM Panel Effective/Revised Date _____	B8. Flood Zone(s) _____	B9. Base Flood Elevation(s) (Zone AO, use base flood depth) _____
B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9. ☐ FIS Profile ☐ FIRM ☐ Community Determined ☐ Other (Describe) _____					
B11. Indicate elevation datum used for BFE in Item B9: ☐ NGVD 1929 ☐ NAVD 1988 ☐ Other (Describe) _____					
B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? ☐ Yes ☐ No Designation Date _____ ☐ CBRS ☐ OPA					

SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)	
C1. Building elevations are based on: ☐ Construction Drawings* ☐ Building Under Construction* ☐ Finished Construction *A new Elevation Certificate will be required when construction of the building is complete.	
C2. Elevations – Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/AE, AR/A1-A30, AR/AH, AR/AO. Complete Items C2.a-g below according to the building diagram specified in Item A7.	
Benchmark Utilized _____	Vertical Datum _____
Conversion/Comments _____	
Check the measurement used.	
a) Top of bottom floor (including basement, crawl space, or enclosure floor) _____	☐ feet ☐ meters (Puerto Rico only)
b) Top of the next higher floor _____	☐ feet ☐ meters (Puerto Rico only)
c) Bottom of the lowest horizontal structural member (V Zones only) _____	☐ feet ☐ meters (Puerto Rico only)
d) Attached garage (top of slab) _____	☐ feet ☐ meters (Puerto Rico only)
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment in Comments) _____	☐ feet ☐ meters (Puerto Rico only)
f) Lowest adjacent (finished) grade (LAG) _____	☐ feet ☐ meters (Puerto Rico only)
g) Highest adjacent (finished) grade (HAG) _____	☐ feet ☐ meters (Puerto Rico only)

SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION			
This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.			
☐ Check here if comments are provided on back of form.			
Certifier's Name _____		License Number _____	
Title _____		Company Name _____	
Address _____	City _____	State _____	ZIP Code _____
Signature _____	Date _____	Telephone _____	
		PLACE SEAL HERE	

IMPORTANT: In these spaces, copy the corresponding information from Section A.			For Insurance Company Use:	
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.			Policy Number	
City	State	ZIP Code	Company NAIC Number	

SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION (CONTINUED)

Copy both sides of this Elevation Certificate for (1) community official, (2) insurance agent/company, and (3) building owner.

Comments

Signature _____ Date _____ ☐ Check here if attachments

SECTION E - BUILDING ELEVATION INFORMATION (SURVEY NOT REQUIRED) FOR ZONE AO AND ZONE A (WITHOUT BFE)

For Zones AO and A (without BFE), complete Items E1-E5. If the Certificate is intended to support a LOMA or LOMR-F request, complete Sections A, B, and C. For Items E1-E4, use natural grade, if available. Check the measurement used. In Puerto Rico only, enter meters.

E1. Provide elevation information for the following and check the appropriate boxes to show whether the elevation is above or below the highest adjacent grade (HAG) and the lowest adjacent grade (LAG).

a) Top of bottom floor (including basement, crawl space, or enclosure) is _____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

b) Top of bottom floor (including basement, crawl space, or enclosure) is _____ ☐ feet ☐ meters ☐ above or ☐ below the LAG.

E2. For Building Diagrams 6-8 with permanent flood openings provided in Section A Items 8 and/or 9 (see page 8 of Instructions), the next higher floor (elevation C2.b in the diagrams) of the building is _____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

E3. Attached garage (top of slab) is _____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

E4. Top of platform of machinery and/or equipment servicing the building is _____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

E5. Zone AO only: If no flood depth number is available, is the top of the bottom floor elevated in accordance with the community's floodplain management ordinance? ☐ Yes ☐ No ☐ Unknown. The local official must certify this information in Section G.

SECTION F - PROPERTY OWNER (OR OWNER'S REPRESENTATIVE) CERTIFICATION

The property owner or owner's authorized representative who completes Sections A, B, and E for Zone A (without a FEMA-issued or community-issued BFE) or Zone AO must sign here. *The statements in Sections A, B, and E are correct to the best of my knowledge.*

Property Owner's or Owner's Authorized Representative's Name _____

Address	City	State	ZIP Code
Signature	Date	Telephone	

Comments

☐ Check here if attachments

SECTION G - COMMUNITY INFORMATION (OPTIONAL)

The local official who is authorized by law or ordinance to administer the community's floodplain management ordinance can complete Sections A, B, C (or E), and G of this Elevation Certificate. Complete the applicable item(s) and sign below. Check the measurement used in Items G8. and G9.

G1. ☐ The information in Section C was taken from other documentation that has been signed and sealed by a licensed surveyor, engineer, or architect who is authorized by law to certify elevation information. (Indicate the source and date of the elevation data in the Comments area below.)

G2. ☐ A community official completed Section E for a building located in Zone A (without a FEMA-issued or community-issued BFE) or Zone AO.

G3. ☐ The following information (Items G4.-G9.) is provided for community floodplain management purposes.

G4. Permit Number	G5. Date Permit Issued	G6. Date Certificate Of Compliance/Occupancy Issued
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G7. This permit has been issued for: ☐ New Construction ☐ Substantial Improvement

G8. Elevation of as-built lowest floor (including basement) of the building: _____ ☐ feet ☐ meters (PR) Datum _____

G9. BFE or (in Zone AO) depth of flooding at the building site: _____ ☐ feet ☐ meters (PR) Datum _____

Local Official's Name	Title
Community Name	Telephone
Signature	Date

Comments

☐ Check here if attachments

FEMA Form 81-31, February 2006

Replaces all previous editions

Building Photographs

See Instructions for Item A6.

			For Insurance Company Use:
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.			Policy Number
City	State	ZIP Code	Company NAIC Number
If using the Elevation Certificate to obtain NFIP flood insurance, affix at least two building photographs below according to the instructions for Item A6. Identify all photographs with: date taken; "Front View" and "Rear View"; and, if required, "Right Side View" and "Left Side View." If submitting more photographs than will fit on this page, use the Continuation Page, following.			

Building Photographs

Continuation Page

			For Insurance Company Use:
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.			Policy Number
City	State	ZIP Code	Company NAIC Number
If submitting more photographs than will fit on the preceding page, affix the additional photographs below. Identify all photographs with: date taken; "Front View" and "Rear View"; and, if required, "Right Side View" and "Left Side View."			

INSTRUCTIONS FOR COMPLETING THE ELEVATION CERTIFICATE

The Elevation Certificate is to be completed by a land surveyor, engineer, or architect who is authorized by law to certify (BFE), AR, AR/A, AR/AE, AR/A1-A30, AR/AH, or AR/AO. Community officials who are authorized by law or ordinance to provide floodplain management information may also complete this form. For Zones AO and A (without BFE), a community official, a property owner, or an owner's representative may provide information on this certificate, unless the elevations are intended for use in supporting a request for a LOMA or LOMR-F. Certified elevations must be included if the purpose of completing the Elevation Certificate is to obtain a LOMA or LOMR-F.

The property owner, the owner's representative, or local official who is authorized by law to administer the community floodplain ordinance can complete Section A and Section B. The partially completed form can then be given to the land surveyor, engineer, or architect to complete Section C. The land surveyor, engineer, or architect should verify the information provided by the property owner or owner's representative to ensure that this certificate is complete.

In Puerto Rico only, elevations for building information and flood hazard information may be entered in meters.

SECTION A – PROPERTY INFORMATION

Items A1.-A4. This section identifies the building, its location, and its owner. Enter the name(s) of the building owner(s), the building's complete street address, and the lot and block numbers. If the building's address is different from the owner's address, enter the address of the building being certified. If the address is a rural route or a Post Office box number, enter the lot and block numbers, the tax parcel number, the legal description, or an abbreviated location description based on distance and direction from a fixed point of reference. For the purposes of this certificate, "building" means both a building and a manufactured (mobile) home.

A map may be attached to this certificate to show the location of the building on the property. A tax map, FIRM, or detailed community map is appropriate. If no map is available, provide a sketch of the property location, and the location of the building on the property. Include appropriate landmarks such as nearby roads, intersections, and bodies of water. For building use, indicate whether the building is residential, non-residential, an addition to an existing residential or non-residential building, an accessory building (e.g., garage), or other type of structure. Use the Comments area of the appropriate section if needed, or attach additional comments.

Item A5. Provide latitude and longitude coordinates for the center of the front of the building. Use either decimal degrees (e.g., 39.5043°, -110.7585°) or degrees, minutes, seconds (e.g., 39° 30' 15.5", -110° 45' 30.7") format. If decimal degrees are used, provide coordinates to at least 4 decimal places or better. When using degrees, minutes, seconds, provide seconds to at least 1 decimal place or better. The latitude and longitude coordinates must be accurate within 66 feet. If the Elevation Certificate is being certified by other than a licensed surveyor, engineer, or architect, this information is not required. Provide the type of datum used to obtain the latitude and longitude. FEMA prefers the use of NAD 1983.

Item A6. If the Elevation Certificate is being used to obtain flood insurance through the NFIP, the certifier must provide at least two photographs showing the front and rear of the building taken within 90 days from the date of certification. The photographs must be taken with views confirming the building description and diagram number provided in Section A. If the building has split-level or multi-level areas, provide at least two additional photographs showing side views of the building. All photographs must be in color and measure at least 3"x3". Digital photographs are acceptable.

Item A7. Select the diagram on pages 7-8 that best represents the building. Then enter the diagram number and use the diagram to identify and determine the appropriate elevations requested in Items C2.a-g. If you are unsure of the correct diagram, select the diagram that most closely resembles the building being certified.

Item A8.a Provide the square footage of the crawl space or enclosure(s) below the lowest elevated floor of an elevated building with or without permanent flood openings. Take the measurement from the outside of the crawl space or enclosure(s). Examples of elevated buildings constructed with crawl space and enclosure(s) are shown in Diagrams 6-8 on page 8. Diagram 2 or 4 should be used for a building constructed with a crawl space floor that is below the exterior grade on all sides.

Items A8.b-c Enter in Item A8.b the number of permanent flood openings in the crawl space or enclosure(s) walls that are no higher than 1.0 foot above the adjacent grade. Estimate the total net area of all such permanent flood openings in square inches, excluding any bars, louvers, or other covers of the permanent flood openings, and enter the total in Item A8.c. If the net area cannot be reasonably estimated, provide the size of the flood openings without consideration of any covers and indicate in the Comments area the type of cover that exists in the flood openings. If the crawl space or enclosure(s) walls have no permanent openings within 1.0 foot above adjacent grade, enter “0” (zero) in Items A8.b-c.

Item A9.a Provide the square footage of the attached garage with or without permanent flood openings. Take the measurement from the outside of the garage.

Items A9.b-c Enter in Item A9.b the number of permanent flood openings in the attached garage that are no higher than 1.0 foot above the adjacent grade. This includes any openings that are in the garage door that are no higher than 1.0 foot above the adjacent grade. Estimate the total net area of all such permanent flood openings in square inches and enter the total in Item A9.c. If the garage has no permanent flood openings within 1.0 foot above adjacent grade, enter “0” (zero) in Items A9.b-c.

SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

Complete the Elevation Certificate on the basis of the FIRM in effect at the time of the certification.

The information for Section B is obtained by reviewing the FIRM panel that includes the building’s location. Information about the current FIRM is available from the Federal Emergency Management Agency (FEMA) by calling 1-800-358-9616. If a Letter of Map Amendment (LOMA) or Letter of Map Revision (LOMR-F) has been issued by FEMA, please provide the letter date and case number in the Comments area of Section D or Section G, as appropriate.

For a building in an area that has been annexed by one community but is shown on another community’s FIRM, enter the community name and 6-digit number of the annexing community in Item B1, the name of the new county in Item B2, and the FIRM index date for the annexing community in Item B6. Enter information from the actual FIRM panel that shows the building location, even if it is the FIRM for the previous jurisdiction, in Items B4, B5, B7, B8, and B9.

Item B1. NFIP Community Name & Community Number. Enter the complete name of the community in which the building is located and the associated 6-digit community number. For a newly incorporated community, use the name and 6-digit number of the new community. Under the NFIP, a “community” is any State or area or political subdivision thereof, or any Indian tribe or authorized native organization, that has authority to adopt and enforce floodplain management regulations for the areas within its jurisdiction. To determine the current community number, see the NFIP Community Status Book, available on FEMA’s web site at <http://www.fema.gov/fema/csb.shtm>, or call 1-800-358-9616.

Item B2. County Name. Enter the name of the county or counties in which the community is located. For an unincorporated area of a county, enter “unincorporated area.” For an independent city, enter “independent city.”

Item B3. State. Enter the 2-letter state abbreviation (for example, VA, TX, CA).

Items B4.-B5. Map/Panel Number and Suffix. Enter the 10-character “Map Number” or “Community Panel Number” shown on the FIRM where the building or manufactured (mobile) home is located. For maps in a county-wide format, the sixth character of the “Map Number” is the letter “C” followed by a four-digit map number. For maps not in a county-wide format, enter the “Community Panel Number” shown on the FIRM.

Item B6. FIRM Index Date. Enter the effective date or the map revised date shown on the FIRM Index.

Item B7. FIRM Panel Effective/Revised Date. Enter the map effective date or the map revised date shown on the FIRM panel. This will be the latest of all dates shown on the map. The current FIRM panel effective date can be determined by calling 1-800-358-9616.

Item B8. Flood Zone(s). Enter the flood zone, or flood zones, in which the building is located. All flood zones containing the letter “A” or “V” are considered Special Flood Hazard Areas. The flood zones are A, AE, A1-A30, V, VE, V1-V30, AH, AO, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO. Each flood zone is defined in the legend of the FIRM panel on which it appears.

Item B9. Base Flood Elevation(s). Using the appropriate Flood Insurance Study (FIS) Profile, Floodway Data Table, or FIRM panel, locate the property and enter the BFE (or base flood depth) of the building site. If the building is located in more than one flood zone in Item B8, list all appropriate BFEs in Item B9. BFEs are shown on a FIRM or FIS Profile for Zones A1-A30, AE, AH, V1-V30, VE, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO; flood depth numbers are shown for Zone AO. Use the AR BFE if the building is located in any of Zones AR/A, AR/AE, AR/A1-A30, AR/AH, or AR/AO. In A or V zones where BFEs are not provided on the FIRM, BFEs may be available from another source. For example, the community may have established BFEs or obtained BFE data from other sources for the building site. For subdivisions and other developments of more than 50 lots or 5 acres, establishment of BFEs is required by the community's floodplain management ordinance. If a BFE is obtained from another source, enter the BFE in Item B9. In an A Zone where BFEs are not available, complete Section E and enter N/A for Section B, Item B9. Enter the BFE to the nearest tenth of a foot (nearest tenth of a meter, in Puerto Rico). Item B10. Indicate the source of the BFE that you entered in Item B9. If the BFE is from a source other than FIS Profile, FIRM, or community, describe the source of the BFE.

Item B11. Indicate the elevation datum to which the elevations on the applicable FIRM are referenced as shown on the map legend. The vertical datum is shown in the Map Legend and/or the Notes to Users on the FIRM.

Item B12. Indicate whether the building is located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA). (OPAs are portions of coastal barriers that are owned by Federal, State, or local governments or by certain non-profit organizations and used primarily for natural resources protection.) Federal flood insurance is prohibited in designated CBRS areas or OPAs for buildings or manufactured (mobile) homes built or substantially improved after the date of the CBRS or OPA designation. For the first CBRS designations, that date is October 1, 1983. An information sheet explaining CBRS areas and OPAs may be obtained on FEMA's web site at http://www.fema.gov/fhm/fmc_cbars.shtm

SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

Complete Section C if the building is located in any of Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/AE, AR/A1-A30, AR/AH, or AR/AO, or if this certificate is being used to support a request for a LOMA or LOMR-F. If the building is located in Zone AO or Zone A (without BFE), complete Section E instead. To ensure that all required elevations are obtained, it may be necessary to enter the building (for instance, if the building has a basement or sunken living room, split-level construction, or machinery and equipment).

Surveyors may not be able to gain access to some crawl spaces to shoot the elevation of the crawl space floor. If access to the crawl space is limited or cannot be gained, follow one of these procedures.

Use a yardstick or tape measure to measure the height from the floor of the crawl space to the "next higher floor," and then subtract the crawl space height from the elevation of the "next higher floor." If there is no access to the crawl space, use the exterior grade next to the structure to measure the height of the crawl space to the "next higher floor."

Contact the local floodplain administrator of the community in which the building is located. The community may have documentation of the elevation of the crawl space floor as part of the permit issued for the building.

If the property owner has documentation or knows the height of the crawl space floor to the next higher floor, try to verify this by looking inside the crawl space through any openings or vents.

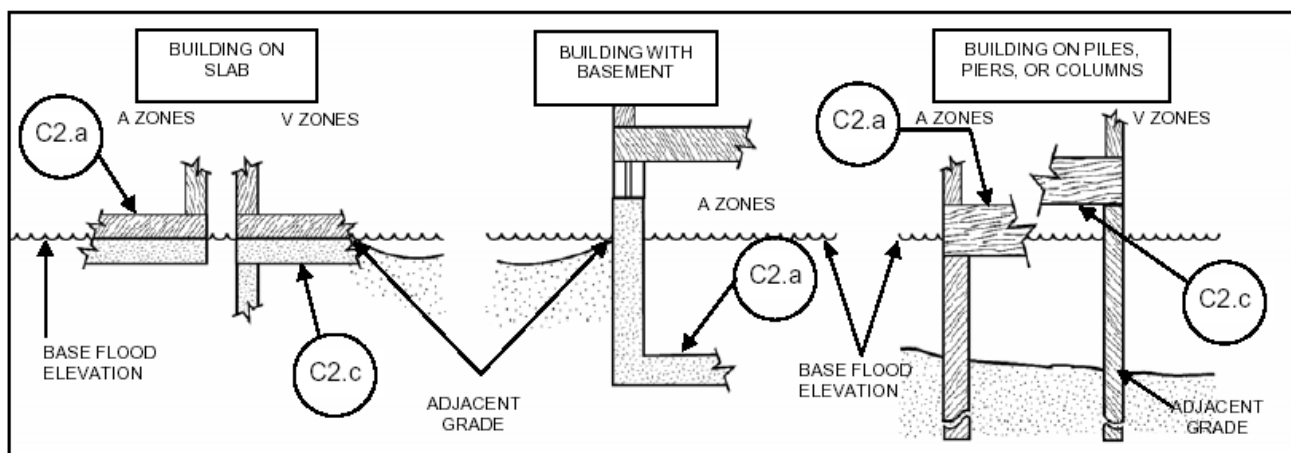
In all three cases, provide the elevation in the Comments area of Section D on the back of the form and a brief description of how the elevation was obtained.

Item C1. Indicate whether the elevations to be entered in this section are based on construction drawings, a building under construction, or finished construction. For either of the first two choices, a post-construction Elevation Certificate will be required when construction is complete. If the building is under construction, include only those elevations that can be surveyed in Items C2.a-g. Use the Comments area of Section D to provide elevations obtained from the construction plans or drawings. Select "Finished Construction" only when all machinery and/or equipment such as furnaces, hot water heaters, heat pumps, air conditioners, and elevators and their associated equipment have been installed and the grading around the building is completed.

Item C2. A field survey is required for Items C2.a-g. Provide the benchmark utilized, the vertical datum for that benchmark, and any datum conversion necessary. Most control networks will assign a unique identifier for each benchmark. For example, the National Geodetic Survey uses the Permanent Identifier (PID). For the benchmark utilized, provide the

PID or other unique identifier assigned by the maintainer of the benchmark. Also provide the vertical datum for the benchmark elevation. Show the conversion from the field survey datum used if it differs from the datum used for the BFE entered in Item B9 and indicate the conversion software used. All elevations for the certificate, including the elevations for Items C2.a-g, must be referenced to the datum on which the BFE is based. Show the datum conversion, if applicable, in this section or in the Comments area of Section D. For property experiencing ground subsidence, the most recent reference mark elevations must be used for determining building elevations. However, when subsidence is involved, the BFE should not be adjusted. Enter elevations in Items C2.a-g to the nearest tenth of a foot (nearest tenth of a meter, in Puerto Rico).

Items C2.a-d Enter the building elevations (excluding the attached garage) indicated by the selected building diagram (Item A7.) in Items C2.a-c. If there is an attached garage, enter the elevation for top of attached garage slab in Item C2.d. (Because elevation for top of attached garage slab is self-explanatory, attached garages are not illustrated in the diagrams.) If the building is located in a V zone on the FIRM, complete Item C2.c. If the flood zone cannot be determined, enter elevations for all of Items C2.a-g. For buildings in A zones, elevations a, b, d, and e should be measured at the top of the floor. For buildings in V zones, elevation c must be measured at the bottom of the lowest horizontal structural member of the floor (see drawing below). For buildings elevated on a crawl space, Diagram 8, enter the elevation of the top of the crawl space floor in Item C2.a, whether or not the crawl space has permanent flood openings (flood vents). If any item does not apply to the building, enter "N/A" for not applicable.



Item C2.e Enter the lowest platform elevation of at least one of the following machinery and equipment items: elevators and their associated equipment, furnaces, hot water heaters, heat pumps, and air conditioners in an attached garage or enclosure or on an open utility platform that provides utility services for the building. Note that elevations for these specific machinery and equipment items are required in order to rate the building for flood insurance. Local floodplain management officials are required to ensure that all machinery and equipment servicing the building are protected from flooding. Thus, local officials may require that elevation information for all machinery and equipment, including ductwork, be documented on the Elevation Certificate. If the machinery and/or equipment is mounted to a wall, pile, etc., enter the platform elevation of the machinery and/or equipment. Indicate machinery/equipment type in the Comments area of Section D or Section G, as appropriate. If this item does not apply to the building, enter "N/A" for not applicable.

Items C2.f-g Adjacent grade is defined as the elevation of the ground, sidewalk, patio slab, or deck support immediately next to the building. If the certificate is to be used to support a request for a LOMA or LOMR-F, provide in the Comments area the lowest adjacent grade elevation measured at the deck support or stairs if that elevation is lower than the building's lowest adjacent grade. For Zone AO, use the natural grade elevation, if available. This measurement must be to the nearest tenth of a foot (nearest tenth of a meter, in Puerto Rico) if this certificate is being used to support a request for a LOMA or LOMR-F.

SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

Complete as indicated. This section of the Elevation Certificate may be signed by only a land surveyor, engineer, or architect who is authorized by law to certify elevation information. Place your license number, your seal (as allowed by the State licensing board), your signature, and the date in the box in Section D. You are certifying that the information on this certificate represents your best efforts to interpret the data available and that you understand that any false statement

may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001. Use the Comments area of Section D, on the back of the certificate, to provide datum, elevation, or other relevant information not specified on the front.

SECTION E - BUILDING ELEVATION INFORMATION (SURVEY NOT REQUIRED) FOR ZONE AO & ZONE A (WITHOUT BFE)

Complete Section E if the building is located in Zone AO or Zone A (without BFE). Otherwise, complete Section C instead. Explain in the Section F Comments area if the measurement provided under Items E1.- E4. is based on the “natural grade.”

Items E1.a and b Enter in Item E1.a the height to the nearest tenth of a foot (tenth of a meter in Puerto Rico) of the top of the bottom floor (as indicated in the applicable diagram) above or below the highest adjacent grade (HAG). Enter in Item E1.b the height to the nearest tenth of a foot (tenth of a meter in Puerto Rico) of the top of the bottom floor (as indicated in the applicable diagram) above or below the lowest adjacent grade (LAG). For buildings in Zone AO, the community’s floodplain management ordinance requires the lowest floor of the building be elevated above the highest adjacent grade at least as high as the depth number on the FIRM. Buildings in Zone A (without BFE) may qualify for a lower insurance rate if an engineered BFE is developed at the site.

Item E2. For Building Diagrams 6-8 with permanent flood openings (see page 8), enter the height to the nearest tenth of a foot (tenth of a meter in Puerto Rico) of the next higher floor or elevated floor (as indicated in the applicable diagram) above or below the highest adjacent grade (HAG).

Item E3. Enter the height to the nearest tenth of a foot (tenth of a meter in Puerto Rico), in relation to the highest adjacent grade next to the building, for the top of attached garage slab. (Because elevation for top of attached garage slab is self explanatory, attached garages are not illustrated in the diagrams.) If this item does not apply to the building, enter “N/A” for not applicable.

Item E4. Enter the height to the nearest tenth of a foot (tenth of a meter in Puerto Rico), in relation to the highest adjacent grade next to the building, of the platform elevation that supports the machinery and/or equipment servicing the building. Indicate machinery/equipment type in the Comments area of Section F. If this item does not apply to the building, enter “N/A” for not applicable.

Item E5. For those communities where this base flood depth is not available, the community will need to determine whether the top of the bottom floor is elevated in accordance with the community’s floodplain management ordinance.

SECTION F - PROPERTY OWNER (OR OWNER’S REPRESENTATIVE) CERTIFICATION

Complete as indicated. This section is provided for certification of measurements taken by a property owner or property owner’s representative when responding to Sections A, B, and E. The address entered in this section must be the actual mailing address of the property owner or property owner’s representative who provided the information on the certificate.

SECTION G - COMMUNITY INFORMATION (OPTIONAL)

Complete as indicated. The community official who is authorized by law or ordinance to administer the community’s floodplain management ordinance can complete Sections A, B, C (or E), and G of this Elevation Certificate. Section C may be filled in by the local official as provided in the instructions below for Item G1. If the authorized community official completes Sections C, E, or G, complete the appropriate item(s) and sign this section.

Check Item G1. if Section C is completed with elevation data from other documentation, including elevations obtained from the Community Rating System Elevation Software, that has been signed and sealed by a licensed surveyor, engineer, or architect who is authorized by law to certify elevation information. Indicate the source of the elevation data and the date obtained in the Comments area of Section G. If you are both a community official and a licensed land surveyor, engineer, or architect authorized by law to certify elevation information, and you performed the actual survey for a building in Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/A1-A30, AR/AE, AR/AH, or AR/AO, you must also complete Section D.

Check Item G2. if information is entered in Section E by the community for a building in Zone A (without a FEMA-issued or community-issued BFE) or Zone AO.

Check Item G3. if the information in Items G4.-G9. has been completed for community floodplain management purposes to document the as-built lowest floor elevation of the building. Section C of the Elevation Certificate records the elevation of various building components but does not determine the lowest floor of the building or whether the building, as constructed, complies with the community's floodplain management ordinance. This must be done by the community. Items G4.-G9. provide a way to document these determinations.

Item G4. Permit Number. Enter the permit number or other identifier to key the Elevation Certificate to the permit issued for the building.

Item G5. Date Permit Issued. Enter the date the permit was issued for the building.

Item G6. Date Certificate of Compliance/Occupancy Issued. Enter the date that the Certificate of Compliance or Occupancy or similar written official documentation of as-built lowest floor elevation was issued by the community as evidence that all work authorized by the floodplain development permit has been completed in accordance with the community's floodplain management laws or ordinances.

Item G7. New Construction or Substantial Improvement. Check the applicable box. "Substantial Improvement" means any reconstruction, rehabilitation, addition, or other improvement of a building, the cost of which equals or exceeds 50 percent of the market value of the building before the start of construction of the improvement. The term includes buildings that have incurred substantial damage, regardless of the actual repair work performed.

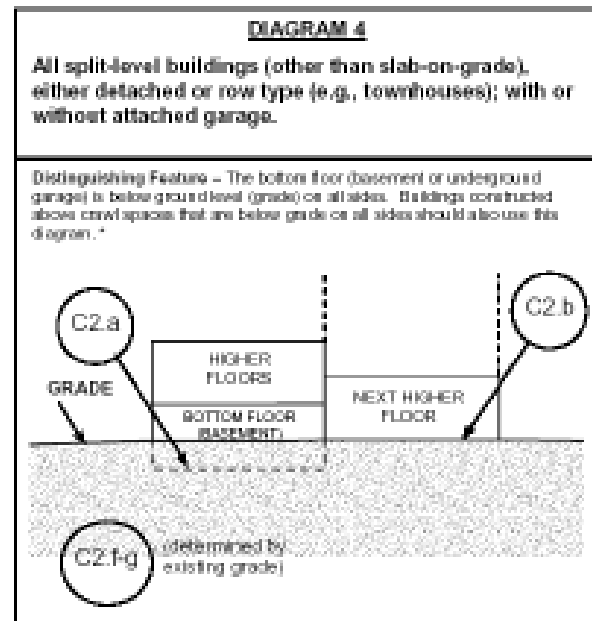
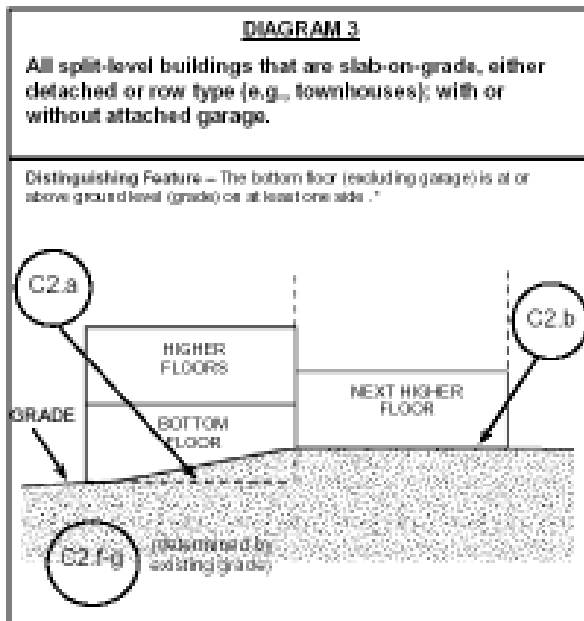
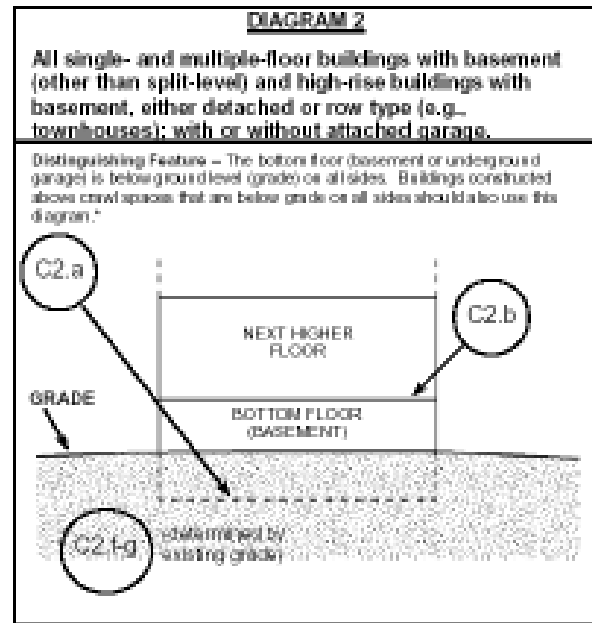
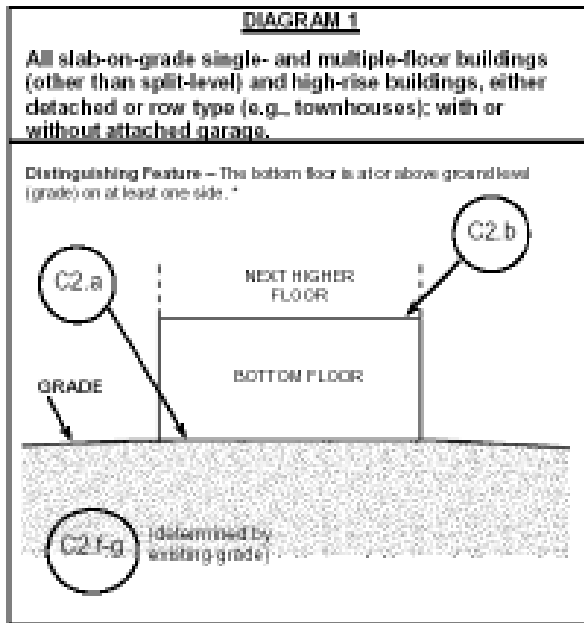
Item G8. As-built lowest floor elevation. Enter the elevation of the lowest floor (including basement) when the construction of the building is completed and a final inspection has been made to confirm that the building is built in accordance with the permit, the approved plans, and the community's floodplain management laws or ordinances. Indicate the elevation datum used.

Item G9. BFE. Using the appropriate FIRM panel, FIS Profile, or other data source, locate the property and enter the BFE (or base flood depth) of the building site. Indicate the elevation datum used.

Enter your name, title, and telephone number, and the name of the community. Sign and enter the date in the appropriate blanks.

The following eight diagrams illustrate various types of buildings. Compare the features of the building being certified with the features shown in the diagrams and select the diagram most applicable. Enter the diagram number in Item A7., the square footage of crawl space or enclosure(s) and the area of flood openings in square inches in Items A8.a-c, the square footage of attached garage and the area of flood openings in square inches in Items A9.a-c, and the elevations in Items C2.a-g.

In A zones, the floor elevation is taken at the top finished surface of the floor indicated; in V zones, the floor elevation is taken at the bottom of the lowest horizontal structural member (see drawing in instructions for Section C).

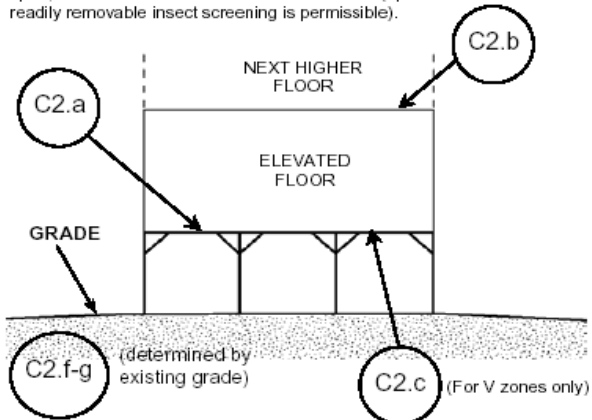


* A floor that is below ground level (grade) on all sides is considered a basement even if the floor is used for living purposes, or as an office, garage, workshop, etc.

DIAGRAM 5

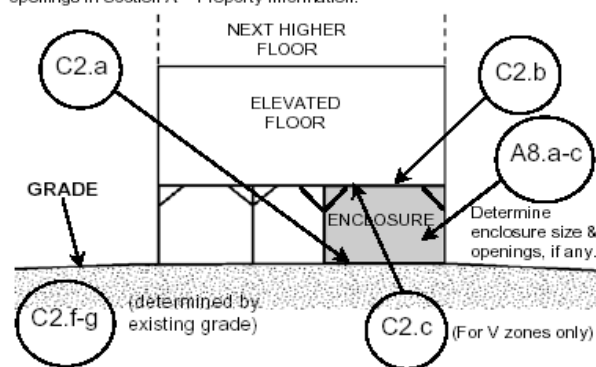
All buildings elevated on piers, posts, piles, columns, or parallel shear walls. No obstructions below the elevated floor.

Distinguishing Feature – For all zones, the area below the elevated floor is open, with no obstruction to flow of flood waters (open lattice work and/or readily removable insect screening is permissible).

**DIAGRAM 6**

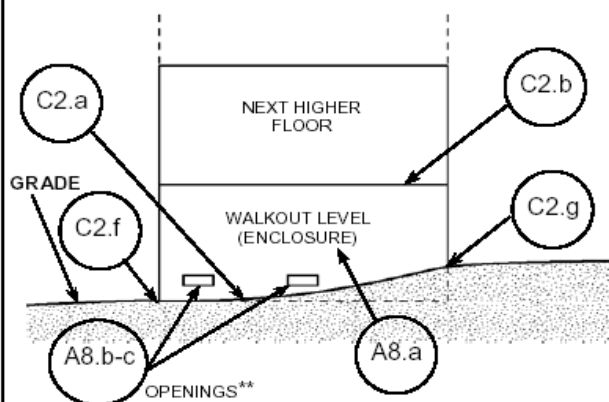
All buildings elevated on piers, posts, piles, columns, or parallel shear walls with full or partial enclosure below the elevated floor.

Distinguishing Feature – For all zones, the area below the elevated floor is enclosed, either partially or fully. In A Zones, the partially or fully enclosed area below the elevated floor is with or without openings** present in the walls of the enclosure. Indicate information about enclosure size and openings in Section A – Property Information.

**DIAGRAM 7**

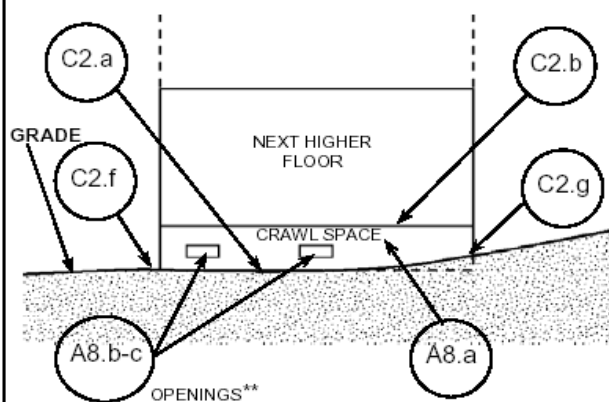
All buildings elevated on full-story foundation walls with a partially or fully enclosed area below the elevated floor. This includes walkout levels, where at least one side is at or above grade. The principal use of this building is located in the elevated floors of the building.

Distinguishing Feature – For all zones, the area below the elevated floor is enclosed, either partially or fully. In A Zones, the partially or fully enclosed area below the elevated floor is with or without openings** present in the walls of the enclosure. Indicate information about enclosure size and openings in Section A – Property Information.

**DIAGRAM 8**

All buildings elevated on a crawl space with the floor of the crawl space at or above grade on at least one side, with or without an attached garage.

Distinguishing Feature – For all zones, the area below the first floor is enclosed by solid or partial perimeter walls. In all A Zones, the crawl space is with or without openings** present in the walls of the crawl space. Indicate information about crawl space size and openings in Section A – Property Information.



** An “opening” is defined as a permanent opening in a wall that allows for the free passage of water automatically in both directions without human intervention. Under the NFIP, a minimum of two openings is required for enclosures or crawl spaces with a total net area of not less than one square inch for every square foot of area enclosed. Each opening must be on different sides of the enclosed area. If a building has more than one enclosed area, each area must have openings on exterior walls to allow floodwater to directly enter. The bottom of the openings must be no higher than one foot above the grade underneath the flood vents. Alternatively, you may submit a certification by a registered professional engineer or architect that the design will allow for the automatic equalization of hydrostatic flood forces on exterior walls. A window, a door, or a garage door is not considered an opening.

O.M.B. NO. 3067-0077
Expires July 31, 2002

FEDERAL EMERGENCY MANAGEMENT AGENCY
NATIONAL FLOOD INSURANCE PROGRAM
FLOODPROOFING CERTIFICATE
FOR NON-RESIDENTIAL STRUCTURES

The floodproofing of non-residential buildings may be permitted as an alternative to elevating to or above the Base Flood Elevation; however, a floodproofing design certification is required. This form is to be used for that certification. Floodproofing of a residential building does not alter a community's floodplain management elevation requirements or affect the insurance rating unless the community has been issued an exception by FEMA to allow floodproofed residential basements. The permitting of a floodproofed residential basement requires a separate certification specifying that the design complies with the local floodplain management ordinance.

BUILDING OWNER'S NAME

STREET ADDRESS (including Apt., Unit, Suite, and/or Bldg. Number) OR P.O. ROUTE AND BOX NUMBER

OTHER DESCRIPTION (Lot and Block Numbers, etc.)

FOR INSURANCE COMPANY USE

POLICY NUMBER

COMPANY NAIC NUMBER

CITY

STATE

ZIP CODE

SECTION I FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

Provide the following from the proper FIRM:

COMMUNITY NUMBER	PANEL NUMBER	SUFFIX	DATE OF FIRM INDEX	FIRM ZONE	BASE FLOOD ELEVATION (In AO Zones. Use Depth)

SECTION II FLOODPROOFING INFORMATION (By a Registered Professional Engineer or Architect)

Floodproofing Design Elevation Information:

Building is floodproofed to an elevation of feet NGVD. (Elevation datum used must be the same as that on the FIRM.)

Height of floodproofing on the building above the lowest adjacent grade is feet.

(NOTE: for insurance rating purposes, the building's floodproofed design elevation must be at least one foot above the Base Flood Elevation to receive rating credit. If the building is floodproofed only to the Base Flood Elevation, then the building's insurance rating will result in a higher premium.)

SECTION III CERTIFICATION (By Registered Professional Engineer or Architect)

Non-Residential Floodproofed Construction Certification:

I certify that, based upon development and/or review of structural design, specifications, and plans for construction, the design and methods of construction are in accordance with accepted standards of practice for meeting the following provisions:

The structure, together with attendant utilities and sanitary facilities, is watertight to the floodproofed design elevation indicated above, with walls that are substantially impermeable to the passage of water.

All structural components are capable of resisting hydrostatic and hydrodynamic flood forces, including the effects of buoyancy, and anticipated debris impact forces.

I certify that the information on this certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

CERTIFIER'S NAME

LICENSE NUMBER (or Affix Seal)

TITLE

COMPANY NAME

ADDRESS

CITY

STATE

ZIP CODE

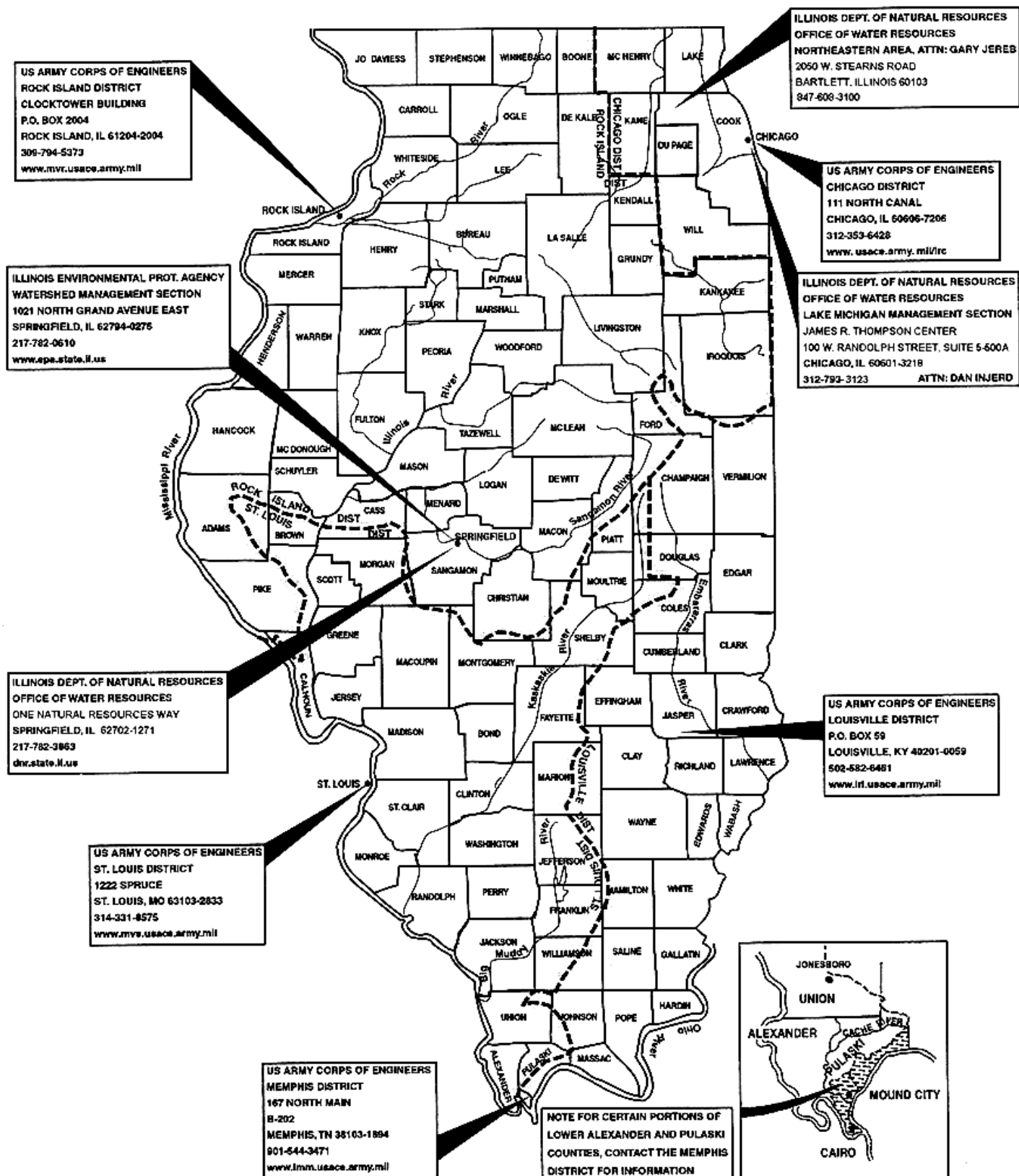
SIGNATURE

DATE

PHONE

Copies should be made of this Certificate for: 1) community official, 2) insurance agent/company, and 3) building owner.

REGULATORY JURISDICTIONAL BOUNDARIES



CONTACTS FOR ASSISTANCE

**ILLINOIS DEPARTMENT OF NATURAL
RESOURCES OFFICE OF WATER
RESOURCES**

One Natural Resource Way
Springfield, IL 62701-1787
217-782-3863
www.dnr.state.il.us

**ILLINOIS DEPARTMENT OF NATURAL
RESOURCES**

Office of Water Resources
2050 Stearns Road
Bartlett, IL 60103
847-608-3100

**FEDERAL EMERGENCY MANAGEMENT
AGENCY**

Region V
536 South Clark Street
Chicago, IL 60605-1521
312-408-5500
www.fema.gov

**FEDERAL EMERGENCY MANAGEMENT
AGENCY**

Maps and Supply Order Facility
800-358-9616
www.fema.gov

**ILLINOIS DEPARTMENT OF NATURAL
RESOURCES**

State Water Survey
Hydrology Division
2204 Griffith Drive
Champaign, IL 61820-7495
217-333-9545
www.dnr.state.il.us

U.S. ARMY CORPS OF ENGINEERS

Rock Island District
Clock Tower Building
P.O. Box 2004
Rock Island, IL 61204-2004
(309) 788-6361
www.mvr.usace.army.mil

U.S. ARMY CORPS OF ENGINEERS

Louisville District
P.O. Box 59
Louisville, KY 40201-0059
(502) 582-6461
www.lrl.usace.army.mil

**ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY**

Division of Water Pollution Control
1021 North Grand Avenue East
Springfield, IL 62794-0276
217-782-0610
www.epa.state.il.us

**ILLINOIS EMERGENCY MANAGEMENT
AGENCY**

500 West Monroe Street
Springfield, IL 62701
217-557-4878
www.iema.state.il.us

**ILLINOIS HISTORIC PRESERVATION
AGENCY**

Preservation Services Division
Old State Capital
Springfield, IL 62701
217-785-1279

U.S. DEPARTMENT OF AGRICULTURE

Natural Resources Conservation Service
1902 Fox Drive
Champaign, IL 61820
217-398-5273

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