CFM® Refresher Course (CRC)

Student Manual

December 29th, 2008 Version

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UNIT I
Floodplain Mgmt. Concepts

UNIT II
Floodplain Mapping

UNIT III
NFIP Regs. & Admin.

UNIT IV
Elevation Certificates

UNIT V
Flood Insurance

UNIT VI
Flood Hazard Mitigation

Appendix

Glossary

Exercises
Mapping & EC

Exercises: Answer Key

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1st TAB

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CFM® Refresher Course

Thanks to PBS&J and
Jen Marcy, CFM

12/29/08 Version

Who is ASFPM?

ASFPM stands for the Association of State Floodplain Managers

- A national organization of floodplain management professionals
- Home of the Certified Board of Regents (CBOR) that oversees the National CFM® Program.

ASFPM Mission

To promote education, policies, and activities that mitigate current and future losses, costs, and human suffering caused by flooding, and to protect the natural and beneficial functions of floodplains – all without causing adverse impacts.

www.floods.org
Phone: 608-274-0123
Fax: 608-274-0696

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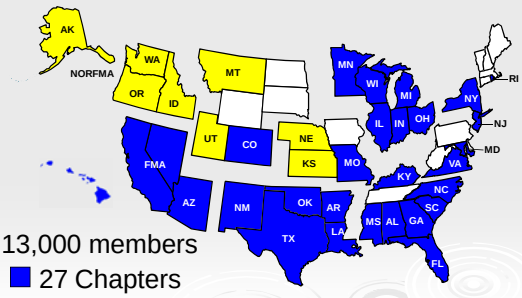
ASFPM Chapters



13,000 members

- 27 Chapters
- State Assoc. & Pending Chapters

Why Become a CFM®?

- Confidence in professional knowledge
- Professional/Public recognition
- Job advancement potential
- Motivation for continued education
- Personal satisfaction

Who Benefits from CFMs?

- Citizens
- Flood Insurance Policy Holders
- Emergency Responders
- Tax Payers
- Policy Makers
- Community Members

Housekeeping

- Emergency exits
- Restrooms
- Phones, PDAs, Pagers, etc.
- Breaks & Lunch
- Smoking Areas
- Parking concerns
- Attendance
- Ability to Hear / See
- Pacing– Too Fast, Slow

Course Expectations

What are your expectations for this course?

What do you hope to learn?

Why are you here?

Course Goal:

To review the CFM® Exam topics to increase familiarity and proficiency in these subject areas. **This course was not designed to prepare you for the CFM® exam.**

Attending this course is <u>not</u> a guarantee for passing the CFM® exam - you should study and prepare in addition to reviewing course content.

Disclaimer

- This course was prepared by the ASFPM based on the topic areas on the *national* CFM® exam.
- ASFPM does not endorse or accredit instructors for this course. Sponsors have received suggested pre-requisites for use in selecting instructors to facilitate. ASFPM does not endorse, promote or guarantee the accuracy of content presented.
- ASFPM's intent is that sponsors may charge a nominal fee to attend this course in order to recover the cost to present the course.

Acronyms & Abbreviations

- ✓ Appendix of notebook
- ✓ FEMA's FAAT Book (FEMA Acronyms, Abbreviations & Terms) available at:

http://www.fema.gov/plan/prepare/faat.shtm

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…FEMA Docs & Websites

Links for documents & websites referenced in this course can be found on a list in the Appendix of your course notebook.

Course Topics

UNIT I Floodplain Management Concepts

UNIT II Floodplain Mapping

UNIT III NFIP Regulations & Administrative Procedures

UNIT IV Elevation Certificates

UNIT V Flood Insurance

UNIT VI Flood Hazard Mitigation

UNIT I

Floodplain Management Concepts:

- Natural and Beneficial Functions
- National Flood Insurance Program
- Unified National Program

Natural & Beneficial Functions

- Flooding is a natural process.
- If the natural process is unbalanced by man-made changes, an area may receive more water than it can handle.
- Floods will flow into nearby low-lying areas or floodplains.
- Different types of floodplains are based upon the type of flooding that forms them.

Natural & Beneficial Functions

Water Resources
(Flood and erosion control)

Living Resources
(habitats, breeding / feeding)

Social Resources
(recreation, science, open space)

Multiple Objective Management

AKA = MOM

- Looks at the entire watershed affecting the flood problems
- Brings all parties' interests to the table
- Capitalizes on the expertise of many parties.
- Solve problems by linking to other community concerns - "broad thinking"

Wetland Protection

Wetland protection is sometimes separated from floodplain management…

- **USACE responsible for wetland permitting: Section 404 of the Clean Water Act**
- **Many states have their own more restrictive wetland regulations**

Flooding and Types of Floods

- Riverine
- Flash
- Coastal
- Shallow

Photo: Bob McMillan / FEMA

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Riverine Overbank Flooding

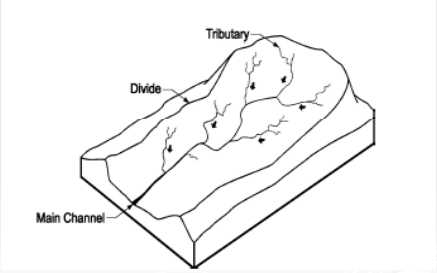

Image from FEMA 480 Manual

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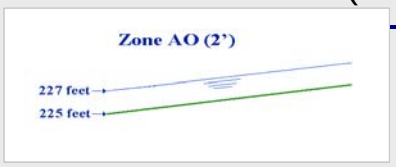
Shallow Flooding

Shallow flooding occurs in flat areas with inadequate or no defined channels.

Shallow Flooding Types:

- ***Sheet Flow*** (Zone AO = w/o a BFE)
- ***Ponding*** (Zone AH = w/ a BFE)
- ***Urban Drainage***
  - Urban drainage systems
  - Areas protected by levees

Sheet Flow Visual (Zone AO)



Picture from FEMA's IS-9

- Floodwater spreads out over large area; somewhat uniform depth; flow downhill
- After intense prolonged rainfall
- Overland flow with no defined channel

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Ponding Visual (Zone AH)

Picture from FEMA's IS-9

- Runoff collects in depressions & cannot drain, does not move or flow away
- Water remains until it infiltrates soil, evaporates or is pumped away

National Flood Insurance Act of 1968

- Established the National Flood Insurance Program
- Created the Unified National program for FPM

Legislative Cornerstones

- 1973 Flood Disaster Protection Act
- 1979 FEMA was created
- 1994 Nat'l Flood Insurance Reform Act
- 2004 Nat'l Flood Insurance Reform Act

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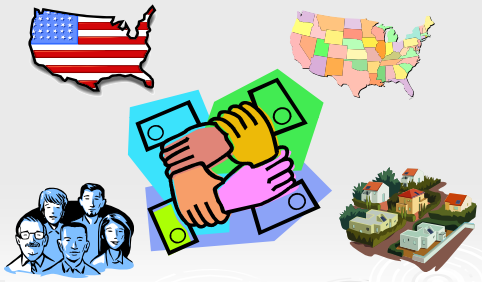
The NFIP - How it Works

Image by Al Goff

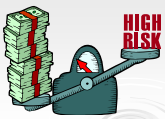
The NFIP - How it Works



Mutual Agreement

The NFIP

Mapping
Regulations
Insurance



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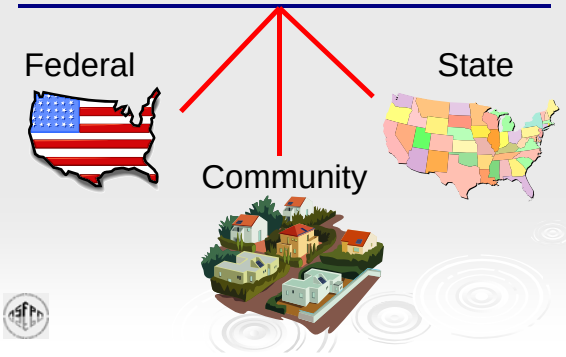
NFIP - Roles



UNIT I – Summary Review

Floodplain Management Concepts:

- Natural and Beneficial Functions
- National Flood Insurance Program
- Unified National Program

Break

Job Aids

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Floodplain Mgmt Concepts - Job Aid

Natural & Beneficial Functions

- Water Resources (Water Storage & Filtering)
- Living Resources (Biodiversity & Habitats)
- Social Resources (Recreation & Science)

Multiple Objective Management (MOM)

- Multi-faceted approach to development needs and protection of natural resources.

Types of Floods

RIVERINE

- Overbank- most common type of flooding
- Hilly / mountainous area = higher velocity flooding

COASTAL

- "Storm Surge" pushes water toward shore increasing wave heights and water level by several feet
- Causes coastal erosion (receding / accreting shoreline)

FLASH

- Highest number of flood related deaths caused by flash floods

SHALLOW

- Sheet Flow
- Ponding
- Urban Drainage

NFIP

- Created in 1968
- Incorporated non-structural solutions
- Made flood insurance available and affordable
- Transferred cost from tax payers to property owners
- Provided flood relief funding for non-federal disasters
- Guided and regulated development away from SFHA

Unified National Program

- Coordinated federal, state, local, and private parties in FPM
- Promoted "wise" use (reduce losses, protect resources)
- Devised **Four Strategies**:
  - ✓ Modify susceptibility to flooding (regulate development)
  - ✓ Modify impact of flooding (mitigation)
  - ✓ Modify flooding (structural)
  - ✓ Preserve and restore resources (wetlands, floodplains, coastal)

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Legislative Cornerstones

1973 Flood Disaster Protection Act

- Limited federal disaster assistance for communities without flood insurance.
- Instituted the Mandatory Purchase Requirement

1994 National Flood Insurance Reform Act

- Mitigation provisions
- ICC was created
- Erosion hazard prevention measures added
- Disaster assistance provisions to improve processes for giving / receiving assistance
- Lender compliance provisions (lenders subject to fines if not compliant)

National Flood Insurance Reform Act

- Authorized CRS
- Mitigation Grants created
- 5 year map review period
- Strengthened Mandatory Purchase Requirement

2004 National Flood Insurance Reform Act

- Digital flood hazard data
- Created mitigation assistance for repetitive losses
- Agent education

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2nd TAB

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UNIT II

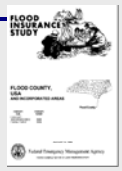
Floodplain Mapping

- Base Flood
- Flood Studies
- Map Formats and Zones
- Map Changes

Base Flood

The flood having a 1% chance of being equaled or exceeded in any given year. Also referred to as the 100-year flood. The base flood is used by the NFIP as the basis for mapping, insurance rating, and regulating new construction.

Flood Insurance Study (FIS)



- The technical support for adopting FPM regulations
- Supports risk assessments with depth, velocity, duration data, and flood history information
- Used with maps to determine BFE, flood zone, and floodway at specific sites

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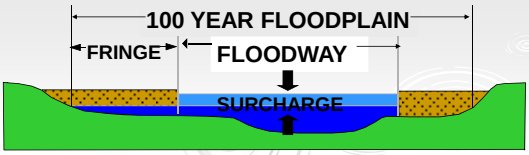
Flood Insurance Study (FIS)

- Estimates flow frequencies
- Establishes flood profiles, floodways, flood zones, and floodplain boundaries for 10, 50, 100 & 500-year floods
- Establishes flood zones

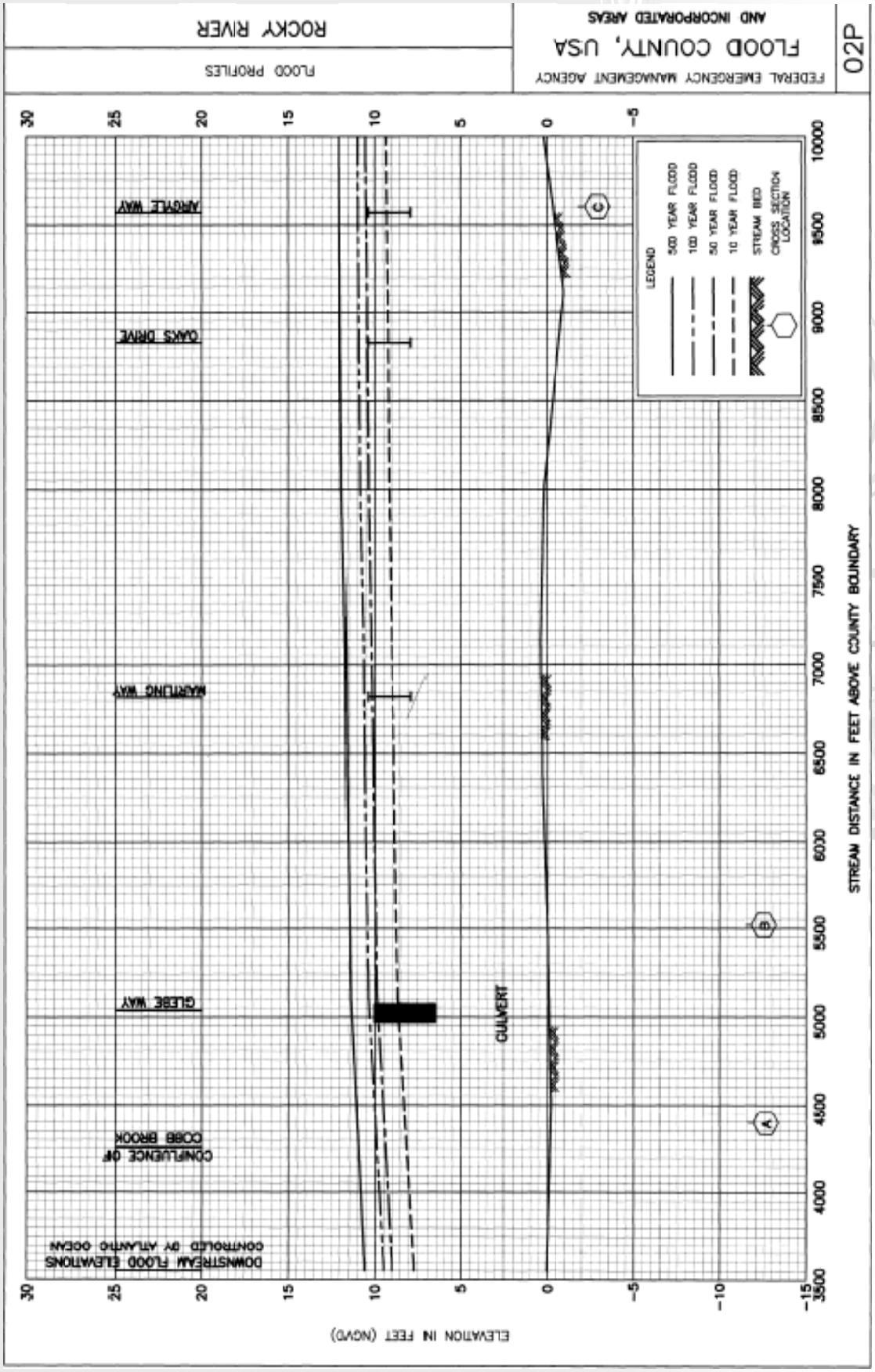


Cross Sections

Detailed flood studies include hydrologic and hydraulic information (depth, flow).

- Cross Sections: reflect ground elevations, stream and channel characteristics
- Hydrologic & Hydraulic study: determines flood elevations, velocities and floodplain widths used to make flood maps

Flood Profiles



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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NGVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Rocky River								
A	4.395	115	1.233	6.1	9.9	9.9	10.0	0.1
B	5.537	13	142	9.2	10.4	10.4	10.5	0.1
C	9.610	100	323	8.4	10.9	10.9	11.1	0.2
D	10.995	85	861	7.2	11.2	11.2	11.3	0.1
E	12.695	245	1.887	5.1	11.3	11.3	11.4	0.1
F	13.845	270	2.403	4.5	11.5	11.5	11.5	0.0
G	14.513	230	2.553	3.7	11.6	11.6	11.6	0.0
H	16.625	180	2.000	4.2	11.7	11.7	11.7	0.0
I	18.209	415	2.566	3.9	12.5	12.5	12.7	0.2
J	20.849	230	2.381	4.0	13.0	13.0	13.2	0.2
K	25.360	340	2.924	3.6	14.0	14.0	14.2	0.2

[1]Feet above county boundary

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, USA
AND INCORPORATED AREAS

FLOODWAY DATA

ROCKY RIVER

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Floodway

Regulatory floodway is the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without increasing the water surface elevation more than a designated height.

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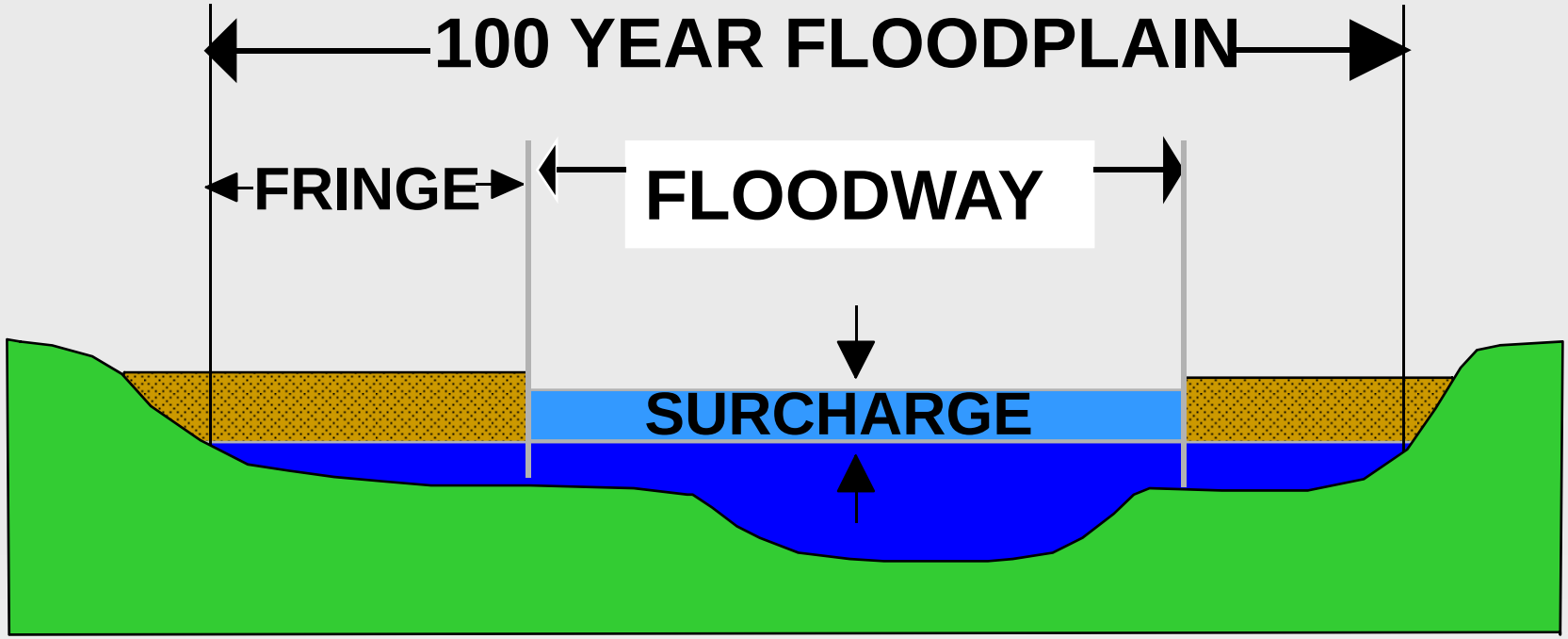
Floodway Schematic



FLOODWAY + FLOODWAY FRINGE = 100 YEAR FLOODPLAIN

SURCHARGE NOT TO EXCEED 1.0 FOOT

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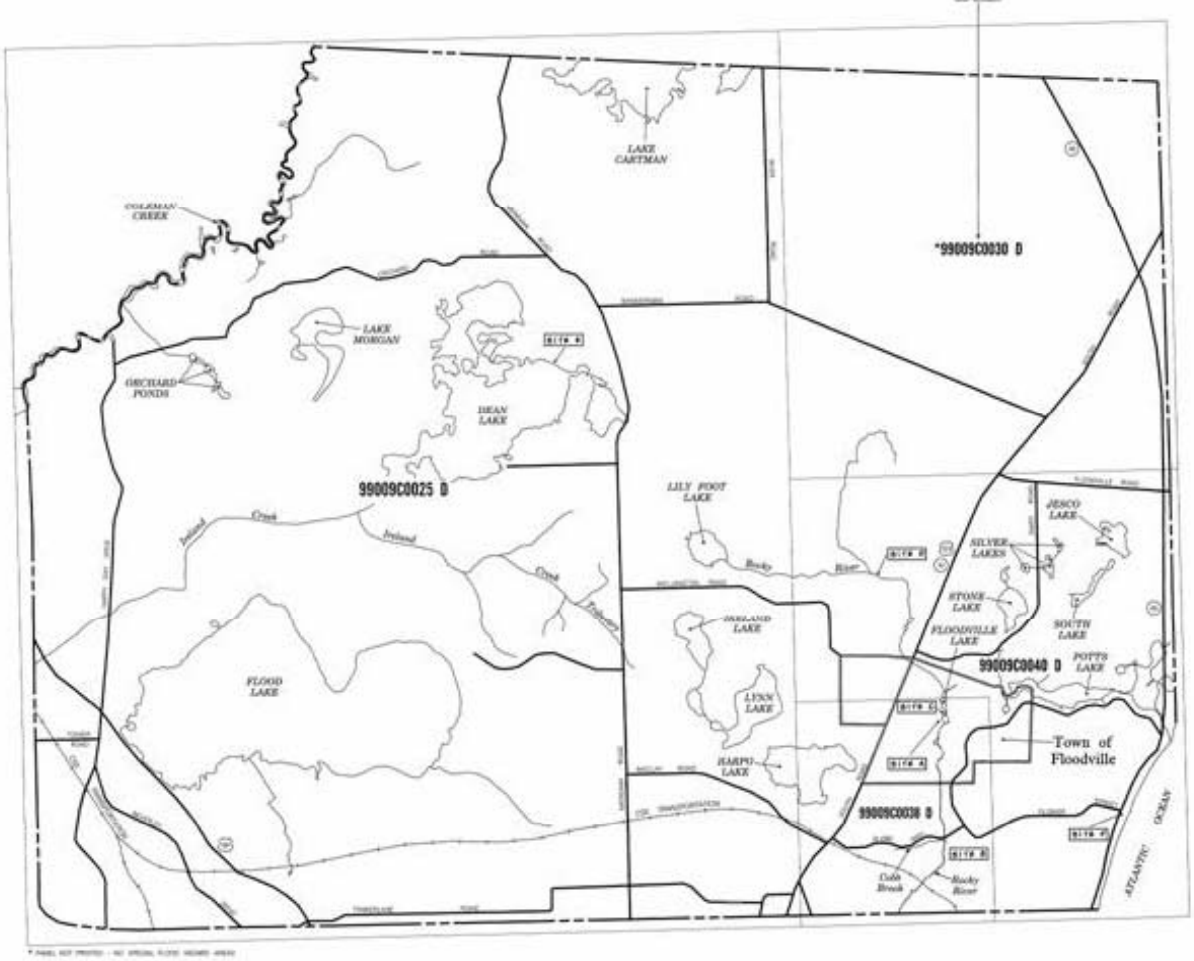
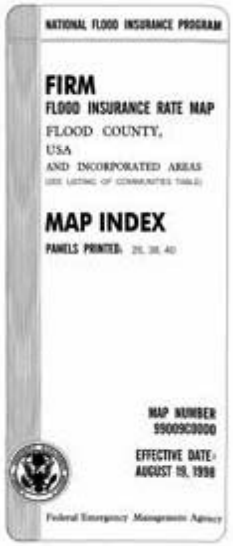
Mapping – Basic Elements

LISTING OF COMMUNITIES

COMMUNITY NAME	COMMUNITY NUMBER	LOCATED ON PANEL(S)	INITIAL IDENTIFICATION DATE	FIRST FIRM DATE
FLOOD COUNTY (UNINCORPORATED AREAS)	[illegible]	[illegible]	[illegible]	APRIL 17, 1987
FLOODVILLE, TOWN OF	[illegible]	[illegible]	JUNE 16, 1970	APRIL 17, 1987

PANEL NOT PRINTED





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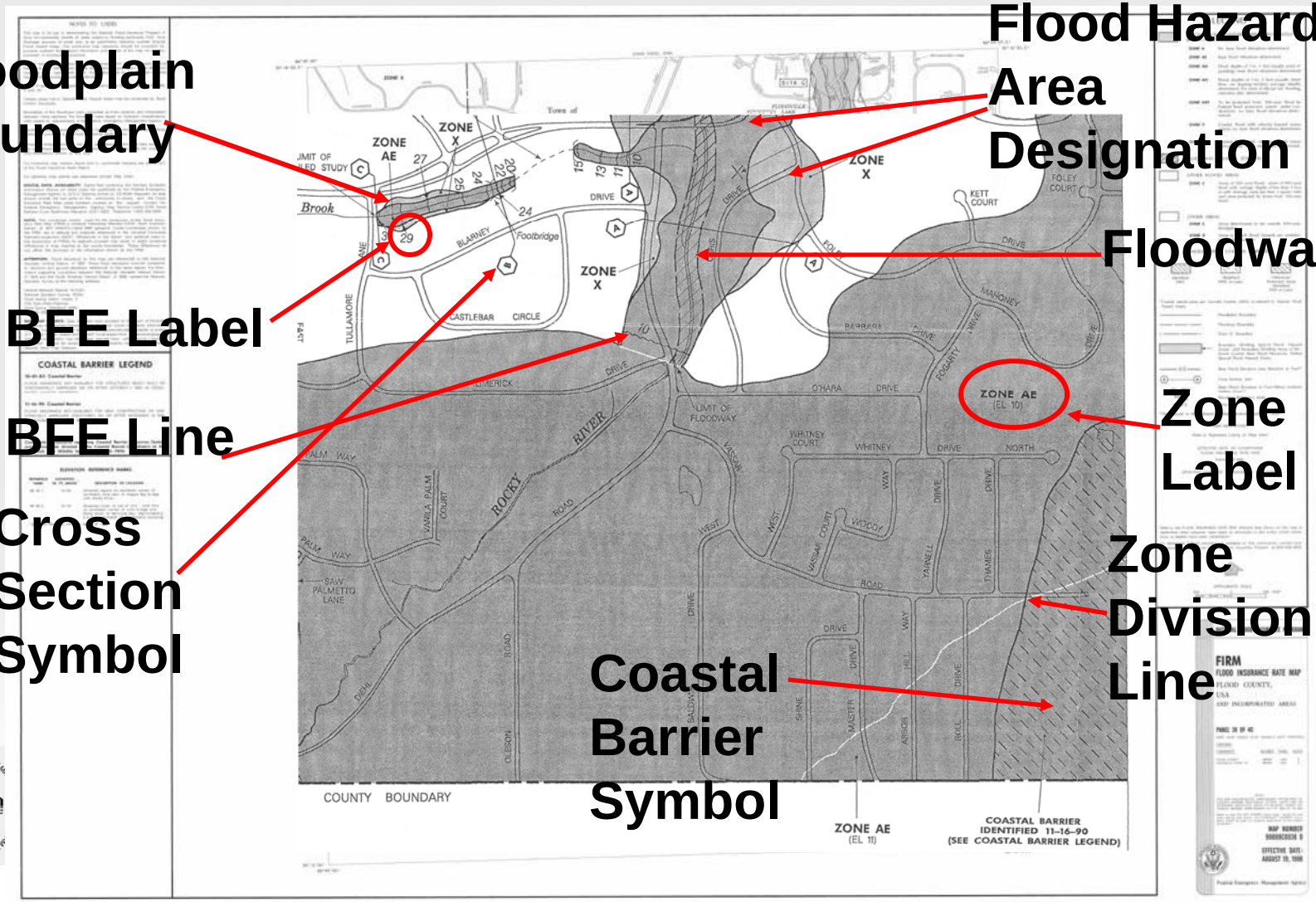
Mapping – Basic Elements



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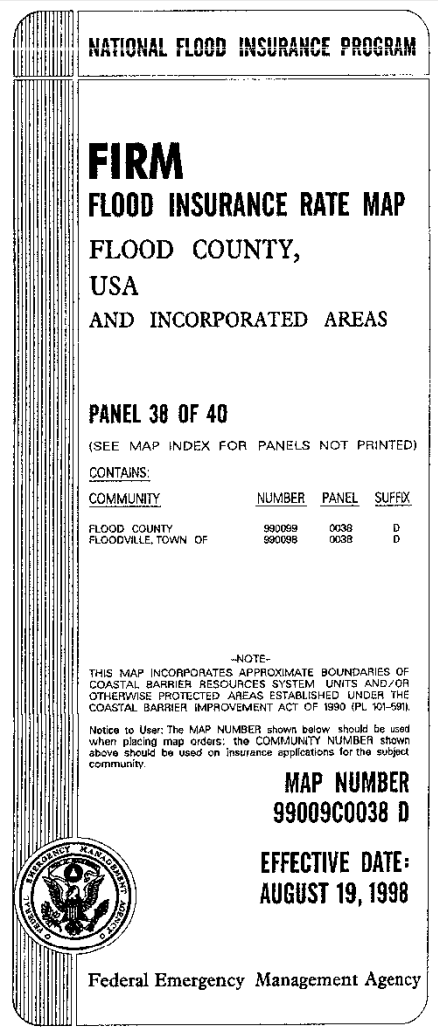
Mapping – Basic Elements



NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

FLOOD COUNTY,
USA
AND INCORPORATED AREAS

PANEL 38 OF 40

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FLOOD COUNTY	990099	0038	D
FLOODVILLE, TOWN OF	990096	0038	D

-NOTE-

THIS MAP INCORPORATES APPROXIMATE BOUNDARIES OF COASTAL BARRIER RESOURCES SYSTEM UNITS AND/OR OTHERWISE PROTECTED AREAS ESTABLISHED UNDER THE COASTAL BARRIER IMPROVEMENT ACT OF 1990 (PL 101-591).

Notice to User: The MAP NUMBER shown below should be used when placing map orders; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER
99009C0038 D

EFFECTIVE DATE:
AUGUST 19, 1998

Federal Emergency Management Agency

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Mapping – Basic Elements

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100–YEAR FLOOD

ZONE A No base flood elevations determined.

ZONE AE Base flood elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE A99 To be protected from 100–year flood by Federal flood protection system under construction; no base flood elevations determined.

ZONE V Coastal flood with velocity hazard (wave action); no base flood elevations determined.

ZONE VE Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

ZONE X Areas of 500–year flood; areas of 100–year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100–year flood.

OTHER AREAS

ZONE X Areas determined to be outside 500–year floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

UNDEVELOPED COASTAL BARRIERS*

Identified 1983 | Identified 1990 or Later | Otherwise Protected Areas Identified 1991 or Later

*Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas.

Floodplain Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 — Base Flood Elevation Line; Elevation in Feet**

A — A — Cross Section Line

(EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone**

RM7 x — Elevation Reference Mark

● M1.5 — River Mile

**Referenced to the National Geodetic Vertical Datum of 1929

MAP REPOSITORY

Refer to Repository Listing on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
AUGUST 19, 1998

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638–6620.

APPROXIMATE SCALE

500 0 500 FEET

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Mapping Formats

Flood Hazard Maps

- Definition – SFHAs, BFE, Floodways
- Old Format
- New Format

Digital FIRM – GIS layers

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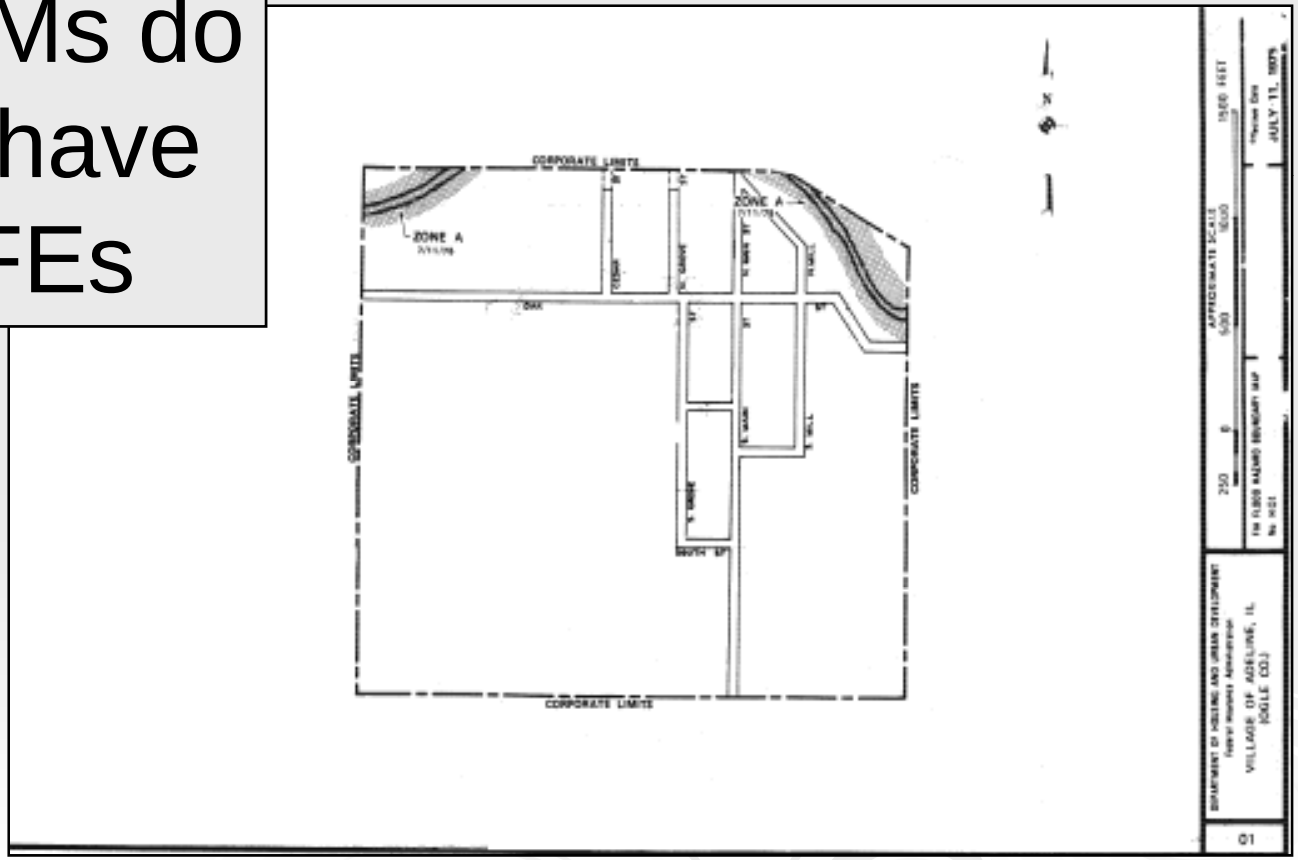
Flood Hazard Boundary Map

FHBMs do not have BFEs



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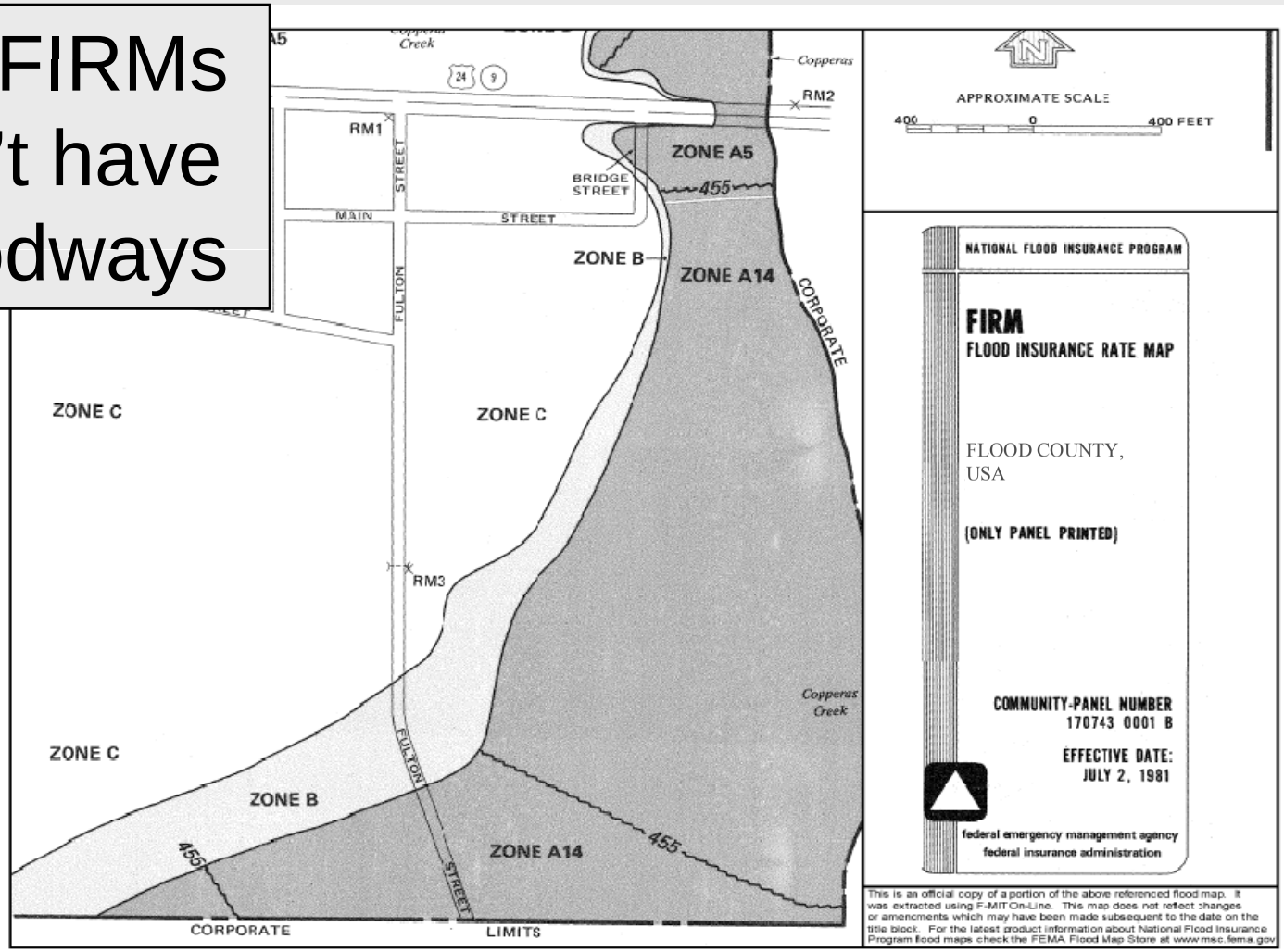
Old Format Flood Insurance Rate Map (FIRM)

Old FIRMs don't have Floodways



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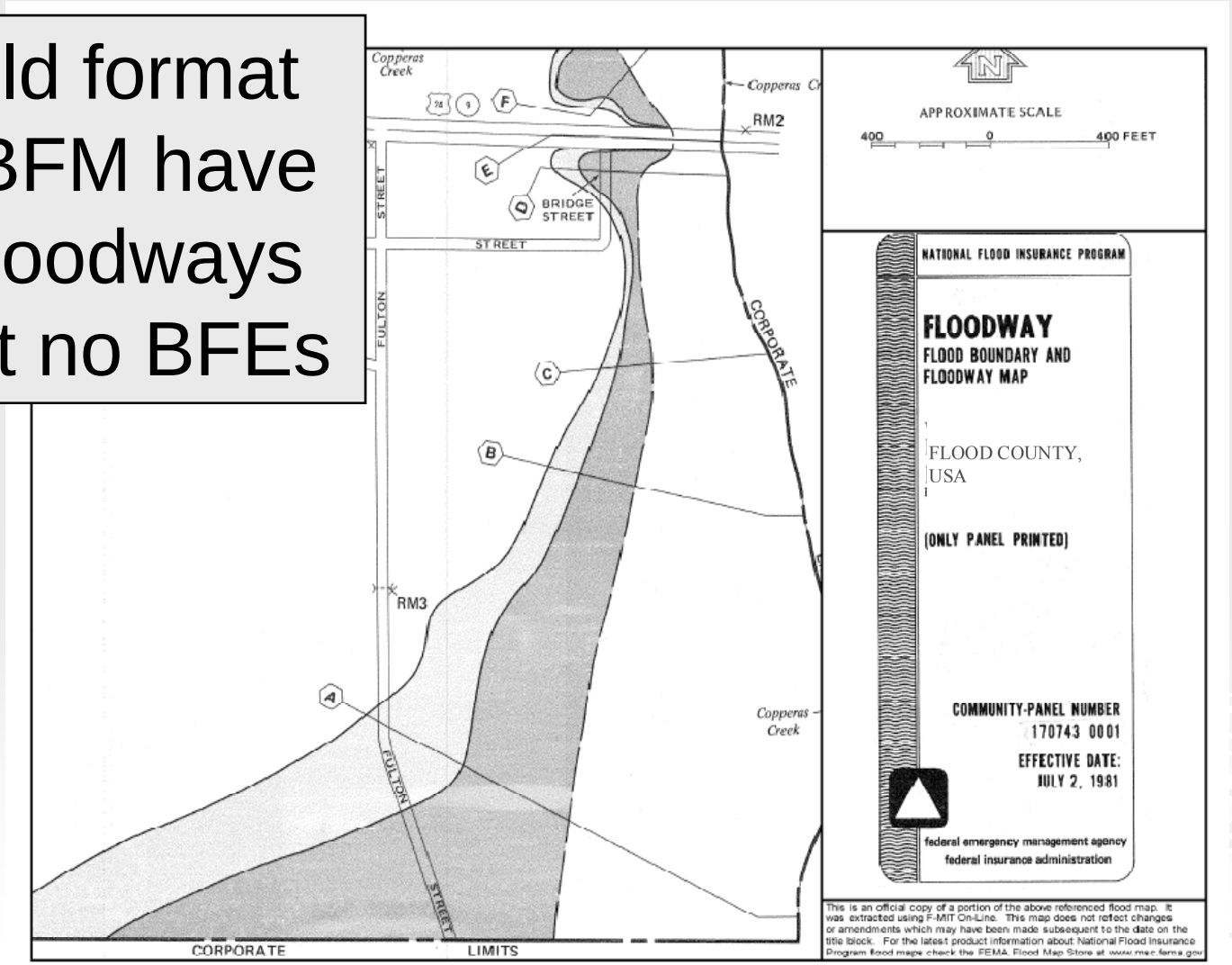
Old Format Flood Boundary and Floodway Map (FBFM)

Old format FBFM have Floodways but no BFEs



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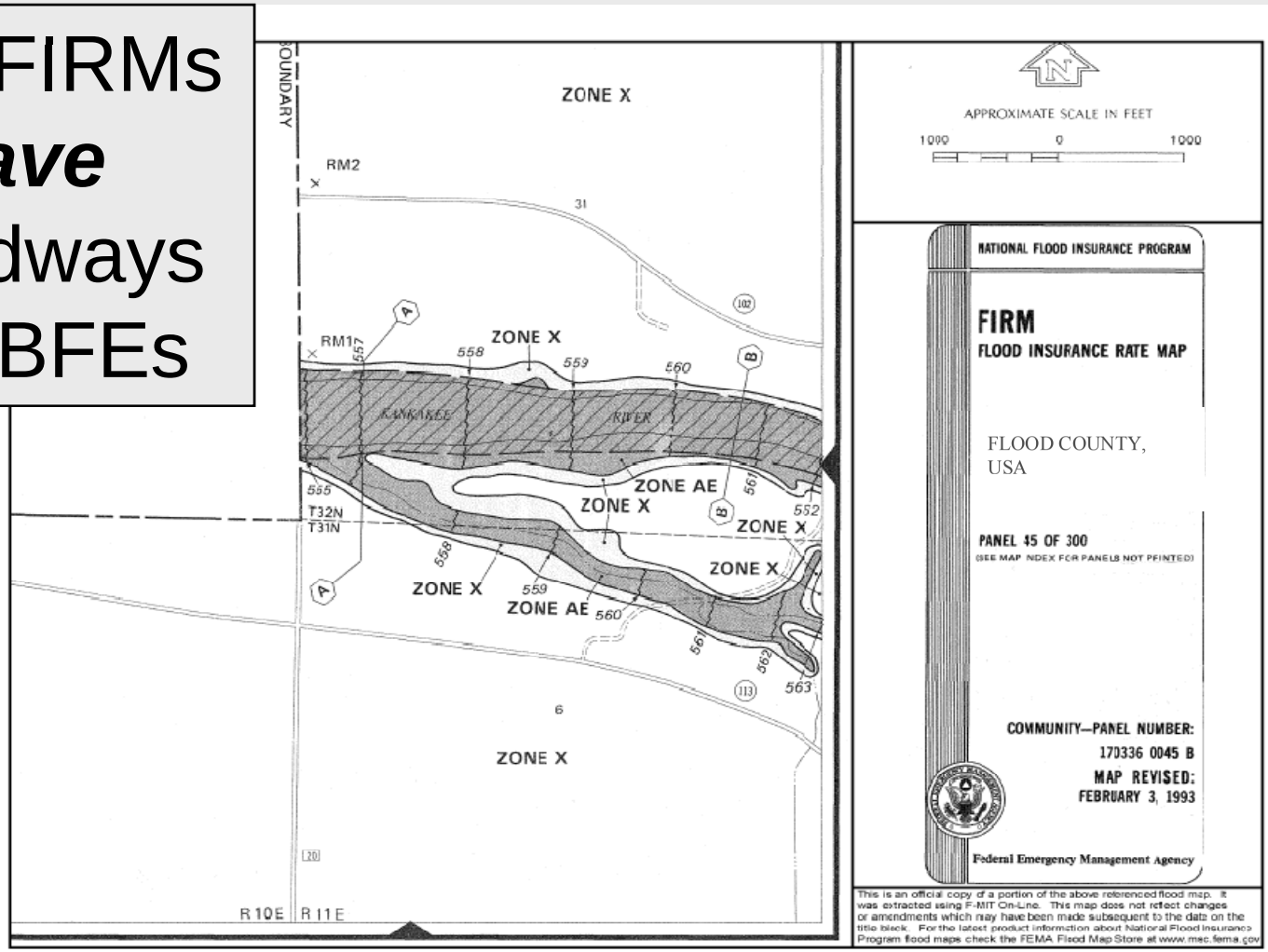
“New” Format Flood Insurance Rate Map (FIRM)

New FIRMs ***have*** Floodways *<u>and</u>* BFEs



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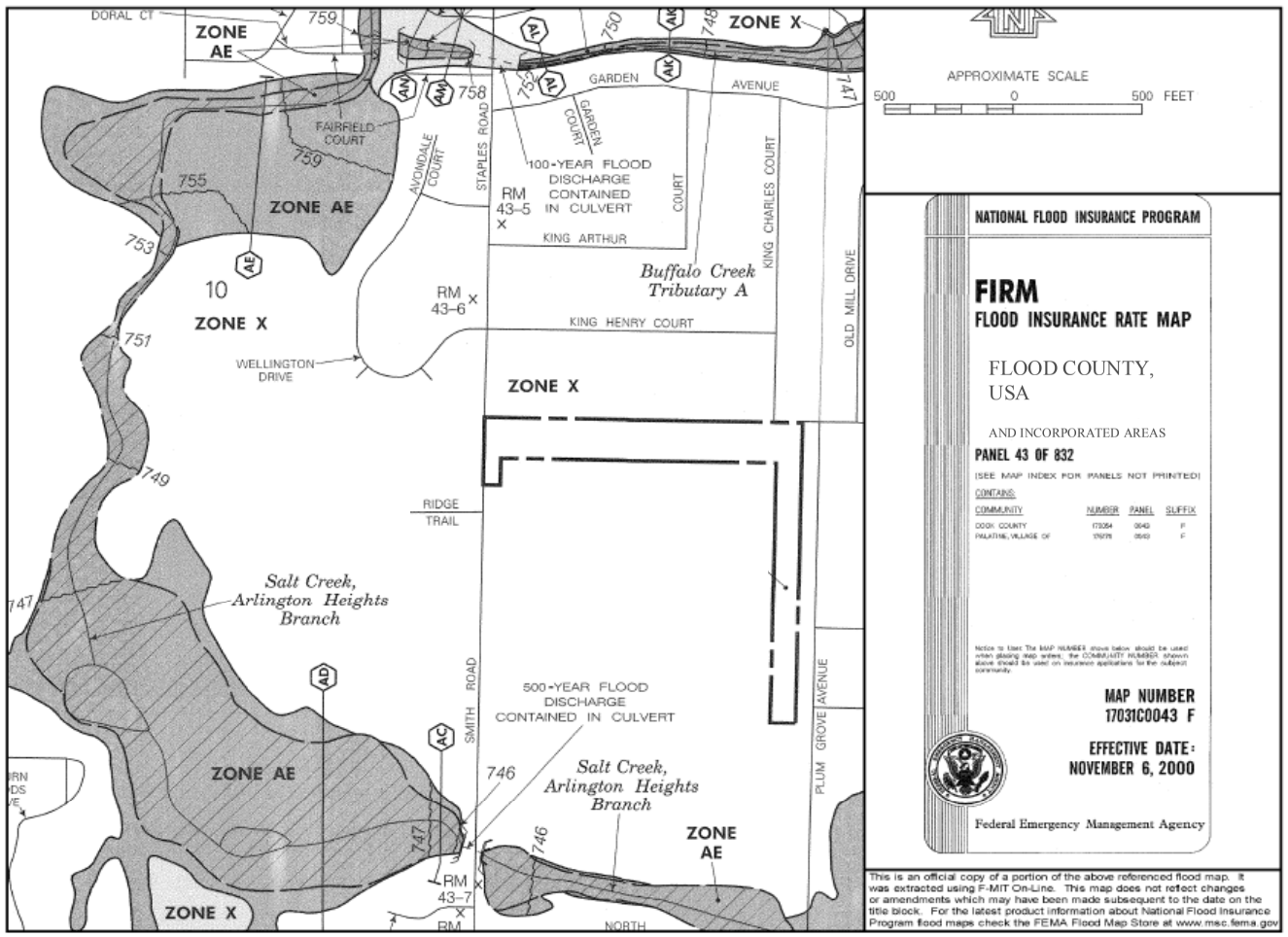
Countywide Flood Insurance Rate Map (FIRM)



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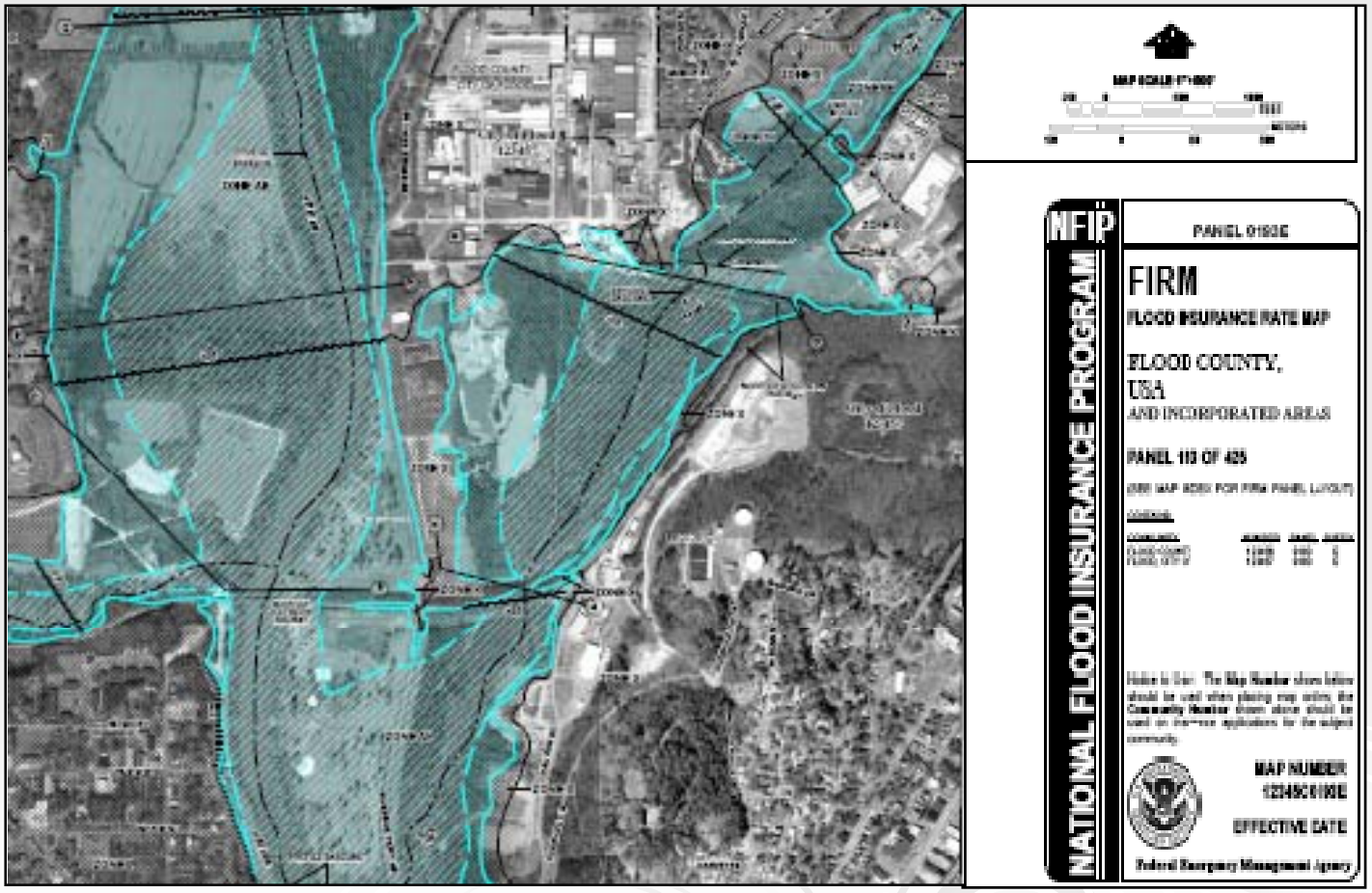
Digital Flood Insurance Rate Map (DFIRM) Ortho Example



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Flood Zone Designations

Unnumbered Zone A
Zones AE (A1 - A30)
Zones AO (Sheet Flow)
Zones AH (Ponding)
Zone A99
Zone AR

Zone V
Zone VE (V1-V30)
Zone D
*Shaded Zone X (B)
*Unshaded Zone X (C)

*No Mandatory purchase requirement.

Only FEMA can change NFIP flood maps!

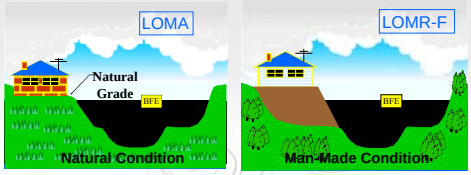
Request must be based upon existing real world conditions at the time of the request.

Methods of Map Change

- Restudy the map and publish new maps
- Issue a letter describing the map change
  - LOMA (natural condition)
  - LOMR (man-made condition)
  - LOMR-F (LOMR based on fill)
  - CLOMA (Conditional LOMA)
  - CLOMR (Conditional LOMR)

Types of Map Change

- Amendments – maps changed to reflect errors primarily due to limitations in map scale
- Revisions – maps changed to reflect physical changes to flood conditions



What Does a LOMA Do?

- Officially amends the FIRM
- Removes the mandatory* flood Insurance purchase requirement
- May remove a property from the local regulatory requirements
- No review fee

* Even with a LOMA, lender may still require purchase of flood insurance

What Does a LOMR-F(ill) Do?

- Officially amends the FIRM
- Removes the mandatory* flood insurance purchase requirement
- Existing and proposed developments MUST comply with local FPM regulations
- Review fee varies

* Even with a LOMR-F, lender may still require purchase of flood insurance

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Conditional Letters of Map Change

- ***Do not*** officially change the FIRM
- FEMA will review determine whether a map change would be approved if built as proposed
- CLOMRs involve fees
- Within 6 months of project completion, LOMR request must be submitted to FEMA.

Maintaining NFIP Maps

- The community is the primary repository for NFIP maps.
- Old and revised maps have historical significance and should be kept.
- To obtain maps:
  Contact the FEMA Map Service Center
  http://msc.fema.gov/ or 1-800-358-9616

UNIT II – Summary Review

Floodplain Mapping

- Base Flood
- Flood Studies
- Map Formats and Zones
- Map Changes

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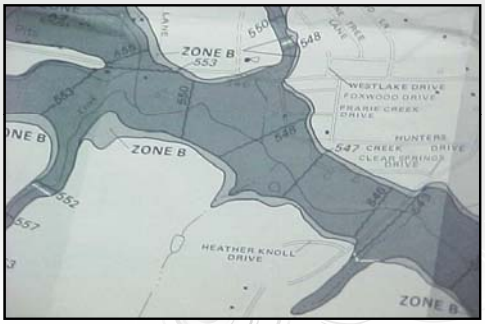
Stretch Break

Mapping Exercise



Break

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Job Aids

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Flood Maps – Zone Designations
44 CFR 64.3

Zone Designations	
Zone A:	SFHAs where BFEs are not determined, sometimes referred to as an "unnumbered A Zone"
Zones AE (A1 - A30):	SFHAs where BFEs are shown
Zone A99:	Areas of 100-year flood to be protected by flood protection system under construction (BFEs not determined)
Zones AO: **(Sheet Flow)**	Shallow flooding where average water depths are between 1 and 3 feet (average depths of inundation are shown)
Zones AH: **(Ponding)**	Shallow flooding where average water depths are between 1 and 3 feet (BFEs are shown)
Zone AR:	SFHAs that result from the decertification of previously accredited flood protection system that is being restored to provide a 100-year or greater level of protection
Zone D:	Areas of undetermined, but possible flood hazards Federal lands such as parks
Zone V:	Areas of 100-year coastal flood with wave height greater than 3 feet (BFEs not determined)
Zone VE (V1-V30):	Areas of 100-year coastal flood with wave height greater than 3 feet (BFEs determined)
***Shaded Zone X:** **(AKA Zone B)**	• Areas between limits of 100-year flood and 500-year flood • Areas protected by levees • 100-year floodplain where water depths are less than 1 foot • Areas with drainage areas less than 1 square mile
***Unshaded Zone X:** **(AKA Zone C)**	Areas of minimal flooding
* There is NO mandatory flood insurance purchase requirement in this zone.	

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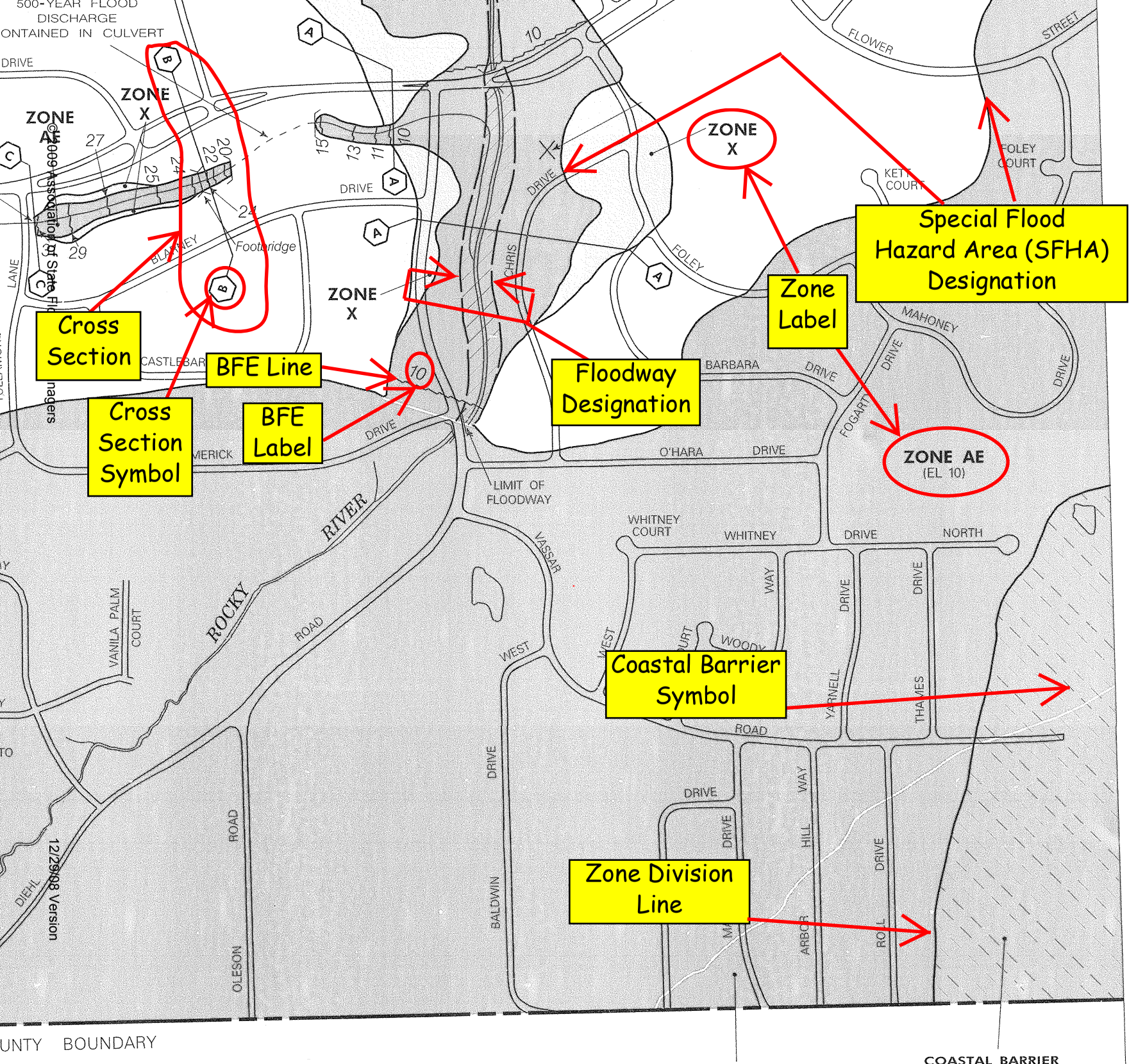
500-YEAR FLOOD
DISCHARGE
ONTAINED IN CULVERT
ZONE A
ZONE X
ZONE X
ZONE X
ZONE AE
(EL 10)
Footbridge
BLARNEY
CASTLEBAR
DRIVE
CHRIS
FOLEY
FLOWER
STREET
FOLEY COURT
KETT COURT
MAHONEY
BARBARA
FOGART
O'HARA
LIMIT OF FLOODWAY
WHITNEY COURT
WHITNEY
NORTH
VASSAR
WEST
WOODY
YARNELL
THAMES
ROCKY
RIVER
ROAD
VANILA PALM COURT
DIEHL
OLESON
BALDWIN
ARBOR
HILL
WAY
ROLL
Cross Section
Cross Section Symbol
BFE Line
BFE Label
Floodway Designation
Zone Label
Special Flood Hazard Area (SFHA) Designation
Coastal Barrier Symbol
Zone Division Line
12/29/08 Version
UNTY BOUNDARY
COASTAL BARRIER

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The panel (sheet) number is 38. Note that an Index Map, which shows all FIRM panels, is available for the community.

The Town of Floodville community ID number is "990098". (Community ID numbers are always 6 digits)

Map Number (always 5 digits followed by a letter)

The date of the FIRM is August 19, 1998

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

FLOOD COUNTY,
USA
AND INCORPORATED AREAS

PANEL 38 OF 40

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FLOOD COUNTY	990099	0038	D
FLOODVILLE, TOWN OF	990098	0038	D

–NOTE–

THIS MAP INCORPORATES APPROXIMATE BOUNDARIES OF COASTAL BARRIER RESOURCES SYSTEM UNITS AND/OR OTHERWISE PROTECTED AREAS ESTABLISHED UNDER THE COASTAL BARRIER IMPROVEMENT ACT OF 1990 (PL 101–591).

Notice to User: The MAP NUMBER shown below should be used when placing map orders; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER
99009C0038 D

EFFECTIVE DATE:
AUGUST 19, 1998

Federal Emergency Management Agency

Map Suffix (indicates which version of map it is, in this case it's the 4th version)

Panel Number (Always 4 digits)

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Mapping: Basic Elements

Source: FEMA "How to Read a Flood Insurance Rate Map Tutorial" (Updated June 2003)

- The body of the flood map displays the map content. Primary features include the major roads, corporate limits, bridges, flood hazard information, and typical symbology.
- Dark tints indicate the areas of greater flood risk.
- BFE wavy lines are used to indicate when BFE varies along a watercourse. If the BFE is uniform across a large area a label is used.
- Zone Division Lines separate SFHA with different zone designations and SFHAs with differing BFEs in coastal areas.

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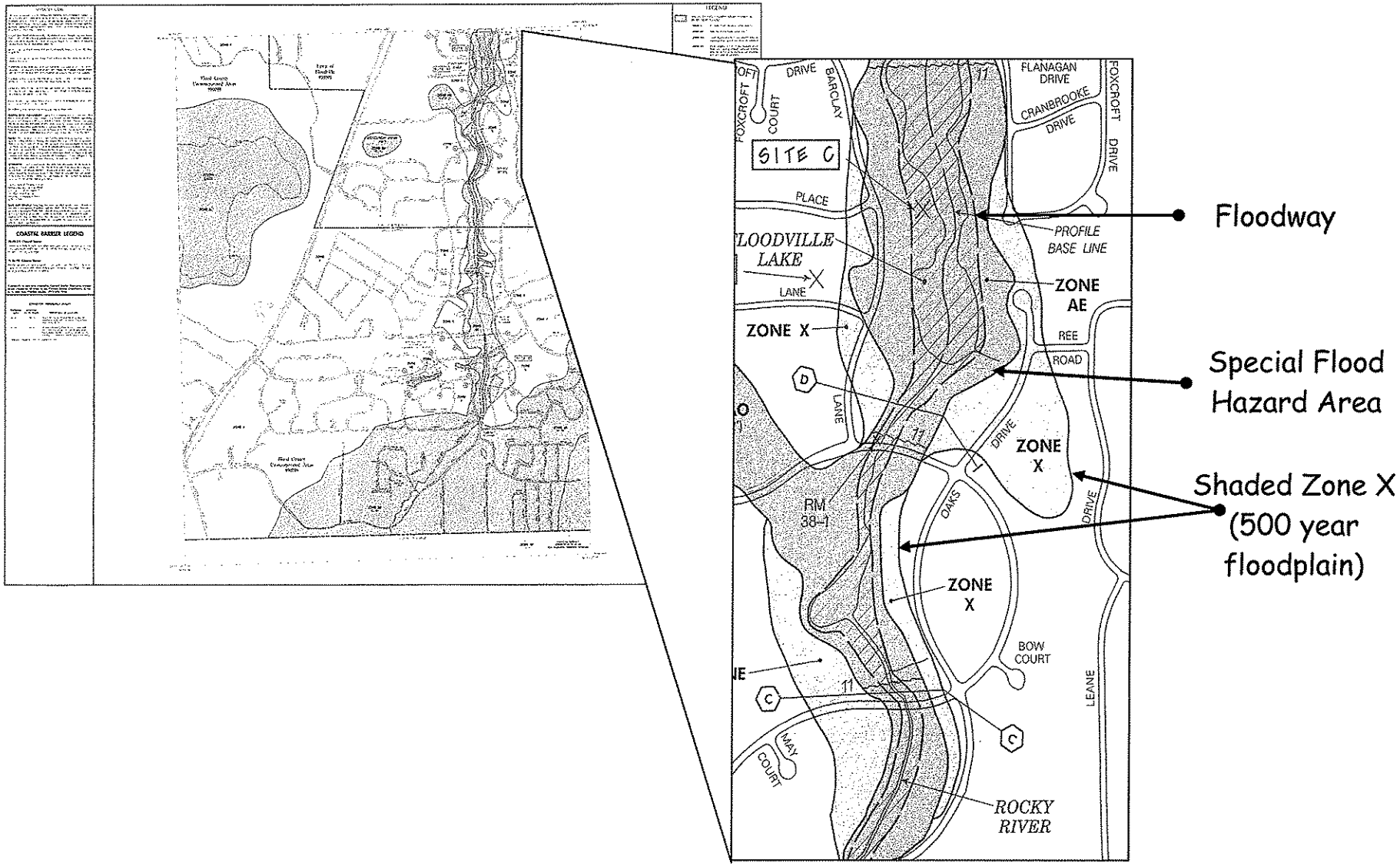
Mapping: Basic Elements



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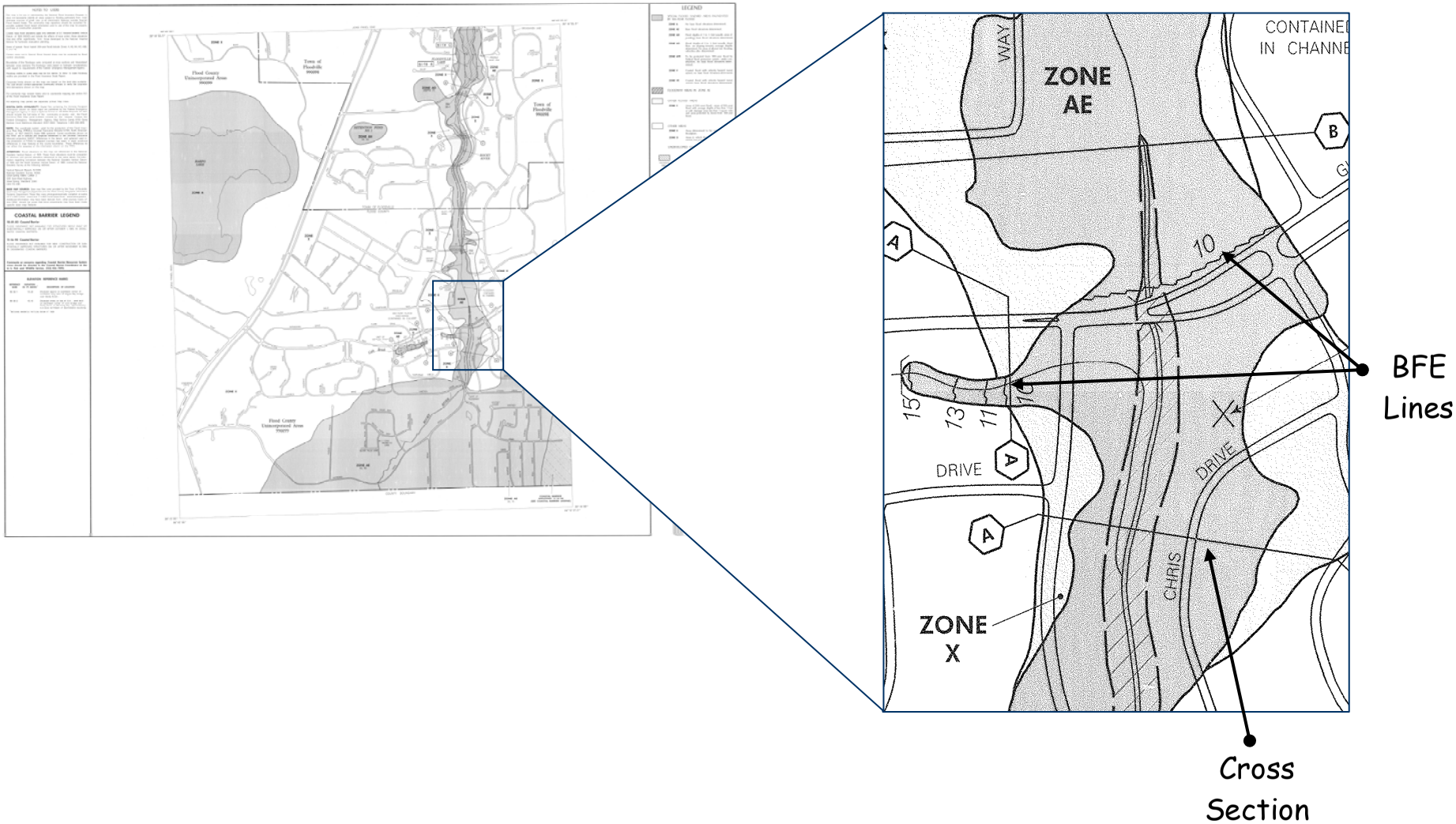
Mapping: Basic Elements



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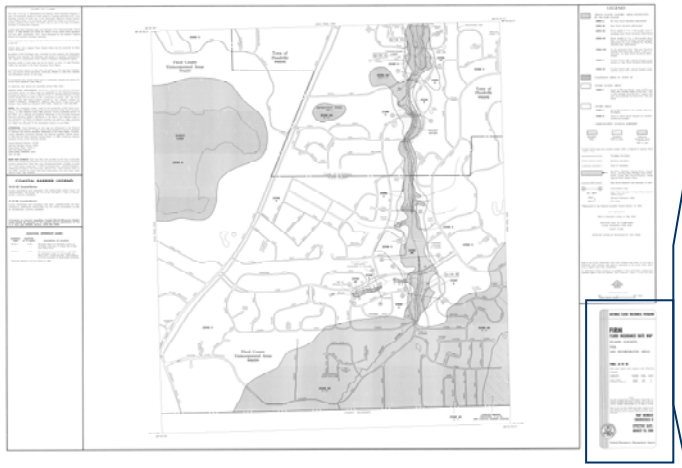
Mapping: Basic Elements



NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

FLOOD COUNTY,
USA
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PANEL 38 OF 40

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Panel Number

Effective Date

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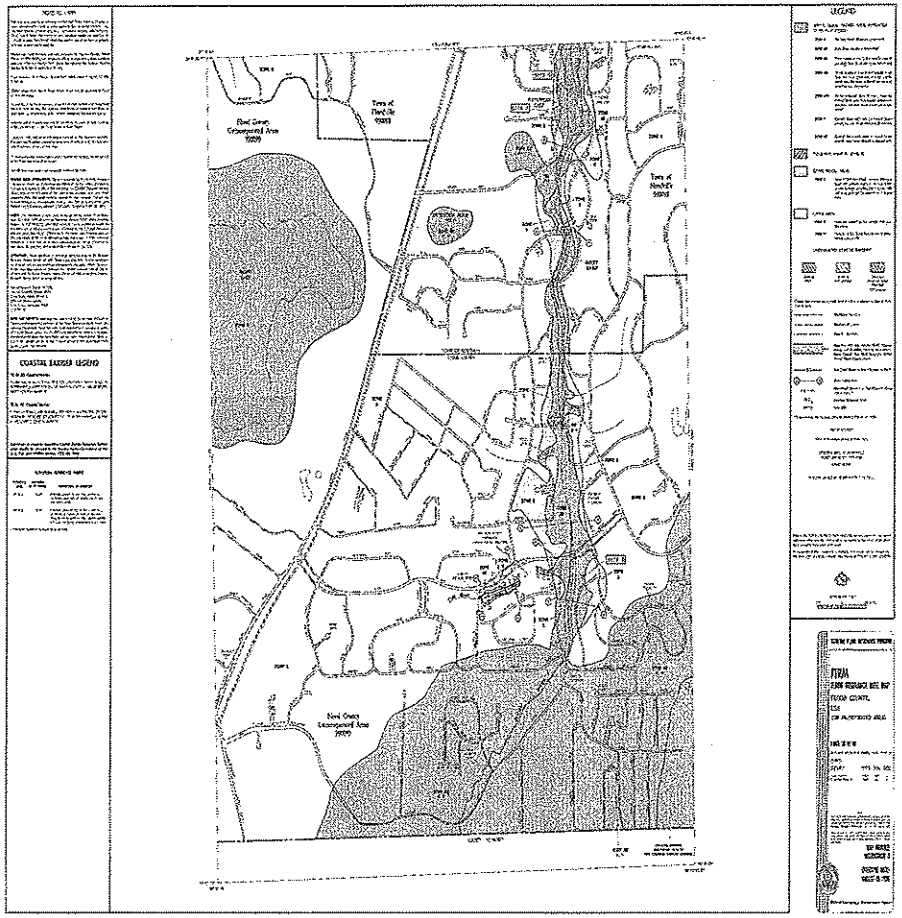

Community
Identification Numbers
(CIDs)

PANEL 38 OF 40

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FLOOD COUNTY	990099	0038	D
FLOODVILLE, TOWN OF	990098	0038	D

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Floodplain Mapping - Job Aid

Base Flood: NFIP flood of regulation (1% chance flood of being = or > in any given year), AKA: 100 year flood.

- Provides reasonable level of protection
- Not overly stringent
- Not excessive burden of cost

Flood Insurance Study (FIS)

- The technical "support" for adopting FPM regulations
- Provides risk assessment data: depth, velocity, duration, historical information
- Used w/maps to determine BFE, flood zones, and floodway at specific sites
- Establishes the elevation profiles and floodplains for 10, 50, 100, & 500 year floods
- Gives flood insurance risk zones
- Provides Hydrologic and Hydraulic information (depth, flow)

Floodway: The regulatory floodway is the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without increasing the water surface elevation more than a designated height (usually 1 foot).

Communities Adopt & Enforce NFIP Regulations based on:

- Floodplain & floodway boundaries
- BFEs
- FIRM Zones
- FIS & historical data

Mapping - 101

- Only FEMA can change maps. Communities who are seeking map changes must file appropriate paperwork with FEMA.
- Communities are responsible for keeping copies of current, old, and revised maps to provide a historical record for the basis of community regulation and enforcement.
- In some circumstances, property owners may retain previous FIRM zones as the basis for insurance premium rating as long as a copy of the map is available.

BASIC ELEMENTS

Index o Community Boundaries o Panel Scheme (there may not be panels available for areas outside SFHA)	**Legend / Key** o Scale & North direction o Insurance zones o Datum (common vertical reference point usually in relation to sea level)
Panel o Highways, Railroads, Areas of Special Interest	**Title Block** o Community ID and Panel #s o Map effective or revision date

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LOMC (Letters of Map Change)

e-LOMA (Letter of Map Amendment): online version of a LOMA on FEMA's website
LOMA (Letter of Map Amendment): *natural* (in-advertent inclusions) change
LOMR-F (Letter of Map Revision – Fill): change based on *fill*
LOMR (Letter of Map Revision): *man-made* change
CLOMR (Conditional Letter of Map Revision): *proposed* change

Use MT-1 Form	Use MT-2 Form
LOMA LOMR-F	LOMR CLOMR

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3rd TAB

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UNIT III

NFIP Regulations and Administrative Procedures

- NFIP Regulations
- 44CFR 60.3 Requirements
- Ordinance Administration
- Substantial Damage / Improvement

Community Participation

Community must adopt and enforce FPM regulations that meet or exceed the minimum NFIP standards and requirements (in accordance with 44 CFR 60.3)

Non-Participating Communities

- No NFIP flood insurance available
- No federal grants/loans for development (in SFHA)
- Limited disaster assistance
- Conventional loans available in identified flood hazard areas, but must notify applicants of the flood hazard and no NFIP insurance or disaster relief available

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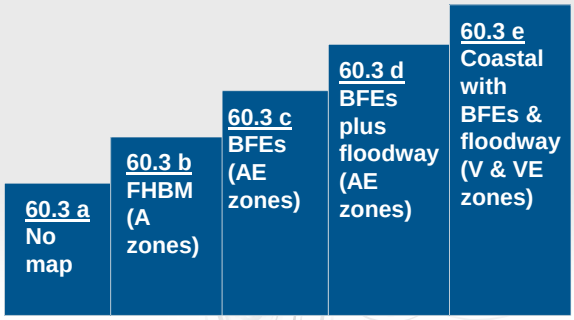
NFIP Regulations (44CFR60.3)



44CFR 60.3 Requirements

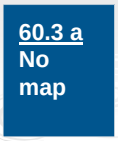
- A permit is required for all development in the SFHA shown on the FIRM.
- "Development" is any man-made change to real estate including:

structures
dredging
grading
excavating
mining
filling
paving
drilling
storage (equipment and materials)

Paragraph 44CFR 60.3(a)

No Map

- Ensure all necessary permits are obtained
- **All** development reviewed by community official to be "reasonably safe" from flooding



Additional Considerations 60.3(a)(2)

- Environmental Protection Measures
- Federal Regulations:
  - National Environmental Policy Act
  - EO 11988
  - Clean Water Act (Section 404)
  - Endangered Species Act
  - Sewage Disposal System regulations
  - Haz Mat Facilities site restrictions

Paragraph 44CFR 60.3(b)

Approximate Zone A only

- Permits required in Zone A
- Obtain, review, and reasonably utilize BFE and floodway data
- BFE data required for developments > 50 lots or 5 acres, whichever is less
- If BFEs or floodways are available follow the appropriate regulations.

60.3 a	60.3 b
No map	FHBM (A zones)

Paragraph 44CFR 60.3(c)

BFEs but no Floodways or V Zones

- Lowest floor at or above BFE
- Keep records of low floor elevations
- Manufactured home rules
- Areas beneath the lowest floor
- Openings, vents
- AO Zone Rules
- Recreational Vehicles
- Drainage paths in AO and AH
- CLOMR for BFEs of more than 1 foot

60.3 a	60.3 b	60.3 c
No map	FHBM (A zones)	BFEs (AE zones)

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Paragraph 60.3(c)

Opening (venting) requirements:

- Certificate from an engineer ***OR***
- Min. of 2, base no higher than 1' above grade, and a net area of not <1 square inch for every square foot of enclosed area, and covering must allow auto-entry / exit of flood waters

Recreational Vehicles:

- Onsite fewer than 180 consecutive days ***AND*** fully licensed and ready for highway use ***OR***
- Meet the permit requirements

Paragraph 60.3(d)

BFEs and Floodways but no V Zones

- Select and adopt a regulatory floodway
- Prohibit encroachments

60.3 a	60.3 b	60.3 c	60.3 d
No map	FHBM (A zones)	BFEs (AE zones)	BFEs plus floodway (AE zones)

Paragraph 60.3(e)

Communities with V Zones

- Bottom of the lowest horizontal structural member at or above BFE
- No fill for structural support
- No obstructions below the BFE
- V Zone Engineer Certification
- Mobile homes & Recreational Vehicles
- New construction landward of high tide
- Mangroves and dunes

60.3 a	60.3 b	60.3 c	60.3 d	60.3 e
				Coastal with BFEs & floodway

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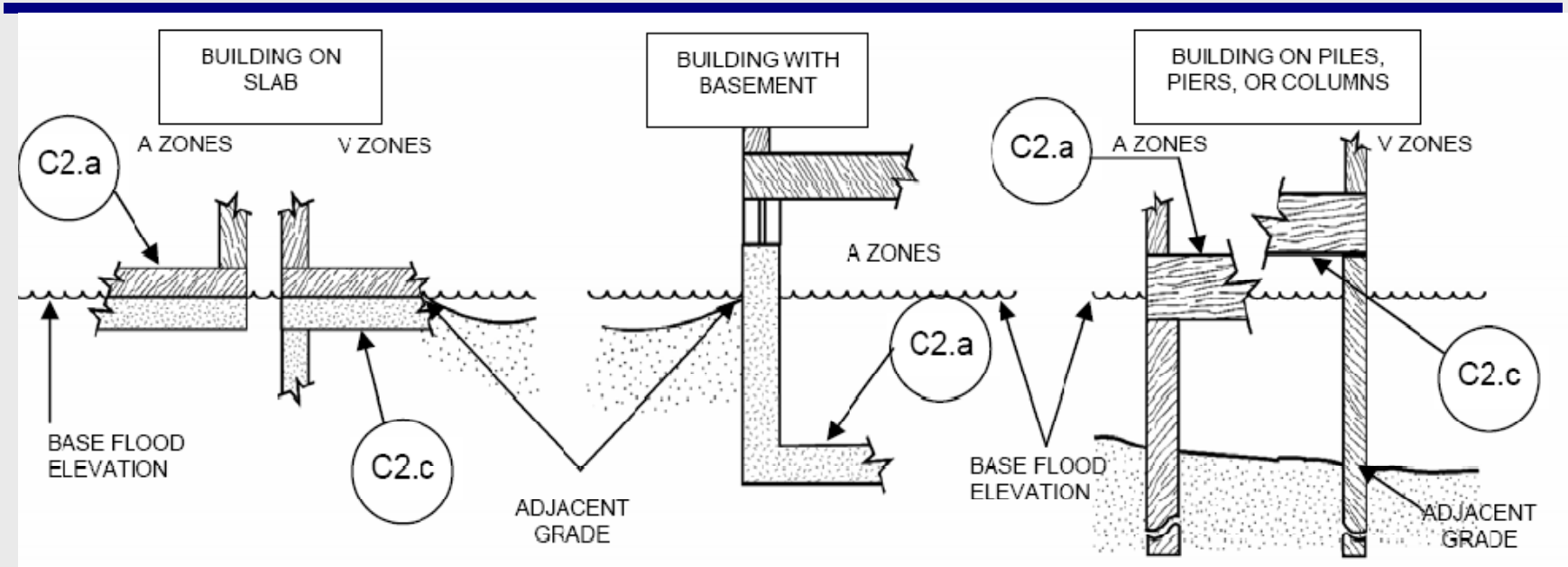
Paragraph 60.3



*C2.a and C2.c are the blanks on the Elevation Certificate for the Lowest Floor Elevation

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Tell me something about . . .

- RVs
- Lowest floor in V Zones vs. A Zones
- AO with no depth shown
- Pre-FIRM Manufactured Home Parks
- Riverine with no floodway
- Enclosure openings
- Development in Approximate A Zones

Ordinance Administration

Ordinance must be:

- ✓ Legally enforceable
- ✓ Applied uniformly throughout community
- ✓ Take precedence over less restrictive requirements

Duties of the Administrator

- ✓ Understanding the regulations
- ✓ Ensure permits are obtained
- ✓ Coordination with other offices, departments, & programs
- ✓ Inspections
- ✓ Correct violations & enforcement actions
- ✓ Updating the ordinance & record keeping

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Ensure Permits Are Obtained

Inspections - most effective way to ensure compliance

Enforcement - ensure all development in the floodplain has a permit and is built according to approved plans in compliance with regulations

Ensure Permits Are Obtained

- Needed for **all** changes to floodplains
- Ensure permit system has wide range of coverage
- Ensure that all federal and state permits are obtained
- If compliant with regulations, issue a permit
- If not compliant deny the permit

Certification Required

Floodproofing Certificate supports the NFIP requirements that ***nonresidential*** buildings may be designed to be watertight or substantially impermeable to floodwaters.

- For insurance - floodproofed elevation must be at least one foot above the BFE
- Must obtain and maintain a registered professional engineer's certification that the building is properly floodproofed

Certification Required

- **No-Rise Certification** documents that a project in the floodway or floodplain where the floodway has not been mapped- will not cause an increase in flood heights. Must be supported by engineering analysis and technical data.
- **V-Zones** require that buildings in coastal high hazard areas are engineered to resist wind and water impacts simultaneously.

Correct Violations & Enforce Actions

- **Voluntary compliance –** educate property owner to risk and effectiveness of regulations to protect their interest
- **Administrative Steps –** Notice of violation, stop work order, no Certificate of Occupancy

Correct Violations & Enforce Actions

- **Violations and Penalties -** Fines, Injunction, Court

- **Section 1316 –** FEMA denial of flood insurance to a property that is in violation of State or local floodplain management regulations

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Record Keeping

There is no statute of limitations!!!

- **Permit File (**NFIP Requirement)
- **Elevation Certificates** official record for new and substantially improved buildings
  - Documents compliance with regulations and supports insurance rating
  - CRS communities must use FEMA Elevation Certificate (Form 81-31)

What is a Variance?

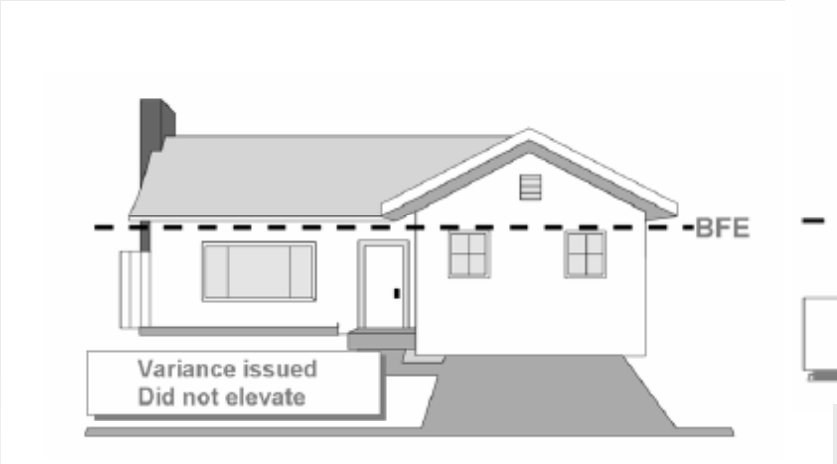
- A grant of relief from the regulations
- Can result in increased risk
- Local decision based upon NFIP, state and local requirements
- Follow general principals of zoning related to property- not personal issues
- Compliance with regulations would be "exceptional hardship"

Guidelines for Granting Variances

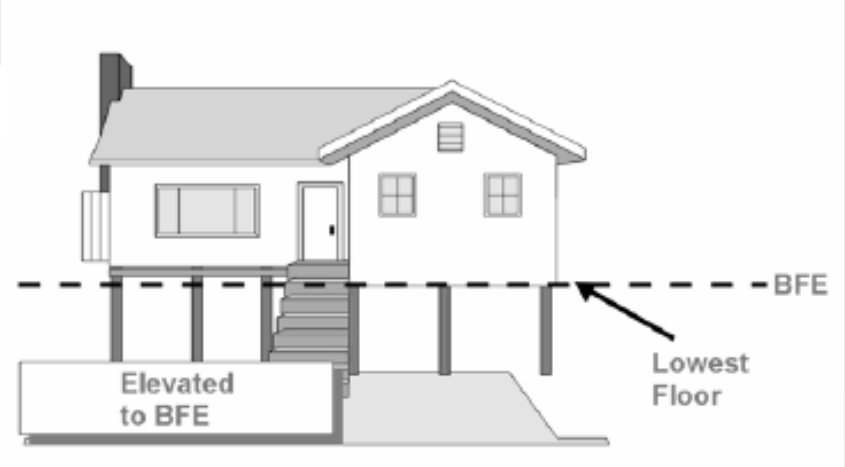
- Unique to the property
- Pertains to land, not owners or structure
- Good and Sufficient Cause
- Hardship
- Does not create threats to public safety
- Must not fraud or victimize the public
- Allows only minimum deviation necessary
- Flood Insurance Rates cannot be waived

Positive Benefits

Denial of a variance can benefit the property owner.



Variance Granted
Did not elevate
$3,090 / year



Variance Denied
Elevated to BFE
$351 / year

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Wet Floodproofing

- Variance must be obtained
- Use limited to parking or storage
- Required openings for entry and exit of water
- Flood resistant materials below BFE
- Utilities dry floodproofed or elevated and anchored to resist flotation, collapse, and lateral movement

Substantial Improvement & Substantial Damage

Substantial Improvement & Substantial Damage

50%

Substantial Improvement & Substantial Damage

Improvement: any reconstruction, remodel, rehabilitation, addition, or improvement the cost of which = or > 50% of the building's ***pre-improvement*** market value.

Damage: damage of any origin, where the cost to restore the building to its pre-damage condition = or > 50% of the building's market value ***before*** the damage occurred.

Costs Included

- Structural items and major building components
- Interior finish elements
- Utility and service equipment
- Market value of all labor and materials

Costs Excluded

- Design cost
- Clean-up
- Contents
- Outside improvements

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Special Situations

- **Exempt costs** should not be included in determining improvement / repair costs
- **Historic structures** are exempt from SI requirements **IF**:
  - Bona-fide "historic"
  - Integrates all possible flood damage reduction measures
  - Project maintains status of structure
- **Code violations**

UNIT III – Summary Review

NFIP Regulations and Administrative Procedures

- NFIP Regulations
- 44CFR 60.3 Requirements
- Ordinance Administration
- Substantial Damage / Improvement

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Job Aids

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Ordinances, Permits, & Variances – Job Aid

Ordinances *must* :

- ✓ Be legally enforceable
- ✓ Be applied consistently and uniformly throughout community
- ✓ Take precedence over less restrictive requirements

Duties of the Floodplain Administrator

- Understand, implement, and ensure compliance with minimum NFIP regulations, or in some states higher standards
- Perform inspections, and ensure permits are applied for
- Correct violations
- Coordinate with other departments (city, county, state, federal levels) that may have requirements for SFHA
- Enforcement actions
- Communicating with FEMA regarding map and ordinance updates
- Recordkeeping

Inspections

First Inspection

- When? - Before ground breaking
- Determining the location of SFHA, the floodway, and any setback requirements

Second Inspection

- When? - Just before installation of low floor
- Check that the foundation is correct type, that the low floor is at correct height. Check ground elevations and fill compaction, the building location, and the adequacy of any crawlspace openings.

Third Inspection

- When? - When project nears completion
- Look for any alterations since last inspection, breakaway walls inspection, and anchoring and tie-down requirements. This is also the time to get as-built certifications.

Permits

- Should have wide coverage to include structures, nonstructural development, new repair, alteration, improvement, and storage
- Know the definition of development and when a permit is required and when it is not required
- FPA is required to ensure that all permits are obtained: local, state, and federal permits
- FPA must ensure certification is provided when required (i.e., floodproofing certs. for non-residentials, ECs, site plans, floodway encroachments, V zone certification)
- FPA should issue or deny the permit based on their review

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Enforcement

- Ensure all development in the floodplain has permits and is built to approved plan in compliance with regulations
- *VOLUNTARY COMPLIANCE* - educate property owner on risks and effectiveness of the regulations to protect their interests
- *ADMINISTRATIVE STEPS* – notify property owner of violations, stop work orders, no certificate of occupancy
- *VIOLATIONS & PENALTIES* – fines, injunction, court
- *SECTION 1316* – only after all previous attempts to remedy non-compliance have failed, FEMA action to deny coverage for NFIP insurance for a specific property owner in violation of regulations

Variances

- Grant of relief from the regulations
- Maintain record of variance including the justification for it
- Legal variances: historic buildings (registered), functionally dependent uses, basement exception
- Probably will result in greater risk to property owner, and *will* increase cost of flood insurance – cannot waive flood insurance requirement!

Guidelines for Granting Variances:

- ✓ Based on NFIP, state, and local requirements
- ✓ Does not create threats to public safety
- ✓ Does not fraud or victimize the public
- ✓ Allows only the minimum deviation from the regulations necessary
- ✓ Based on general principals of zoning, not personal issues
- ✓ Unique to the property/land does not pertain to the owners or structure
- ✓ Demonstrates a hardship; compliance would place exceptional hardship on the property owner (unique property characteristic, unsuitable soils, irregular shaped lot, subsurface geology)

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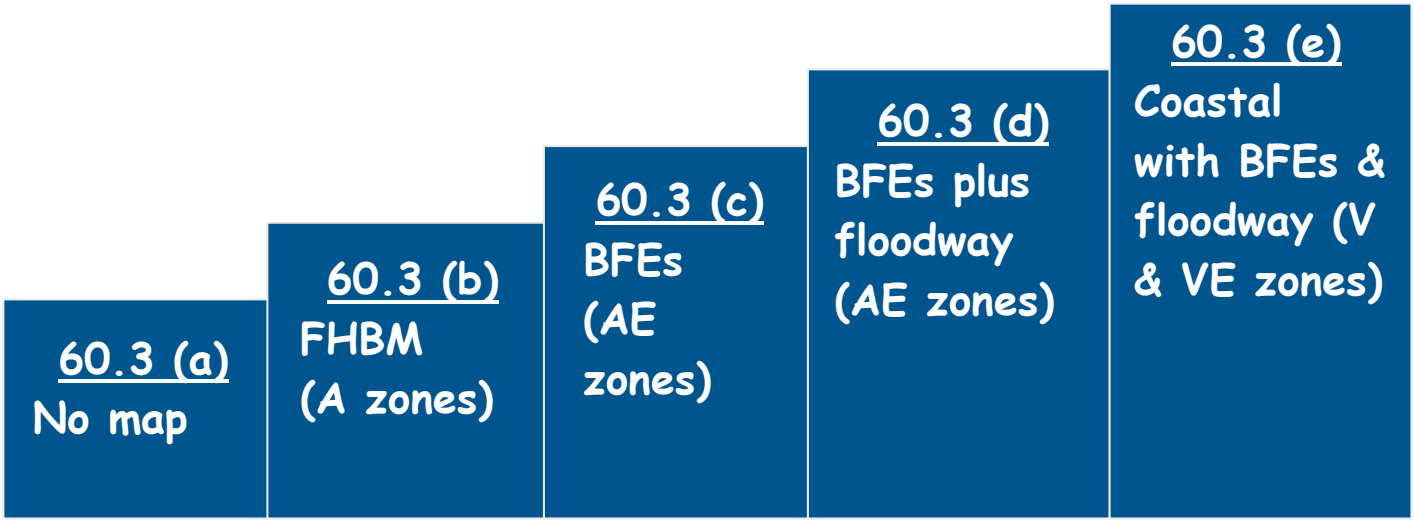
44 CFR Part 60.3



60.3 (a) No Map

- *No maps:* you must observe all new development in the community to estimate where your flood hazards are.
- Require permits
- Check proposed sites to ensure that development is reasonably safe from flooding:
  - ✓ Anchored
  - ✓ Flood resistant materials
  - ✓ Methods and practices to minimize damage
  - ✓ Utilities and service facilities designed to prevent floodwater entry and accumulation

60.3 (b) Approximate A Zone only

Criteria from 60.3(a) plus:

- Reasonably utilize available BFE and floodway information
- Require development that is 5 acres or 50 lots (which ever is less) to generate BFE
- Manufactured homes in A zones with no BFE must install using methods and practices to minimize damage. This means elevate and anchor to resist flotation, collapse and lateral movement.
- FEMA 85 "Manufactured Home Installation in Flood Hazard Areas" is good reference.
- If you get a BFE, then follow 60.3(c):
  - ✓ Residentials elevated
  - ✓ Non Residentials floodproofed OR elevated
  - ✓ Mobile homes elevated & anchored
  - ✓ Keep records of elevations

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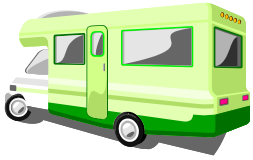
60.3 (c) BFEs but not Floodways or V Zones

Criteria from 60.3(a-b) plus:

- Elevate residential, elevate or floodproof non-residential, and elevate / anchor manufactured homes
- Keep records of lowest floor elevations
- Areas beneath the lowest floor have openings
- Recreational Vehicles elevated and anchored

- CLOMR for increases in BFEs of more than 1 foot or floodway boundary revisions
- No identified floodway – determine development's impact; 60.3(c)(10) Until a regulatory floodway is established, demonstrate cumulative effect of proposed development, existing and anticipated development will not increase water surface elevation of BFE more than 1 foot anywhere in community.
- AO/AH zones need drainage paths away from structures.



60.3 (d) BFEs & Floodways but no V Zones

Criteria from 60.3(a-c) plus:

- Select a Floodway – area designated to carry waters of base flood without increasing water surface elevation of regulatory (or 1% annual chance) flood more than the allowable 1 foot at any point.
- Require hydrologic and hydraulic analysis to show proposed development will not increase flood levels during Base Flood discharge.
- Obtain CLOMR for any proposed project that will result in more than 0' rise in BFE.

60.3 (e) V Zones

Criteria from 60.3(a-d) plus:

- New construction must be landward of high tide and certified by registered P.E.
- Lowest horizontal beam must be at or above BFE
- No enclosures / obstructions below BFE
- Cannot use fill for structural support
- No changes to sand dunes or mangrove stands that would increase flood damage

Other Zones:

- AO/AH elevations related to Highest Adjacent Grade.
- AO – elevate or floodproof to the depth shown on the FIRM, 2 feet if no depth
- AO and AH – drainage paths for structures on slopes in these Zones

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Substantial Improvement / Damage – Job Aid

Existing buildings must meet the floodplain management requirements for new construction **IF**: *the cost of improvements or cost to repair damage equals or exceeds **50%** of the market value of the building prior to the improvement or damage.* FEMA 213 and the Residential Substantial Damage Estimator (RSDE) software from FEMA are good references.

IMPROVEMENT: **any** reconstruction, repairs, remodel, rehabilitation, addition, or improvement the cost of which = or > 50% of the building's ***pre-improvement*** market value.

- applies to pre-FIRM buildings that may not already be compliant
- consider phased improvement projects from the perspective of total project costs
- regulations can be amended /adapted to allow the cumulative tracking of improvements
- alterations of historic buildings are excluded from substantial improvement requirements to elevate or floodproof **IF** certain conditions are met and the building is a "registered" historic building by the state or federal standards for "historic"

DAMAGE: damage **of any origin**, where the cost to restore the building to its pre-damage condition = or > 50% of the building's market value ***before*** the damage occurred.

- can be either pre- or post-FIRM buildings
- regulations can be amended / adapted to allow the cumulative tracking of damage

Costs INCLUDED (partial list)	**Costs EXCLUDED (partial list)**
Interior finish elements	Clean-up
Major building components	Contents
Market value of all labor and materials	Design cost
Structural items	Outside improvements
Utility and service equipment	

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4th TAB

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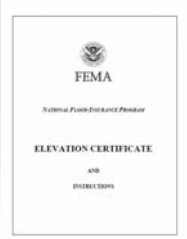
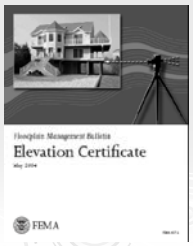
UNIT IV

Elevation Certificates (ECs)





Elevation Certificates

- Provides elevation information to ensure compliance
- Determines proper insurance premiums
- Supports map change requests (LOMA, LOMR-F)

U.S. DEPARTMENT OF HOMELAND SECURITY
Federal Emergency Management Agency
National Flood Insurance Program

ELEVATION CERTIFICATE

Important: Read the instructions on pages 1-8.

OMB No. 1660-0008
Expires February 28, 2009

SECTION A - PROPERTY INFORMATION

For Insurance Company Use:
Policy Number
Company NAIC Number

A1. Building Owner's Name I.P. Morgan

A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.
208 Eagle Drive
City Jefferson City State MO ZIP Code 65102

A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)
Parcel ID No. 10 08 12 0015 002 004

A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.) Residential

Elevation Certificates

- The NFIP requires communities to obtain lowest floor elevation information for newly constructed and substantially improved buildings in the SFHA.
- The community must maintain this information and the Elevation Certificate provides a formal record of compliance.

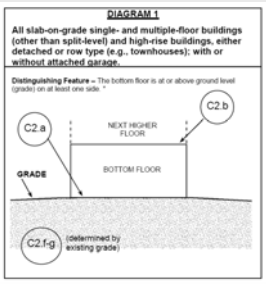
Elevation Certificates

- Required for rating post-FIRM buildings in AE, AH, A (with BFE), VE, V (with BFE) and AR zones
- Not required for pre-FIRM buildings, but can be an option if using post-FIRM insurance rating
- Elevation Certificate certifies building elevations, but does NOT waive the flood insurance purchase requirement

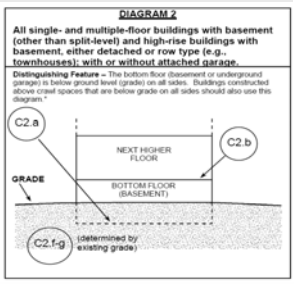
Elevation Certificates

- Collect property, map and community information (A, B, E, G)
- Provide building description (A)
- Certify the building elevation data and professional expertise (C, D, F)
- Must be used by CRS communities

Building Diagrams



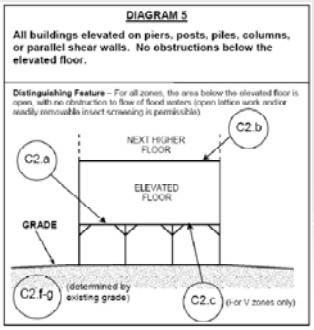
Slab-On-Grade



Buildings with Basements

Building Diagrams

Piles, Piers, or Columns, No Enclosure



FEMA Elevation Certificate

FEMA

NATIONAL FLOOD INSURANCE PROGRAM

ELEVATION CERTIFICATE

AND

INSTRUCTIONS

Elevation Certificates

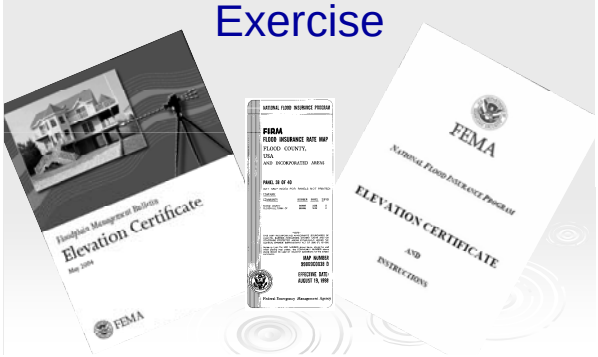
The Elevation Certificate & Surveyor's Guide to Elevation Certificate can be found at:

www.fema.gov/business/nfip/elvinst.shtm

http://training.nfipstat.com/ecsurveyor/

Lunch Break

Elevation Certificate Exercise



UNIT IV– Summary Review

Elevation Certificates

Break

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Elevation Certificate

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FEMA

NATIONAL FLOOD INSURANCE PROGRAM

ELEVATION CERTIFICATE

AND

INSTRUCTIONS

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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."

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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:
Policy Number
Company NAIC Number

A1. Building Owner's Name

A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.

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:
a) Square footage of crawl space or enclosure(s) _____ sq ft
b) No. of permanent flood openings in the crawl space or enclosure(s) walls within 1.0 foot above adjacent grade _____
c) Total net area of flood openings in A8.b _____ sq in

A9. For a building with an attached garage, provide:
a) Square footage of attached garage _____ sq ft
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 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.

PLACE SEAL HERE

Certifier's Name License Number

Title Company Name

Address City State ZIP Code

Signature Date Telephone

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12/29/08 Version

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

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

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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.

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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.”

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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 elevation information when elevation information is required for 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. 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

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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.

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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_cbrs.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

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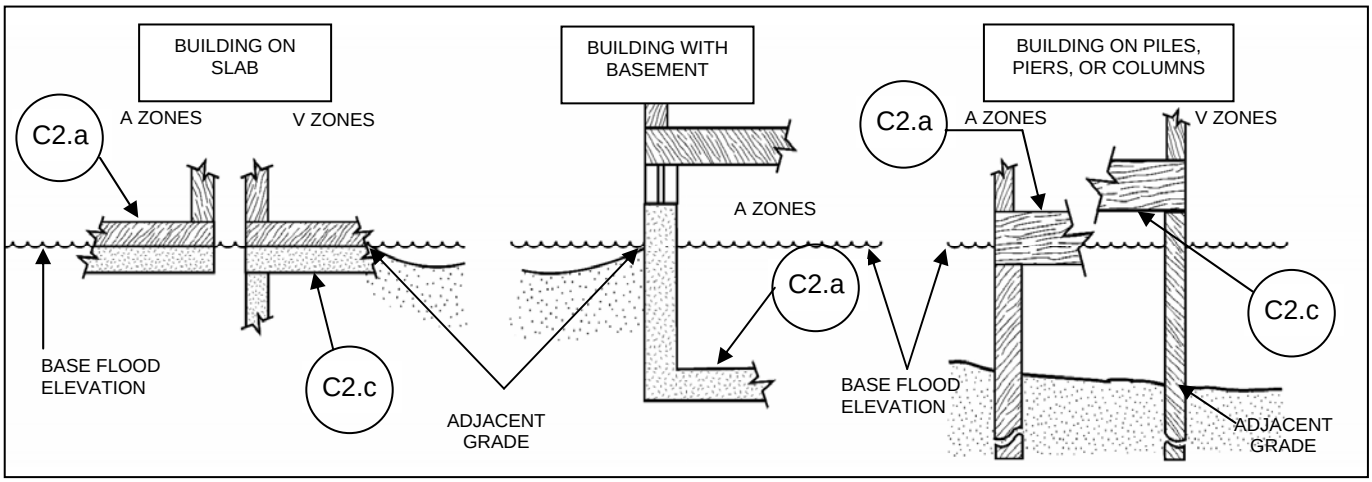
unique identifier assigned by the maintainer of the benchmark. Also provide the vertical datum for the benchmark elevation. Show the conversion from the field survey datum used if it differs from the datum used for the BFE entered in Item B9 and indicate the conversion software used. All elevations for 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 <u>all</u> 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

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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.

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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.

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BUILDING DIAGRAMS

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).

DIAGRAM 1

All slab-on-grade single- and multiple-floor buildings (other than split-level) and high-rise buildings, either detached or row type (e.g., townhouses); with or without attached garage.

Distinguishing Feature – The bottom floor is at or above ground level (grade) on at least one side. *

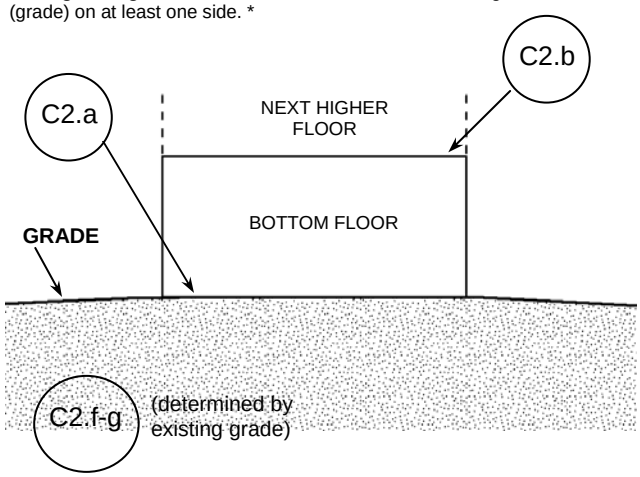


DIAGRAM 2

All single- and multiple-floor buildings with basement (other than split-level) and high-rise buildings with basement, either detached or row type (e.g., townhouses); with or without attached garage.

Distinguishing Feature – The bottom floor (basement or underground garage) is below ground level (grade) on all sides. Buildings constructed above crawl spaces that are below grade on all sides should also use this diagram.*

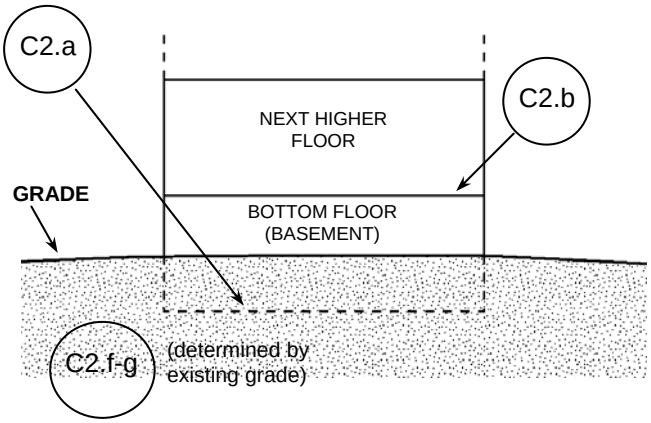


DIAGRAM 3

All split-level buildings that are slab-on-grade, either detached or row type (e.g., townhouses); with or without attached garage.

Distinguishing Feature – The bottom floor (excluding garage) is at or above ground level (grade) on at least one side .*

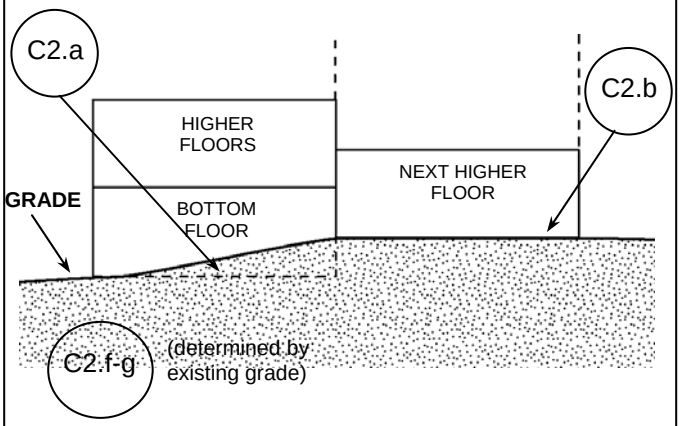
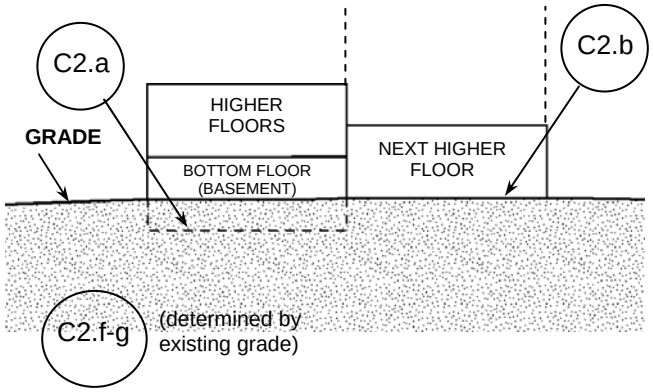


DIAGRAM 4

All split-level buildings (other than slab-on-grade), either detached or row type (e.g., townhouses); with or without attached garage.

Distinguishing Feature – The bottom floor (basement or underground garage) is below ground level (grade) on all sides. Buildings constructed above crawl spaces that are below grade on all sides should also use this diagram. *



* 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.

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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).

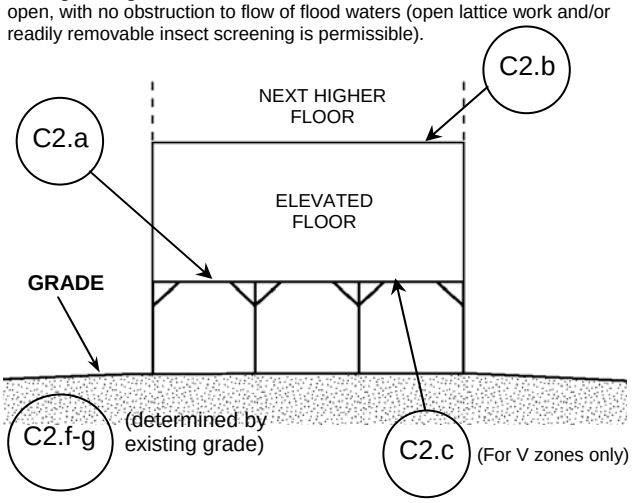


DIAGRAM 6

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.

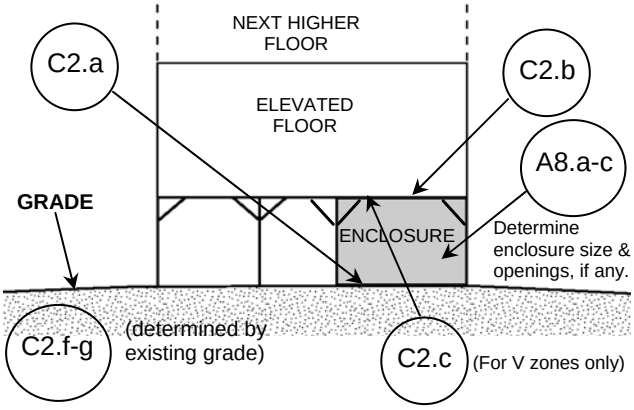


DIAGRAM 7

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.

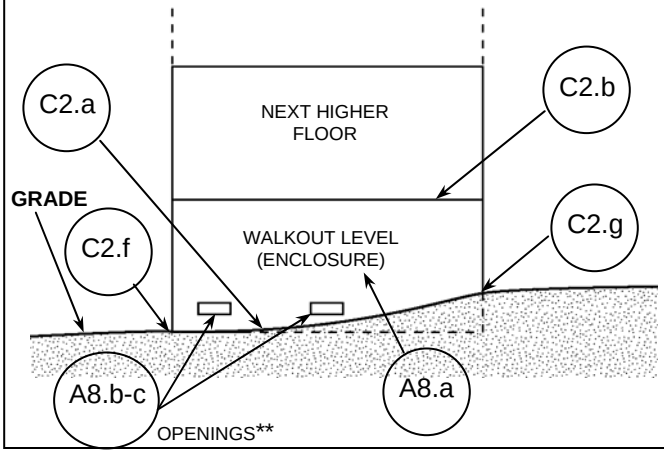
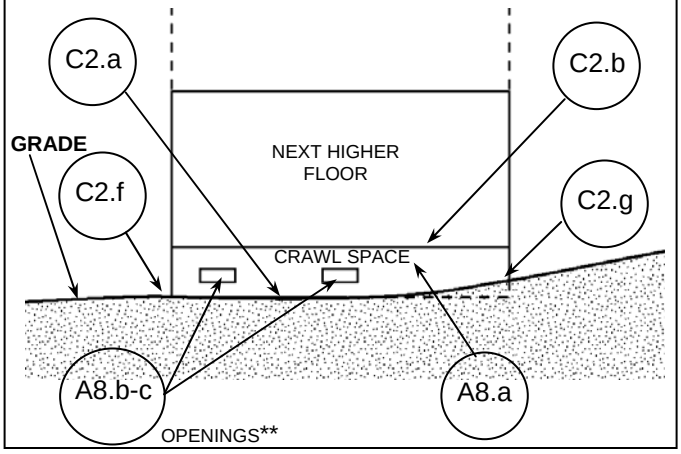


DIAGRAM 8

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.

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Elevation Certificate Bulletin

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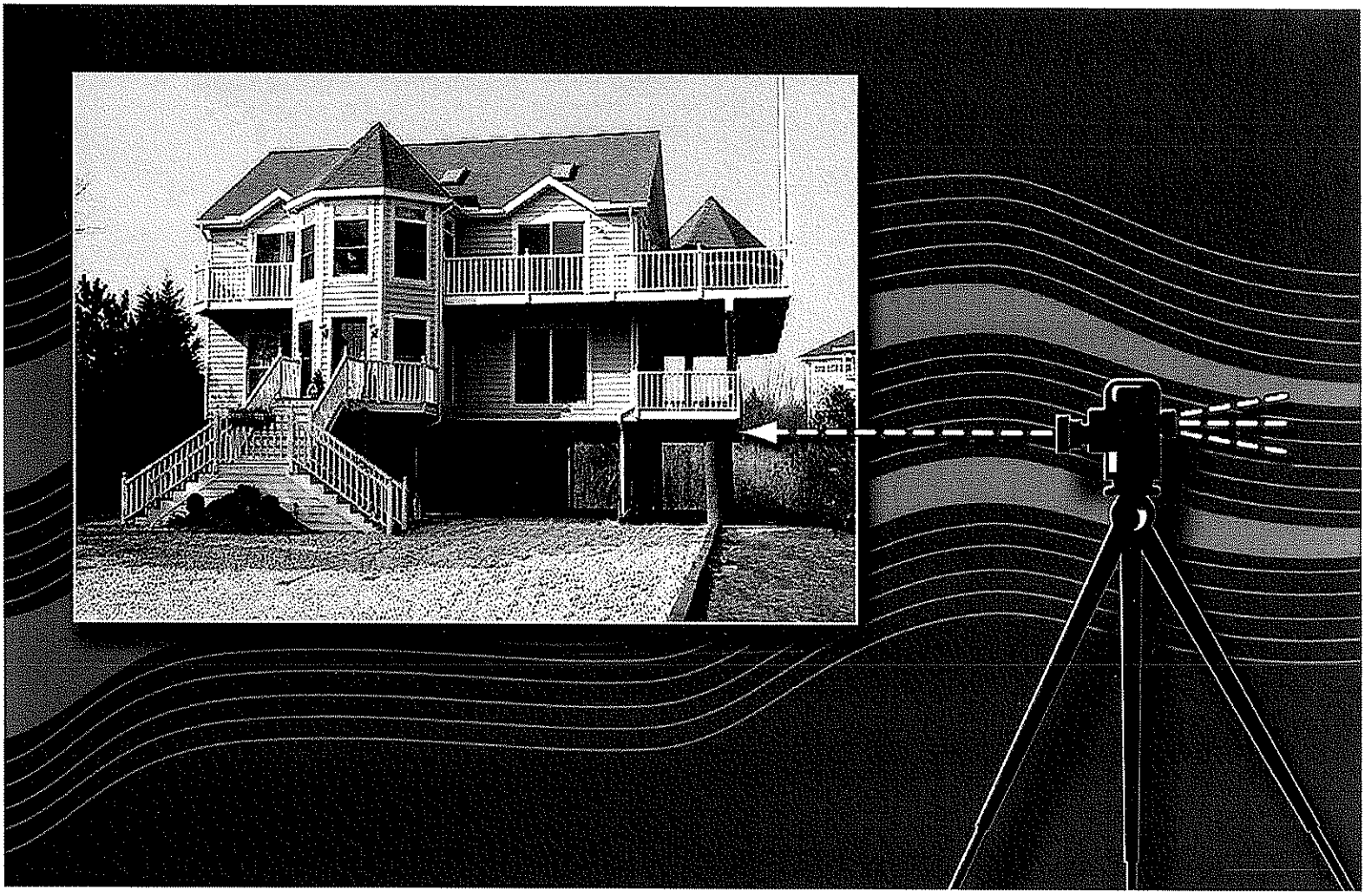

Floodplain Management Bulletin

Elevation Certificate

May 2004

FEMA

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12/29/08 Version

National Flood Insurance Program

Floodplain Management Bulletin
Elevation Certificate

This Floodplain Management Bulletin addresses frequently asked questions about the National Flood Insurance Program (NFIP) Elevation Certificate. The bulletin addresses the following questions:

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Introduction

The **Elevation Certificate** (FEMA Form 81-31) is an important administrative tool of the NFIP. It is used to determine the proper flood insurance premium rate; it can be used to document elevation information necessary to ensure compliance with community floodplain management regulations; and it may be used to support a request for a Letter of Map Amendment (LOMA) or Letter of Map Revision based on fill (LOMR-F). This Floodplain Management Bulletin addresses frequently asked questions about completing and using the Elevation Certificate.

This bulletin is primarily intended to assist local floodplain management officials with responsibility for administering the community's floodplain management ordinance and to assist land surveyors, architects, and engineers who are authorized by law to certify elevation information on the Elevation Certificate. Insurance professionals who use the Elevation Certificate for insurance rating purposes may also find this bulletin useful. The information contained in this Floodplain Management Bulletin is not intended to replace the Instructions section of the Elevation Certificate, but to supplement them.

Because a FEMA Elevation Certificate is needed before most flood insurance policies can be issued under the NFIP, communities are encouraged to obtain and maintain Elevation Certificates so that residents and businesses can easily obtain flood insurance. In order to participate in the NFIP Community Rating System (CRS), communities must require and maintain the Elevation Certificate for all new and substantially improved structures.

References are made throughout this bulletin to various sections in the Elevation Certificate. You can obtain a copy of the Certificate through the Federal Emergency Management Agency (FEMA) Distribution Center or obtain a copy of the Certificate at the website http://training.nfipstat.com/ecsurveyor/. This is also the website for the Elevation Certificate tutorial.

Frequently Asked Questions

1) Are communities required to use the FEMA Elevation Certificate to verify compliance?

The NFIP regulations do not mandate that a community participating in the NFIP use a specific form for keeping building elevation records. Under the NFIP, communities are required to obtain the elevation of the lowest floor (including basement) of all new and substantially improved structures and maintain a record of all such information [44 CFR 60.3(b)(5)]. The community's permit files need an official record that documents to what height new buildings and substantial improvements in the Special Flood Hazard Area were elevated. This record is needed to show that buildings constructed in the floodplain are compliant with the community's floodplain management ordinance. While communities can create their own forms for documenting elevation information, communities are encouraged to use the FEMA Elevation Certificate for documenting the elevation of various building elements (section C of the Elevation Certificate) and for documenting building compliance including the lowest floor determination (section G of the Elevation Certificate which is the Community Information section). The advantage of using the Elevation Certificate is that it will help the property owner in obtaining flood insurance since this form is used in determining a flood insurance rate.

In order to participate in the CRS, communities are required to obtain and maintain completed FEMA Elevation Certificates for all buildings constructed or substantially improved in the Special Flood Hazard Area after the community's initial date of application for the CRS. Credit is provided to CRS communities that maintain Certificates for all new and substantially improved buildings. A software

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program has been developed to enter Elevation Certificate data into an electronic database using a personal computer. Additional credit is available to CRS communities that maintain Elevation Certificates in a computerized format and provide a disk of the Elevation Certificate data to FEMA each year. You can obtain the software by writing or emailing your request to:

The National Flood Insurance Program
Community Rating System (NFIP/CRS)
P.O. Box 501016
Indianapolis, IN 46250-1016

E-mail: NFIPCRS@ISO.COM

2) Can the Elevation Certificate be used to determine the "as built" lowest floor of a structure?

The local official can use the guidance in Figure 1 on the following pages to help determine which level, based on the elevation information provided in section C of the Elevation Certificate, is the lowest floor. However, the local official should not rely solely on the Elevation Certificate for determining the lowest floor without inspecting the building site and without discussions with the permit applicant. Although section C of the Elevation Certificate records the elevation of the various building floors and components, this section does not specifically identify the "as built" lowest floor of the building or indicate whether the building, as constructed, complies with the community's floodplain management regulations. The determination of the "as built" lowest floor for compliance with the community's floodplain management ordinance is the responsibility of the local floodplain management official. The most effective way to ensure compliance is to inspect the site frequently during construction. This is particularly important in the early phases of work on a building because that is when errors in the elevation of the lowest floor can be found and most easily corrected.

The "Diagram Description" in the left hand column below refers to the eight Diagrams included in the Instructions for the Elevation Certificate. The "As Built Lowest Floor Determination" in the right hand column refers to the location that should be the lowest floor based on the type of building for which an "as built" determination is being made. The local official can document the "as built" lowest floor in item G8. of the Elevation Certificate (section G) or can document the "as built" elevation information on other community permit forms. Communities should also conduct the appropriate inspections to verify the elevation information and other information on the Elevation Certificate and to determine the building's lowest floor to ensure that the building complies with the community's floodplain management regulations (See Question 15).

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Figure 1. "As Built" Lowest Floor Guide

Diagram Description:	"As Built" Lowest Floor Determination
Diagram 1: Slab-on-grade buildings.	A Zones: C3.a, top of bottom floor. V Zones: See Note 1.
Diagram 2: Buildings with basements.	A Zones: C3.a, top of bottom floor (including basement). V Zones: See Note 1.
Diagram 3: Split-level slab-on-grade buildings.	A Zones: C3.a, top of bottom floor. V Zones: See Note 1.
Diagram 4: Split-level buildings other than slab-on-grade.	A Zones: C3.a, top of bottom floor (including basement). V Zones: See Note 1.
Diagram 5: Buildings elevated on piers posts, piles, columns, or parallel shear walls (no obstructions, but open lattice and/or screening is permissible.)	A Zones: C3.a, top of elevated floor. V Zones: C3.c, bottom of lowest horizontal structural member.
Diagram 6: Buildings elevated on piers, posts, piles, columns, or parallel shear walls with full or partial enclosure.	A Zones: If the enclosure has proper openings AND is used solely for parking, building access, or storage (see Note 2): C3.b, top of elevated floor. If the enclosure does NOT have proper openings OR is used for something other than parking, access, or storage: C3.a, top of floor of enclosure. V Zones: If the enclosure's walls are break away AND the enclosure is used solely for parking, building access, or storage (see Note 3): C3.c, bottom of lowest horizontal structural member of the elevated floor. If the enclosure's walls are NOT breakaway OR the enclosure is used for something other than parking, access or storage: C3.a, floor of enclosure.

Continued on next page

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Figure 1. "As Built" Lowest Floor Guide

Diagram Description:	"As Built" Lowest Floor Determination
Diagram 7: Buildings elevated on full-story foundation walls with partial or full enclosure.	A Zones: If the walkout level (enclosure) has the proper openings AND is used solely for parking, building access, or storage (see Note 2): C3.b, top of next higher floor. If the walkout level (enclosure) does NOT have the proper openings OR is used for something other than parking, access, or storage: C3.a, top of floor of walkout level. V Zones: See Note 1.
Diagram 8: Buildings elevated on crawlspace. (See Note 4 on differentiating between a crawlspace and a basement.)	A Zones: If the crawlspace enclosure has the proper openings (see Note 2): C3.b, top of next higher floor. If the crawl space enclosure does NOT have the proper openings: C3.a, top of floor of crawlspace. V Zones: See Note 1.
Attached Garage (when garage floor is below the Base Flood Elevation):	If the garage has the proper openings (see Note 2), then the garage floor (C3.d) is not the "lowest floor" for purposes of determining the as-built lowest floor of the building in item G8.of the Elevation Certificate. If the building has an attached garage that does NOT have the proper openings, then the garage floor (C3.d) is the "lowest floor" that should be identified in G8.
Equipment: Under the NFIP, buildings must be constructed with electrical, heating, ventilation, plumbing, and air-conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding. Generally, this is done by elevating equipment above the Base Flood Elevation, but there are ways to floodproof equipment to keep water out.	Even though the building may be properly elevated based on the "as built" lowest floor, it is not a compliant building unless the equipment is properly elevated or floodproofed. See also *Protecting Building Utilities From Flood Damage*, FEMA 348, 2000.

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Figure 1. "As Built" Lowest Floor Guide

Note 1. V Zone buildings that are constructed similar to Diagrams 1-4, 7 and 8, are violations under the NFIP. For buildings in V Zones the lowest floor is measured at the bottom of the lowest horizontal structural member, which will be the bottom of the slab or a footing.

Note 2. Enclosures and Openings in A Zones (Diagrams 6, 7, and 8). The NFIP Floodplain Management Regulations permit limited uses of enclosures below the lowest floor. The enclosed area below an elevated building cannot be used for other than parking of vehicles, building access, or storage. The enclosure must be built with flood resistant materials. The enclosed areas below an elevated building must contain openings. 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.* Openings are explained on the last page of the Elevation Certificate Instructions and in Technical Bulletin 1-93 on *Openings in Foundation Walls for Buildings Located in Special Flood Hazard Areas* (FIA-TB-1). The number and total area of openings are provided in C3.h and i. The floor area measurement should be on the permit plans.

Note 3. In V Zones, an enclosure (as shown in Diagram 6) must be constructed with non-supporting, non-load bearing breakaway walls, which meet applicable NFIP criteria. The enclosure can only be used for parking of vehicles, building access and storage. The enclosure must be built with flood resistant materials. Flood insurance rates increase significantly when the area of the enclosure is 300 square feet or more.

Note 4. Crawlspace Construction (Diagram 8): If the floor of the crawlspace is below the Base Flood Elevation, NFIP requirements can be met by ensuring that the interior floor of the crawlspace is at or above the lowest adjacent grade to the building and the crawlspace contains openings. If the floor of the crawlspace is below the Base Flood Elevation and the interior floor of the crawlspace is below the adjacent exterior grade on all sides of the building, Diagram 2 or 4 must be used. Additional guidance on crawlspace construction can be found in Technical Bulletin 11-01, *Crawlspace Construction for Buildings Located in Special Flood Hazard Areas*, (FIA-TB-11).

3) What is the community's responsibility for ensuring the Elevation Certificate is accurately completed?

If the community maintains Elevation Certificates on file, it is the community's responsibility to ensure that the Certificate is completed correctly. Communities should do this as a general practice for any elevation certifications even if elevations are provided on the community's own forms or plans. The community should proofread the Elevation Certificate provided by surveyors for any errors or omissions, such as a wrong Flood Insurance Rate Map Index or Panel date or diagram number or for missing information in section C. If there are Certificates that have some of the items omitted or incorrectly filled out, the community has the following options.

1) For any inaccurate or incomplete information in items C3.a)-d), f), or g), the local official should request a new Elevation Certificate. If the local official uses elevation information taken

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from other documentation that has been signed and embossed by a licensed surveyor, engineer, or architect who is authorized by state or local law to certify elevation information to complete section C, the local official needs to ensure the certified elevations are accurate and complete before entering them in section C. If not, the local official should request new certified elevations. Note: If the community uses elevation information taken from documentation other than the FEMA Elevation Certificate, the local official should check the box in G1. on the Elevation Certificate and indicate in the comment section the source of the elevation data.

2) The local official can do the following if incomplete or inaccurate information is found in sections A, B, or C1, C2, and C3.e), h) and i). **Note: The local official should not mark up the form with the correct information because the information in sections A, B and C is certified by a land surveyor, engineer, or architect who is authorized by law to certify elevation information.**

   a) The forms may be returned to the surveyor with instructions on what needs to be changed or corrected;

   b) The local official can prepare a separate memo with the correct information and attach the memo to the form. When the Certificate is provided to an inquirer, the memo must be included with it; or

   c) The local official can note the changes or corrections in section G of the Elevation Certificate under Comments.

3) If the community uses Elevation Certificate software or maintains the elevation information in a database, the community can correct sections A and B, and subsection C1, C2, and C3.e), h), and i) when the data from the Certificate is entered into the Elevation Certificate software or database. It must be noted in section G what changes were made to the original paper copy. The local official should check item G1 when data are entered into database or elevation certificate software. The community will still need to keep the original Certificate, but can hand out copies printed from the corrected electronic version.

It should be noted that the community assumes responsibility for the accuracy of the changes it makes. Therefore, data entry for electronic versions should be double-checked.

One way communities can ensure that Elevation Certificates are accurately filled out is to complete sections A and B at the time of the permit application. The partially completed form can then be given to the surveyor who can then focus on completing the surveyed information in section C. If a community does complete section A and B, the surveyor should note in the comment section that the surveyor's certification is limited to section C.

4) Is it important for the datum used for the elevations obtained in section C of the Elevation Certificate to be the same as the datum used for the Base Flood Elevation in section B.9?

Yes. If the datum for the elevations in items C3.a)-g) are not properly converted when necessary, it could result in an inaccurate determination of compliance by the local floodplain management official or it could result in an inaccurate flood insurance rate. In item B1. of the Elevation Certificate, the elevation datum (either NGVD 1929 or NAVD 1988) to which the Base Flood Elevations on the applicable FIRM are referenced should be indicated. All elevations in section C must be referenced to the datum on which the Base Flood Elevation is based. If a datum conversion

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is necessary, show the field measurements and datum conversion calculation in section C or in the Comments of section D or G, as appropriate.

5) Why is it necessary to obtain the elevation of a crawlspace floor?

It is very important that the elevation of the crawlspace floor be obtained so that, in the case of new or substantially improved construction, the community can determine compliance of the building with the community's floodplain management ordinance and the insurance agent can properly rate the structure for flood insurance.

If the floor of the crawlspace is below grade on all sides or the crawlspace foundation walls do not have proper openings in accordance with 44 CFR 60.3(c)(5) of the NFIP regulations that allow for the automatic entry and exit of floodwaters into the crawlspace area there is an increased risk of flood damages to the building due to hydrostatic pressure. The crawlspace foundation could be damaged or fail completely. It doesn't matter whether the crawlspace floor is a dirt floor or a finished floor.

The flood insurance rates for structures with crawlspaces up to 2 feet below-grade on all sides are higher than those for buildings that have the interior grade of the crawlspace at or above the lowest adjacent grade, since the risk of flood damage is greater for this type of construction. For structures that have their crawlspace floors greater than 2 feet below-grade, a full basement rate will be charged. These rates are higher still due to the increased risk of flood damage to the building.

Additional guidance on crawlspace construction can be found in Technical Bulletin 11-01, *Crawlspace Construction for Buildings Located in Special Flood Hazard Areas*, (FIA-TB-11).

6) How can the elevation of a crawlspace floor be measured when the area is inaccessible?

It is recognized that surveyors may not have access to some crawlspaces in buildings due to height restrictions or lack of an access door and may not be able to shoot an elevation of the interior floor of the crawlspace.

If the surveyor has limited access to the crawlspace, such as in the case of the building in Figure 2, and is unable to shoot an elevation of the floor of the crawlspace [C3.a)], the surveyor can do the following:

a. Use a yardstick or tape measure to check the floor height to the next highest floor, and then subtract the crawlspace height from the elevation of the "next higher floor" [C3.b)]. Provide the elevation in the comment section only and provide a brief description of how the elevation was obtained.

b. Contact the local floodplain administrator for the community that the building is located in. The community may have documentation of the elevation of the crawlspace floor as a part of the permit process for the building. Provide the elevation in the comment section and provide a brief description of how the elevation was obtained.

c. If the property owner has documentation or knows the height of the crawlspace floor to the next higher floor, try to verify this by looking inside the crawlspace through any openings or vents. If information appears to be reliable, provide the elevation in the comment section and provide a brief description of how the elevation was obtained.

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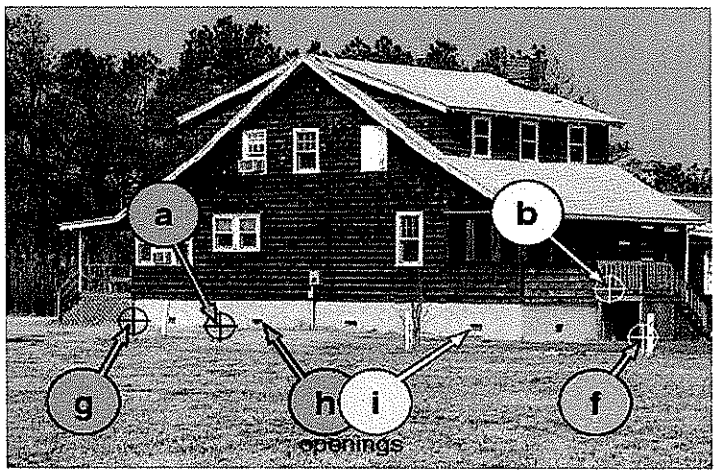
Figure 2. Limited Access to Crawl Space



Letters equate to items in Section C3. of the Elevation Certificate:
a) Top of bottom floor
b) Top of next higher floor
f) Lowest adjacent grade
g) Highest adjacent grade
h) No. of permanent openings
i) Total area of all permanent openings in square inches.

NOTE: For all three suggestions above, under subsection C3.a) Top of bottom floor (including basement or enclosure) of the Elevation Certificate, the surveyor should indicate the following: "See comments section."

7) How should the total area of permanent openings for section C3.i) be calculated if the openings include some type of cover?

Buildings constructed on extended foundation walls or that have other enclosures below the Base Flood Elevation in A Zones are subject to flood forces that include hydrostatic pressure of floodwaters against the foundation or enclosure walls. If the walls are not designed to withstand hydrostatic pressure, they can be weakened or can fail causing damages to the building. The NFIP Regulations at 44 CFR 60.3(c)(5) require that foundation and enclosure walls of buildings constructed in A Zones contain openings (flood vents) that will permit the automatic entry and exit of floodwaters. These openings allow floodwaters to reach equal levels on both sides of the walls and thereby lessen the potential for damage from hydrostatic pressure. Under the NFIP, the following requirements must be met for all new or substantially improved A Zone buildings that have enclosed areas below the Base Flood Elevation:

- There must be a minimum of two openings and the openings should be on different sides of each 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 total net area of all openings must be at least 1 square inch for each 1 square foot of enclosed area.
- The bottom of each opening can be no more than 1 foot above the adjacent grade.

In situations where it is not feasible or desirable to meet the openings criteria stated above, a design professional (registered architect or engineer) may design and certify the openings. See Technical Bulletin 1-93 on *Openings in Foundation Walls for Buildings Located in Special Flood Hazard Areas* (FIA-TB-1) for additional guidance on the openings requirement. In all cases, any grates, louvers, grills, bars, or other opening covers must not block or impede the automatic flow of floodwaters into and out of the enclosed area.

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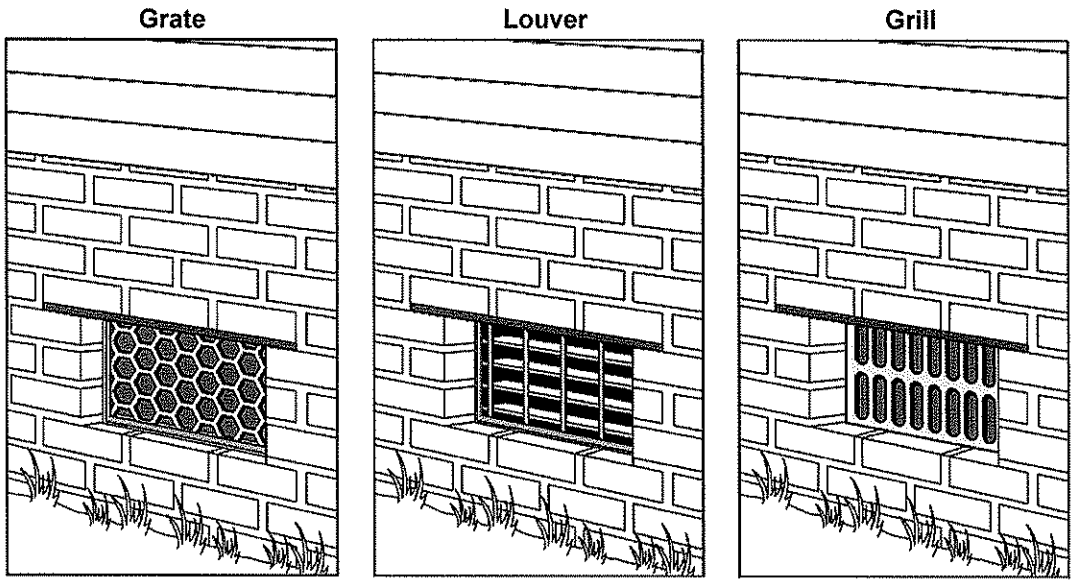
Item C3.h) of the Elevation Certificate asks for the number of permanent openings in the walls supporting the building that are no higher than 1 foot above the adjacent grade and item C3.i) asks for the total area of all such openings in square inches. If there are no permanent openings within 1 foot above the adjacent grade, "0" (zero) should be entered in items C3.h) and i). Also, the surveyor should note in the Comments section whether the openings are in the foundation walls of the building and/or in the walls of any attached garage.

When there are grates, louvers, grills, or other opening covers as indicated in Figure 3, the surveyor can estimate the net open area in the flood vent (total area of all permanent openings in square inches). If the size of the openings, excluding any grates, louvers, grills, or other covers, cannot be estimated, the surveyor can measure the size of the opening, without consideration to the existence of any covers, and indicate in the comment section the type of opening cover that exists. It is the community's responsibility and not the surveyor's to determine whether the size, number, and location of the openings meet the requirements of the community's floodplain management ordinance.

Figure 3. Examples of Opening Covers



8) Why is elevation information needed for certain types of machinery and equipment in section C3.e) of the Elevation Certificate?

Because the area below the lowest elevated floor of an elevated building is exposed to floodwaters, there is limited flood insurance coverage in this area for Post-FIRM (Flood Insurance Rate Map) buildings located in zones A1-A30, AE, AH, AR, AR/A, AR/AE, AR/AH, AR/A1-A30, V1-V30, or VE. Flood insurance is provided for foundation elements that support the building, access stairs, and certain machinery and equipment items that are considered essential building elements located in enclosed areas below the lowest elevated floor of elevated buildings. The machinery and equipment items include a furnace, water heater, heat pump, air conditioner, and elevator. No coverage is provided for enclosures and only limited coverage is available for personal property contained therein.

For flood insurance purposes, the underwriter needs to know the lowest elevation of at least one covered machinery and equipment item in order to determine if a rate loading or surcharge is necessary.

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Thus, the Elevation Certificate requires that the surveyor provide the elevation of the one machinery and equipment item if it is a furnace, hot water heater, heat pump, air conditioner, or elevator in C3.e) that has the lowest elevation and indicate the type of machinery and equipment surveyed in section D. An insurance rate loading is determined based on the elevation of the machinery and equipment item that is below the Base Flood Elevation. Additional information about other machinery and equipment is obtained on Part II of the Flood Insurance Application.

Note that the lowest elevation of machinery and equipment is needed whether the machinery and equipment is located inside or outside of the footprint of the building. For example, if the slab for an air conditioning condenser unit is the lowest elevation of covered machinery, then that is the elevation that should be documented in C3.e). However, the local floodplain management official is required to ensure that all machinery and equipment servicing the building are protected from flooding (See Questions 9 and 10). While the Elevation Certificate requires the elevation of only one machinery and equipment item, Question 11 addresses how community officials can ensure that all machinery and equipment is protected in accordance with the community's floodplain management ordinance and how compliance of these items can be documented.

9) Why is it important for communities to ensure that all machinery and equipment servicing the building is protected?

Protecting a building from flood damage means more than elevating the lowest floor to or above the Base Flood Elevation. Sections 60.3a(3)(ii) and (iv) of the NFIP regulations require that buildings ***"(ii) be constructed with materials resistant to flood damage"*** and ***"(iv) be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding."***

Flood insurance claims as well as post-disaster assessments have shown that significant damage to the machinery and equipment servicing the building (e.g., furnaces, hot water heaters, air conditioners, fuel systems, electrical receptacles, ductwork, and insulation) can occur due to improper design and location of these systems below the Base Flood Elevation. Floodwater often contains dissolved chemicals, silt, suspended solids, and floating debris. Moving floodwater exerts pressure on everything in its path, and causes erosion of soil and scour around solid objects.

With such destructive characteristics, floodwaters present many hazards to the often-fragile components of building support utility systems including corrosion, contamination, flotation, dislocation, and other physical damages. Improperly designed or located machinery and equipment below the Base Flood Elevation that become dislodged can also increase damages to the structure itself even though the building's lowest floor was high enough. In addition, mold, mildew and fungus accumulating in flood damaged air passageways, such as ductwork, often can lead to serious health issues for residents or occupants of the structure. As a result, improperly designed and located machinery and equipment can result in increased costs and potentially extensive repairs. If the machinery and equipment servicing the building is damaged or destroyed, the building may be unusable for days or even longer.

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In A Zones, utilities and equipment must be either elevated to or above the Base Flood Elevation or made watertight to the Base Flood Elevation so that the components are protected from flood damages. In V Zones, utilities and equipment must be elevated to or above the Base Flood Elevation. If not, then the building is not in compliance with the NFIP floodplain management regulations.

10) What requirements apply to ductwork?

One question that gets frequently raised is related to the requirements that apply to ductwork. Ductwork must be either elevated above the Base Flood Elevation or if ductwork is located below the Base Flood Elevation, it must be made watertight to prevent water from entering or accumulating within the system components when inundated by floodwaters.

Equipment and the supporting distribution system should be elevated such as in Figure 4 or, as an alternative, property owners and builders should consider locating ductwork in the attic as indicated in Figure 5.

Figure 4. Compliant machinery and equipment.

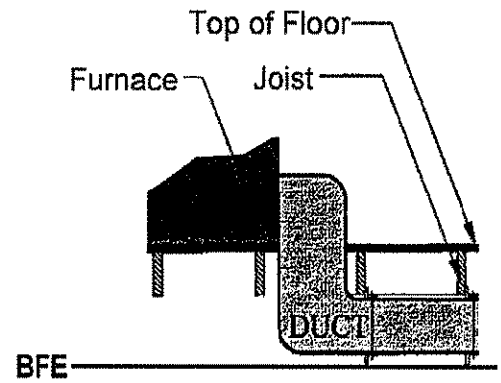
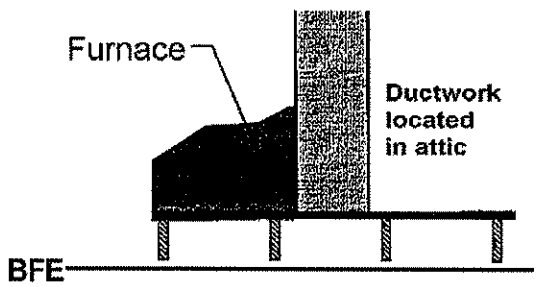


Figure 5. Compliant machinery and equipment.



Ductwork may only be located below the Base Flood Elevation in new or substantially improved structures in a Special Flood Hazard Area as shown in Figure 6 if it is made watertight. This technique (making ductwork watertight) is only allowed in A Zones. Although it is possible to design and construct ductwork so that it is watertight to keep floodwater from entering the system components, this technique is not commonly used. In V Zones, ductwork must be elevated to or above the Base Flood Elevation.

Ductwork that is not elevated to or above the Base Flood Elevation or is not made sufficiently watertight to keep floodwater from entering the system components is considered non-compliant as shown in Figure 6.

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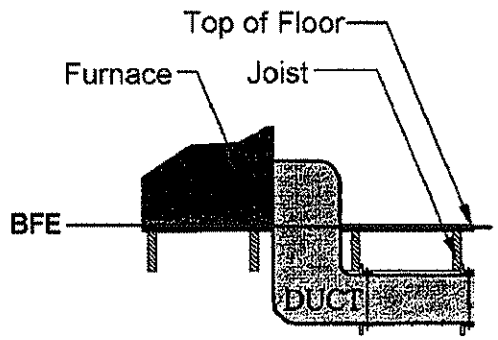
Figure 6. Non-compliant ductwork



For additional guidance on protecting utilities and other equipment servicing the building from flood damage, see FEMA manual, *Protecting Building Utilities from Flood Damage*, FEMA 348. This document reviews principles and practices for the design and construction of flood resistant building utility systems including ductwork and other equipment from flood damage.

11) Can the community use the Elevation Certificate to document compliance for all machinery and equipment servicing the building?

The community can use the Elevation Certificate to document compliance of all utilities, ductwork, machinery, and equipment or the community can use its own forms to document compliance. The following steps are recommended to communities to ensure that all machinery and equipment are in full compliance with the NFIP.

- Review your community's floodplain management ordinance and verify that it clearly requires elevation and protection of utilities, ductwork, machinery, and equipment to or above the Base Flood Elevation. If not, the floodplain management ordinance should be revised to include these requirements. If in doubt, ask your community's legal counsel whether the ordinance can be interpreted as providing this protection or check with the FEMA Regional Office or the State Coordinator for the NFIP.

- Review your permit application and inspection procedures to determine the best way to ensure that the requirement is being met. This may necessitate procedural changes such as additional information on the permit application form, additional plans provided by the permit applicant, an addition to a field inspection checklist, and/or a photograph for the record at the time of the final inspection.

- Discuss the matter with local builders and architects as necessary. Refer them to FEMA's manual, *Protecting Building Utilities from Flood Damage*, FEMA 348.

- Make sure the building plans clearly indicate that the building's utilities, ductwork, machinery, and equipment, such as furnaces, water heaters, heat pumps, air conditioners, and elevators and their associated equipment, will be properly elevated or that the components located below the Base Flood Elevation will be protected such that floodwater is prevented from entering or accumulating within the system components (watertight) (allowed in A zones only) before issuing the permit.

- Inspect the location of all utilities, ductwork, machinery, and equipment during the course of construction and make a final inspection after construction is completed to ensure that these items comply with the community's floodplain management regulations.

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- Make sure that the community records show that utilities, ductwork, machinery, and equipment have been properly elevated or made watertight (A zones only) once construction has been completed. Elevation of these items can be documented in the following ways:

  - The community can document elevation of utilities, ductwork, machinery, and equipment on the community inspection records. The final inspection records can note that the bottom of the items, such as ductwork, are "X" feet above or below the lowest floor or the actual elevation can be used;

  - The community can document compliance of utilities, ductwork, machinery, and equipment in the Comments area of section G of the Elevation Certificate. The community can note in section G that the bottom of these items, such as ductwork, is "X" feet above or below the lowest floor or the actual elevation of these items can be used; or

  - The Elevation Certificate for finished construction requires the surveyor to enter the lowest elevation of one machinery or equipment item – a furnace, water heater, heat pump, air conditioner, or elevator – located in an attached garage or enclosure or on an open utility platform that provides utility services for the building in C3.e). If there is more than one machinery and/or equipment item, the community can require the surveyor to document the elevation of all machinery and equipment and list the type of machinery and equipment in the Comments area of section D when the Elevation Certificate is being used to document compliance. However, the community must still verify through inspections that all machinery and equipment comply with the community's floodplain management regulations.

    NOTE: Ductwork is not included in machinery and equipment that the surveyor must capture in C3.e) of the Elevation Certificate. However, the community can ask the surveyor to document the elevation of the bottom of the ductwork in section D of the Elevation Certificate or a community can document the elevation of ductwork in the community's inspection records or in section G of the Elevation Certificate.

Where component protection is used for utilities, ductwork, and other machinery and equipment, the community should require documentation on the plans and indicate in the inspection records that these items have been designed and constructed so as to prevent floodwaters from entering or accumulating within the components during conditions of flooding (watertight).

12) Why does the Elevation Certificate request the elevation for "Highest Adjacent Grade" and "Lowest Adjacent Grade"? Why doesn't the Elevation Certificate also request the elevation for "Natural Grade"?

Both the highest adjacent grade and the lowest adjacent grade are included in section C3. because it provides a clearer picture of how the building is constructed relative to the terrain. It also helps to verify that the diagram number chosen for the building is most similar to the building surveyed. This is particularly important for insurance rating since the underwriter at the insurance company will likely never see the building.

In Zones A1-30, AE, AH, AO, A (with a Base Flood Elevation), VE, V1-30, V (with a Base Flood Elevation) AR, AR/A, AR/AE, AR/A1-30, AR/AH, and AR/AO, natural grade information should be obtained by the community as part of the floodplain development permit application. The natural grade information should be obtained at this stage before any permit is issued in order to determine the

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relationship between the natural ground and the Base Flood Elevation. This information is necessary in order to determine how high the building ultimately needs to be elevated. This information can be obtained from topographic information or from spot elevations obtained as part of site plans or drainage plans.

The community should document the natural grade information on the permit application or in section G of the Elevation Certificate. If the Elevation Certificate is used as part of the permit application and the building elevation is based on construction drawings, then the "Construction Drawings" box should be checked under item C1. of the Elevation Certificate.

13) Is a survey required for Zone AO in order to complete the Elevation Certificate?

No. Section C, which must be completed and certified by a surveyor, is not required for Zone AO. Only sections E and F are required to be completed. The information in section E is all that is needed in order to rate the structure for insurance purposes provided that sections A and B are also completed. However, if the elevations are intended for use in supporting a LOMA or LOMR-F, section C must be completed with certified elevations.

Although a survey is not required for Zone AO to complete the Elevation Certificate, the local floodplain management official must take appropriate actions to ensure that the structure is built in compliance. In Zone AO, all new and substantially improved buildings must have the lowest floor (including basement) above the highest adjacent grade at least as high as the depth number specified in feet on the community's FIRM (at least two feet if no depth number is specified) [44 CFR 60.3(c)(7)]. Under the NFIP, highest adjacent grade means ***"the highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure."*** (44 CFR 59.1).

In order to ensure that a building in Zone AO is properly elevated, the community will have to determine that the lowest floor (including basement) is above the highest adjacent grade at least as high as the AO Zone depth. This may include reviewing grading plans and looking at topographic information before the building is constructed, and conducting inspections during the course of construction and before the building is occupied.

As part of the administration of the community's subdivision ordinance, a community may already be requiring grading plans and other site information in which the elevation of the ground is provided as part of the subdivision review. The local floodplain management official should check the ground elevation information as part of the permit process in an AO Zone so that it can be used later to determine whether the lowest floor is above the highest adjacent grade at least as high as the AO Zone depth. The community should document the ground elevation information in the floodplain development permit file or in section G of the Elevation Certificate.

If the community does not require a site plan or grading plan, the community could require a survey of the ground elevation, check topographical information, if it is available and is sufficiently detailed, or require the builder to place a reference mark on the site so that the local official can determine that the building is elevated on fill to or above the required number of feet above natural grade.

Communities shall not base their lowest floor determination on the completion of section E by the property owner or his or her agent. Under the NFIP, it is the community's responsibility to ensure that the building is built according to the permit application. The local floodplain management

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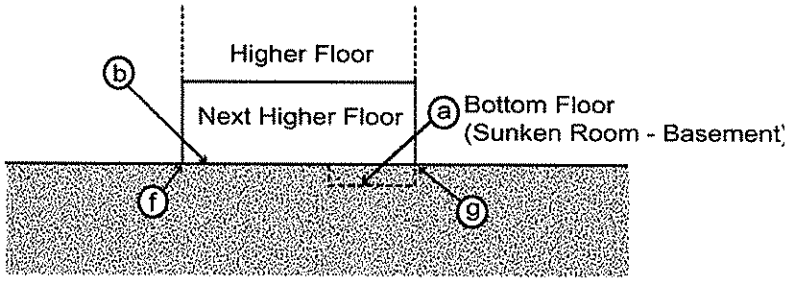
official should conduct a sufficient number of inspections to ensure that the building is built in compliance.

14) Is it necessary to capture the elevation of a sunken room on the Elevation Certificate?

Yes. The elevation of a sunken room or a sunken area within a room should be captured on the Elevation Certificate in item C3. of the Elevation Certificate at either C3.a) "Top of the bottom floor" or C3.b) "Top of next higher floor" depending on its location above or below other floors such as a basement. The floor of the sunken room could be considered the "lowest floor" under the community's floodplain management ordinance depending on its location relative to other floors. The sunken room could also be considered the "lowest floor" for insurance rating purposes.

If the sunken room is below grade on all four sides as illustrated in Figure 7, it is considered a basement and Diagram 2 should be selected for item C2. of the Elevation Certificate.

Figure 7. Building with a Sunken Room



Letters equate to items in Section C3. of the Elevation Certificate:
a) Top of bottom floor (include basement or enclosure)
b) Top of next higher floor
f) Lowest adjacent grade
g) Highest adjacent grade

15) If the elevation of the slab foundation or other foundation was surveyed at the time it was poured and no other changes have been made to the structure, is a final elevation certification required after construction is completed?

Yes. Once construction of the building is completed, the community must obtain "as built" elevation information on the building to determine whether the building is compliant in accordance with 44 CFR 60.3(b)(5)(i). As indicated in question 1, there is no mandated form – the community can use its own form or the Elevation Certificate to document the "as built" elevation information. These elevations need to be surveyed by a surveyor, engineer, or architect who is authorized by law to certify such elevation information. Use of a tape measure is not sufficient for determining "as built" elevation information and cannot be used for completing section C of the Elevation Certificate for the various floor elevations of the building required on the Certificate.

The "as built" elevation information must be obtained before an occupancy permit is issued. While construction is underway and changes can be more easily made to bring the building into compliance, the community should still verify that the building is elevated to the proper elevation and that other building elements will be protected from flood damages. Community floodplain management officials should not assume that construction and development will proceed as spelled out in the approved permit. The most effective way to ensure compliance is to inspect the building

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site frequently during construction. A series of at least three inspections is recommended for any project that involves construction of a building in the floodplain.

The first inspection should be done before the ground is broken to determine that the site as identified on the permit application and proposed plans are consistent with actual ground conditions. This provides the local official an opportunity to check the floodplain/floodway boundaries, any setback lines, channel banks, etc.

A second inspection is recommended just before installation of the lowest floor to ensure that this floor will be built at the elevation stipulated in the permit application, and the foundation is the type specified in the plans. The type of foundation may dictate the schedule for this inspection. For example, if the building has a slab foundation, the inspection is best done when the forms are placed. If the forms for the slab are high enough, the local official can approve pouring the slab. In another example, if the building has an elevated foundation, (e.g., crawlspace), the inspection is best done when the foundation is completed. If the top of the foundation of the crawlspace is high enough, the local official can approve placement of the floor.

Making sure the lowest floor is properly elevated is the key to the entire floodplain construction process. The floor elevation can be checked during the second inspection in a couple of ways. The local official can require the builder to obtain a certification of the floor elevation or alternatively, the local official can use a hand level to determine whether the lowest floor will be as high as the reference mark established by the builder's surveyor before construction began. This reference mark could be located on a nearby stationary object such as a telephone or light pole or the surveyor could establish the reference mark on a stake. Use of a hand level will give the local official a rough estimate that the building will be constructed to the correct elevation. However, it is not as accurate an elevation as a survey.

During the second and later inspections the local official should also begin checking other building elements against the permit and the plans, such as whether the fill meets necessary compaction, slope, and protection requirements; the location of utilities are being properly protected; and if any openings are required, they are of the appropriate number and size and are located at the appropriate height above grade.

The local official should conduct a final inspection and obtain the "as-built" elevation certification to determine if the lowest floor is at the proper elevation. This inspection should be done as the project nears completion and before the certificate of occupancy or certificate of compliance is issued. The "as built" certification can be documented on the Elevation Certificate or on the community's own forms or on the plans. During this final inspection, all building elements (such as enclosures, openings, utilities, ductwork, machinery and equipment, breakaway walls, and anchoring) need to be thoroughly inspected to ensure that they comply with the community's floodplain management regulations.

For insurance purposes, for a building under construction, the survey should include only the elevations surveyed in items C3.a)-g). The remaining elevations, if applicable, should be obtained from the construction plans or drawings and entered as Comments in section D. Buildings in the course of construction are rated the same as completed construction. A renewal application and a new Elevation Certificate are required at renewal time once the building has been completed. The new Elevation Certificate should then be based on "Finished Construction" in item C1.

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16) Which diagram should be used for manufactured homes that have vinyl or aluminum skirting?

If the vinyl or aluminum skirting is purely for decorative purposes, the skirting can be disregarded and Diagram 5 can be used in both A and V Zones. However, if the area below the manufactured home's lowest floor is enclosed by something other than vinyl or aluminum skirting, it may be an enclosure in which case Diagrams 6 or 8 may be more appropriate. The surveyor can note in the Comments section whether the manufactured home includes vinyl or aluminum skirting. Openings are not required if vinyl or aluminum skirting is used.

The local official should document on the permit whether skirting will be used or whether the area below the manufactured home's lowest floor will be an enclosure before issuing a permit. If an enclosure is created below the manufactured home's lowest floor, the enclosure can only be used for parking, access, or storage. If the manufactured home is located in an A Zone, the enclosed area must include openings [44 CFR 60.3(c)(5)]. If it is located in a V Zone, the area below the lowest horizontal structural member of the lowest floor must be either free of obstruction or constructed with non-supporting breakaway walls, open-wood lattice-work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the manufactured home or supporting foundation system [44 CFR 60.3(e)(5)].

17) Are Elevation Certificates required for accessory structures, such as a detached garage or a storage shed?

If a community requires that an accessory structure must be elevated to or above a specified elevation, then an Elevation Certificate or similar documentation will be needed to ensure that the accessory structure was built in compliance. Communities may allow accessory structures that are not elevated or dry floodproofed (made watertight) provided that they represent a minimal investment and are designed to have a low damage potential with respect to the structure and contents. These structures could include a two-car detached garage or smaller or a small shed. Generally, a community should allow wet floodproofed accessory structures only through its variance process unless it has established specific criteria in its floodplain management regulations. If the community allows wet floodproofed accessory structures, a certification of the elevation of the lowest floor to which the accessory structure is built is not required.

The Dwelling Form of the Standard Flood Insurance Policy written to cover a 1-4 family residence also covers a detached garage on the lot, but the coverage is limited to no more than 10 percent of the limit of the liability on the dwelling. Use of this insurance coverage is at the policyholder's option but reduces the building limit of liability on the main building. In this case, an Elevation Certificate is not required for the detached garage to be covered under the Dwelling Form.

If the property owner chooses to separately insure the detached garage under the Standard Flood Insurance Policy, then an Elevation Certificate will be required. Also, an Elevation Certificate is required if the property owner chooses to individually insure other accessory structures under the Standard Flood Insurance Policy.

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18) If an Elevation Certificate is prepared as part of a request for a Letter of Map Amendment (LOMA) or Letter of Map Revision based on fill (LOMR-F), but a Base Flood Elevation is not available in a Zone A, how can a Base Flood Elevation be obtained?

Zone A identifies a Special Flood Hazard Area, studied by approximate methods, for which no Base Flood Elevations have been developed or provided as part of the Flood Insurance Study. Because an Elevation Certificate may be used to obtain a LOMA or LOMR-F, a surveyor may need to obtain a Base Flood Elevation at a building site in order to complete the Elevation Certificate. In some cases, Base Flood Elevations may already exist in the approximate Zone A area for which the Certificate is needed. There are several sources that a surveyor can check in order to obtain a Base Flood Elevation. The following list highlights three major sources for potential Base Flood Elevation data:

1) State and local agencies: Check with the community floodplain management official. A Base Flood Elevation may have been developed as part of the floodplain development permit process before the building was constructed. Other local sources include the local public works department or the local transportation department, which may have developed flood data in designing sewer and storm drainage systems or local roads. Also, check with state agencies, such as Department of Natural Resources or a Geological Survey, which may have conducted flood studies using state funds, or the Department of Transportation.

2) Other Federal Agencies: Information regarding Base Flood Elevations may be obtained from other Federal agencies involved in floodplain management. Some of the sources of Base Flood Elevation data may include the U.S. Army Corps of Engineers, U.S. Geological Survey, or the Department of Agriculture, Natural Resources Conservation Service.

3) FEMA may have detailed flood information that has not yet been incorporated into the community's Flood Insurance Study. Data requests should be directed to the FEMA Map Assistance Center at 1-877-FEMA MAP. In some circumstances FEMA can calculate a Base Flood Elevation if the data to develop the Base Flood Elevation is available in the back-up data to the Flood Insurance Study.

   In some cases, a Base Flood Elevation may have to be developed for the building site by a qualified engineer. A list of additional sources for existing data as well as guidance in developing Base Flood Elevations can be found in the publication, *Managing Floodplain Development in Approximate Zone A Areas, A Guide for Obtaining and Developing Base (100-year) Flood Elevations*, FEMA 265/July 1995

NOTE: If the Elevation Certificate is to be used to support a LOMA or LOMR-F request, the Certificate must be submitted along with the application, supporting data, signatures, and FEMA review fees (only for LOMR-Fs), as appropriate, before the LOMA or LOMR-F can be processed.

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Further Information

The Elevation Certificate and the Surveyor's Guide to the Elevation Certificate can be found at http://training.nfipstat.com/ecsurveyor/. The Elevation Certificate can be downloaded at this site.

Managing Floodplain Development in Approximate Zone A Areas, A Guide For Obtaining and Developing Base (100-year) Flood Elevations, FEMA 265, July 1995. Additional guidance pertaining to obtaining and developing Base Flood Elevations in Zone A can be found in this publication.

Openings in Foundation Walls for Buildings Local in Special Flood Hazard Areas in accordance with the National Flood Insurance Program, Technical Bulletin 1-93, FIA-TB-1 (4/93).

Protecting Building Utilities From Flood Damage, Principles and Practices for the Design and Construction of Flood Resistant Building Utility Systems, FEMA 348, November 1999.

To obtain a copy of these publications, see the section on Ordering Information below. They are also available to view and download from http://www.fema.gov/library/prepandprev.shtm/mit.

Comments

Any comments on the Floodplain Management Bulletin should be directed to:

FEMA
Mitigation Division
500 C St., SW
Washington, D.C. 20472

Ordering Information

- Copies of the Elevation Certificate and Instructions (FEMA Form 81-31) and the above listed publications are available from:

  FEMA Distribution Facility
  P.O. Box 2012, Jessup, MD
  20794-2012.

  FEMA's Distribution Facility also accepts telephone requests (1-800-480-2520) and facsimile requests (301-362-5335).

- Copies of the Floodplain Management Bulletins can also be obtained from the appropriate FEMA regional office.

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Job Aids

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Elevation Certificates (ECs) – Job Aid

EC Information:

- Provides elevation information to ensure compliance
- Determines proper insurance premiums
- Supports map change requests (LOMA, LOMR-F)
- Provides building description (Section: A)
- Collects property, map and community information (Sections: A, B, E, G)
- Certifies the building elevation data and professional expertise (Sections: C, D, F)

Requirements for Using ECs:

- The NFIP requires communities to obtain lowest floor elevation information for newly constructed and substantially improved buildings in the SFHA. The community must maintain this information and the EC provides a formal record of compliance.
- **Must** be used by CRS communities
- Required for rating post-FIRM buildings in AE, AH, A (with BFE), VE, V (with BFE) and AR zones
- Not required for pre-FIRM buildings, but can be an option if using post-FIRM insurance rating
- Elevation Certificate certifies building elevations, but does NOT waive the flood insurance purchase requirement

EC - INFORMATION BY SECTION

Section A

Property information, including: address, legal description, building type, lat/long, crawl space information (if applicable), and building diagram number

Section B

FIRM information, including: Community name, CID, Panel Number, Panel Date, BFE to the nearest tenth of a foot, source of BFE, and whether the property is located in a CBRA Zone

Section C

Building Elevation including: Vertical Datum for your elevations, Lowest floor, LAG, and HAG

Section D

This is the Certification Section

Section E

Information for properties located in FIRM Zone AO or Approximate A Zones where you don't have a BFE determined

Section F

Property owner information including: name, address, and any comments the owner may have

Section G

Optional section: includes an area for the permit official to make notes

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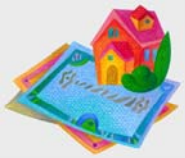
UNIT V

Flood Insurance



- Mandatory Purchase
- Coverage / Limitations
- Rating Buildings
- Increased Cost of Compliance (ICC)
- Community Rating System

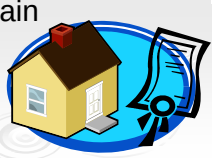
Mandatory Purchase Requirement

- Applies to buying, repairing, constructing or improving private and publicly owned buildings
- Secured mortgage loans from lenders regulated or insured by Federal agencies
- Lender determines if property is in SFHA
- Lender discretion if building is not in SFHA

Coverage

30-Day Waiting Period Applies unless:

- Policy bought while making, increasing, extending or renewing loan
- In coordination with certain map changes



Coverage

- Obtained from local insurance agents
- Agents can sell “direct” policies through FEMA or WYO through companies that work with and agree to FEMA requirements and rates
- Dwelling, General Property and Residential Condo Association are standard flood insurance policy types

Coverage

Preferred Risk Policy is a lower-cost option for properties in moderate-to-low risk areas with combinations of building and contents protection.

- Must be in B, C or X Zone on effective date of policy
- Regular Program communities
- Limited loss history

Limitations

Insurance coverage limitations:

- In areas below the lowest elevated floor depending on the flood zone and date of construction
- In basements regardless of zone or date of construction

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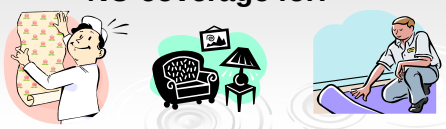
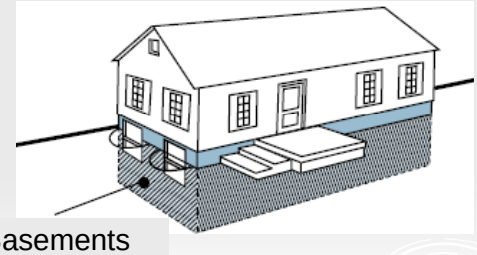
Limitations

BASEMENT is any area of a building (including sunken room or portion of) with a floor subgrade (below ground level) on all sides.

NO coverage for:

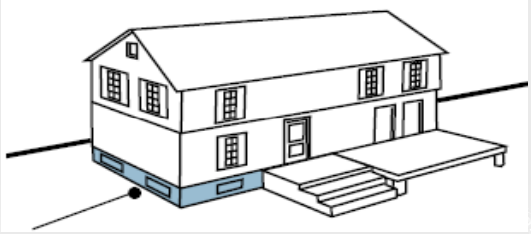


Limitations



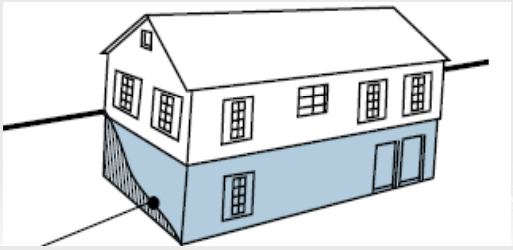
Basements

Limitations



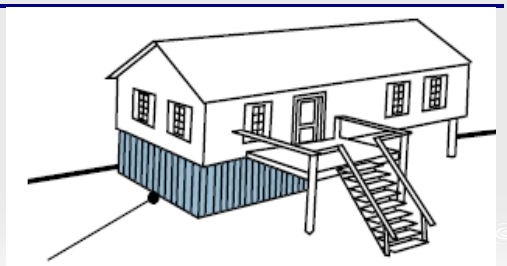
Crawlspaces

Limitations



Elevated building on full story

Limitations



Elevated Building With Enclosure

Rating Buildings

Flood insurance and NFIP regulations are designed to reinforce each other in the area of **rating buildings.**

- Enforcement of state & local regulations affects property owners' rates.

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Rating Buildings

Pre-FIRM buildings are built prior to the community's initial FIRMs or flood maps, so they may have greater flood risk.

Post-FIRM buildings were built after initial FIRM. They have reduced risk of flooding and damage if they are compliant with the state and local floodplain regulations.

Rating Buildings

Pre-FIRM rates are "subsidized" by premium income from Post-FIRM SFHA, B, C and X zone policy-holders.

- **Rating based on building type and FIRM zone, not elevation**
- Can rate using Elevation Certificate if Regular Program Community

Rating Buildings

Post-FIRM rates are actuarial-
Based on building's risk of flooding:

- **If BFE is available, rating is based on elevation of lowest floor in relation to the BFE.**
- If no BFE, rates are based on overall loss experience and expected damage for all buildings within that zone.

Rating Buildings

- Post-FIRM buildings in Zones VE and V1-30, with no obstructions below elevated floor, have higher rates than AE and A1-30 Zones due to greater risk from wave impacts.
- V Zone buildings with enclosures greater than or equal to 300 sq ft will have higher insurance rates.

Rating Buildings

"Insurable" Building: is walled and roofed "principally above ground" with at least 51% of actual cash value (including equipment and machinery) above ground

Manufactured Home: designed for use with or without a permanent foundation when attached to required utilities

Rating Buildings

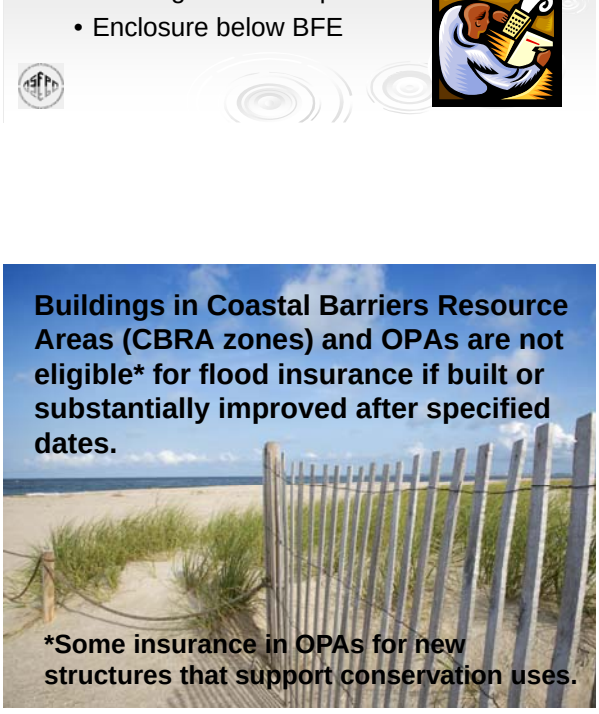
Three important facts:

- Contents coverage is a separate policy
- Single peril policy for direct physical damage; pays just replacement cost or Actual Cash Value of actual damage up to policy limit
- Not guaranteed replacement, never pays more than policy limit!

Rating Buildings

"Submit-to-Rate" detailed underwriting analysis is required for certain buildings with peculiarities in exposure to flooding:

- Lowest floor 2 feet or more below BFE
- Below grade crawlspace
- Enclosure below BFE



Increased Cost of Compliance

Increased Cost of Compliance (ICC): coverage helps pay for the increased costs to comply with floodplain ordinances after a flood, when the building has been declared substantially or repetitively damaged.

ICC coverage can be applied to FRED:
Floodproofing, Relocation, Elevation, Demolition up to $30,000

Community Rating System (CRS)

A voluntary NFIP program to recognize and encourage communities to go beyond the NFIP minimums in their local floodplain Management activities.

- Communities in full compliance can apply
- CRS uses a class rating system which entitles residents in SFHAs to premium reductions

Benefits of CRS

- Reduced flood insurance rates
- More risk awareness & education
- Improved public safety
  - less damage and $ losses
- Better floodplain management
- CRS training and technical assistance

Community Rating System (CRS)

Communities accrue points by undertaking activities in four categories:

- Public Information
- Mapping and Regulations
- Flood Damage Reduction
- Flood Preparation

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UNIT V – Summary Review

Flood Insurance

- Mandatory Purchase
- Coverage / Limitations
- Rating Buildings
- Increased Cost of Compliance (ICC)
- Community Rating System

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NFIP Rating Buildings & ICC – Job Aid

"**Insurable Building**" is "walled and roofed" with two or more exterior rigid walls with roof fully secured that is "principally above ground" with at least 51% of actual cash value (including equipment and machinery) above ground.

"**Manufactured Home**" is transportable on a permanent chassis designed for use w/wo permanent foundation when attached to required utilities.

Rating Buildings:

- Enforcement of state & local regulations affects property owners' rates.
- By complying with regulations – owners elevate and floodproof so the risk is reduced. Premiums go down as structures go up.
- Ratings - Based on the risk of flooding and flood damage – **Pre-FIRM and Post-FIRM**
- Buildings in **Coastal Barriers Resource System (CBRS)** or **Otherwise Protected Areas (OPA)** (shown on flood maps as CBRA zones) are not eligible* for flood insurance if built or substantially improved after specified dates. *Some insurance in OPAs for new structures that support conservation uses.

Pre-FIRM buildings are built prior to the community's initial FIRMs or flood maps, so they may have greater flood risk. Pre-FIRM structures are not rated using elevation data.

- ✓ Do not use elevations to determine rates.
- ✓ Rates are determined by flood zone.

Post-FIRM buildings were built after initial FIRM. They have reduced risk of flooding and damage if are compliant with the state and local floodplain regulations. The regulations are applied to all structures built or substantially improved after date of the initial FIRM. Post-FIRM properties get subsidized rates:

- ✓ Based on Lowest floor in relation to BFE
- ✓ **Submit to Rate** - Submit to rate is when the low floor is more than 2 feet below the BFE…can be as high as $25,000. These cases are also forwarded to the Regional FEMA office for investigation
- ✓ **Floodproofing** - Rates are based on low floor unless floodproofed to 1 foot above the BFE
- ✓ **Approximate A Zones** - Premiums can be very high in A zones unless you have an EC stating that your low floor is X feet above Highest Adjacent Grade (HAG), or if a local BFE is available they will use that

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Increased Cost of Compliance (ICC) - Key Points

- ✓ ICC can be applied to FRED: Floodproofing (non-residentials only), Relocation, Elevation, Demolition
- ✓ Only available if building is insured before the flood
- ✓ Covers only damage caused by a flood
- ✓ Capped at $30,000
- ✓ Claims must be accompanied by the substantial damage determination from the FPA
- ✓ Does not require a federal disaster declaration

ICC Coverage: helps pay for the increased costs to comply with floodplain ordinances after a flood, when the building has been declared substantially or repetitively damaged.

- Works with post-disaster and repetitive loss properties well.
- Substantial Damage can be one shot or cumulative if your community regulations track the damage. Consider how many repetitive loss properties you have when you update your regulations concerning substantial improvement and substantial damage.
- ICC can be the driver for reducing risk with property owners.
- It's the corrective aspect of the NFIP that shows how it works as a mitigation program.
- Communities can use quick substantial damage determinations to help property-owners decide on mitigation actions including Hazard Mitigation Grant Projects.
- FEMA allows ICC claim monies to be counted as non-federal matching funds when applying for mitigation grants.

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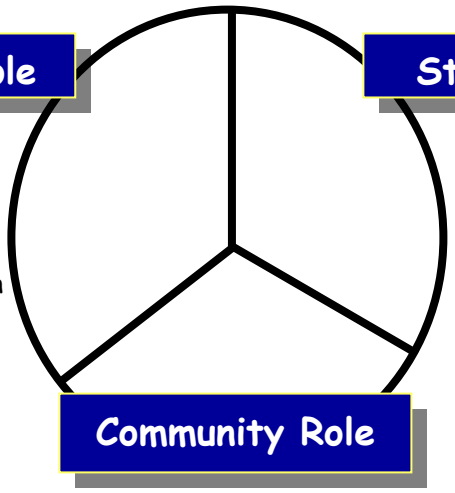
NFIP Flood Insurance & Coverage - Job Aid

How the NFIP Works

- Voluntary partnership between community and the Fed.
- Community agrees to regulate development and adopt floodplain management regulations
- Fed. backs subsidized flood insurance policies
- FEMA maps flood hazard areas
  - Maps support rating for flood premiums
  - Maps determine mandatory purchase requirements for properties
- Flood claims are paid even if not a federal disaster
- Available to all insurable buildings in or out of SFHA



Federal Role

- ✓ Map flood hazard areas
- ✓ Set insurance rates
- ✓ Coordinate Fed / State / Community efforts
- ✓ Provide training & information
- ✓ Establish & maintain minimum

State Role

- ✓ Appoint State NFIP Coordinator
- ✓ Empower communities with authority to manage development
- ✓ Adopt minimum (or higher) NFIP standards
- ✓ Support mapping

Community Role

- ✓ Regulate development in the floodplain
- ✓ Enforce ordinances & inspect for compliance
- ✓ Maintain floodplain records
- ✓ Support mapping

The following coverage limits are available under the Dwelling Form and General Property Form of the Standard Flood Insurance Policy.

The following coverage limits are available under the Dwelling Form and the General Property Form of the Standard Flood Insurance Policy. Coverage limits under the Residential Condominium Building Association Policy are listed in the *NFIP Flood Insurance Manual*

	Emergency Program	Regular Program
Building Coverage		
Single-Family dwelling	$ 35,000*	$250,000
Two- to Four-family dwelling	$ 35,000*	$250,000
Other residential	$100,000*	$250,000
Non-residential	$100,000*	$500,000
Contents Coverage		
Residential	$ 10,000	$100,000
Non-residential	$100,000	$500,000

* Under the Emergency Program, higher limits of building coverage are available in Alaska, Hawaii, the U.S. Virgin Islands, and Guam.

From *NFIP Flood Insurance Manual*. Link to the full document is located in the **Appendix** of your notebook.

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"**Building**" - Not the same as "building" for floodplain management purposes, which includes a gas or liquid storage tank.

- ✓ Walled and roofed structure (two or more rigid walls and a roof attached)
- ✓ Principally above ground (51% or more of the actual cash value is above ground)
- ✓ Affixed permanently to a site (built on a permanent chassis and designed for use with or without a permanent foundation when attached to utilities).

Condo Coverage - limits are different, see the NFIP Insurance Manual.

Building Coverage - includes those things that typically stay with a house when it is sold (utility equipment, wall to wall carpet, built-ins, wallpaper/paneling)

- ✓ 10% may apply to a detached garage, other structures need own policies
- ✓ Does NOT include: gas or liquid storage tanks, or a building declared in violation of state or local law

Contents Coverage – Includes only removable items within an insured building.

- ✓ Can not include animals, licensed vehicles, items valued at more than $250, money or papers, or items inside an uninsurable structure

General Guidance on Flood Insurance Coverage

What is insured under Building Property coverage

- The insured building and its foundation.
- The electrical and plumbing systems.
- Central air conditioning equipment, furnaces, and water heaters.
- Refrigerators, cooking stoves, and built-in appliances such as dishwashers.
- Permanently installed carpeting over an unfinished floor.
- Permanently installed paneling, wallboard, bookcases, and cabinets.
- Window blinds.
- Detached garages (up to 10 percent of Building Property coverage). Detached buildings (other than garages) require a separate Building Property policy.
- Debris removal.

What is insured under Personal Property coverage

- Personal belongings such as clothing, furniture, and electronic equipment.
- Curtains.
- Portable and window air conditioners.
- Portable microwave ovens and portable dishwashers.
- Carpets not included in building coverage (see above).
- Clothes washers and dryers.
- Food freezers and the food in them.
- Certain valuable items such as original artwork and furs (up to $2,500).

What is not insured by either Building Property or Personal Property coverage

- Damage caused by moisture, mildew, or mold that could have been avoided by the property owner.
- Currency, precious metals, and valuable papers such as stock certificates.
- Property and belongings outside of a building such as trees, plants, wells, septic systems, walks, decks, patios, fences, seawalls, hot tubs, and swimming pools.
- Living expenses such as temporary housing.
- Financial losses caused by business interruption or loss of use of insured property.
- Most self-propelled vehicles such as cars, including their parts (see Section IV.5 in your policy).

From FEMA F679 "National Flood Insurance Program Summary of Coverage" (full copy provided in the **Appendix**).

Community Rating System (CRS) – Job Aid

Source: FEMA "Community Rating System Fact Sheet" (May 2007)

- CRS classes are rated from 10-1. Class 10 is a community that does not apply to CRS or that does not maintain the minimum number of credit points (500 pts.).
- Class 9 (first discount class) entitles community residents in SFHA to a 5% discount on flood insurance premiums.
- Each class improvement equals a 5% greater discount (Class 1 maximum discount is 45%).

Credit Points	CRS Class	Premium Discount
4,500+	1	45%
4,000-4,499	2	40%
3,500-3,999	3	35%
3,000-3,499	4	30%
2,500-2,999	5	25%
2,000-2,499	6	20%
1,500-1,999	7	15%
1,000-1,499	8	10%
500-999	9	5%
0-499	10	0

From FEMA's CRS webpage: ://www.fema.gov/business/nfip/crs.shtm
and the *NFIP Flood Insurance Manual*

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UNIT VI

Flood Hazard Mitigation

- Disaster Operations
- Recovery to Reduce Risk
- Mitigation Planning
- Mitigation Assistance Programs

Photo: Liz Roll / FEMA

Disaster Operations

Disaster operations are organized around four major areas:

- Prepare
- Respond
- Recover
- Mitigate

Disaster Operations

Permit process expedited if **clean up & emergency repairs** are limited to:

- Removal & disposal of damaged items
- Hosing, scrubbing, or cleaning damage
- Covering holes to prevent further damage
- Making building safe to enter (removing sagging ceilings, shoring-up foundations)

Recovery to Reduce Risk

Enforcement Responsibilities:

- Inspections of all flood properties
- Post your determination on each building
- Follow-up to make sure recovery is compliant

Photo: Walter Jennings / FEMA

Mitigation Measures

- Prevention
- Property Protection
- Protection of Natural Resources
- Emergency Services

Mitigation Measures

Prevention

Photo: Mark Wolfe / FEMA

Mitigation Measures

Property Protection

Mitigation Measures

Protection of Natural Resources

Mitigation Measures

Emergency Services

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Mitigation Planning

is a process to identify risk and vulnerabilities and then develop long term strategies for protecting people and property.

- **Disaster Mitigation Act of 2000** requires communities to have a mitigation plan to qualify for some of the FEMA mitigation grants

Mitigation Planning

Mitigation Planning Key Elements:

- Public Involvement
- Risk Assessment
- Mitigation Strategy

Photo: Greg Henshall / FEMA

FEMA Mitigation Grant Programs

Hazard Mitigation Grant Program (HMGP):

- Requires Federal Disaster Declaration
- State and communities must have FEMA approved mitigation plan
- Funding is sliding scale formula dependent on State Mitigation Plan; usually 75% federal 25% nonfederal monies
- Elevation, acquisition (demolition or relocation), retrofitting and minor flood control are eligible projects

FEMA Mitigation Grant Programs

Flood Mitigation Assist. Program (FMA):

- Applies to NFIP insured structures
- Planning grants support risk assessment and development of mitigation plans
- Project grants implement elevation, demolition, relocation or acquisition activities
- Technical assistance grants for states and communities to develop FMA applications and implement projects

FEMA Mitigation Grant Programs

Pre-Disaster Mitigation Program (PDM):

- Nationally competitive program for States and communities
- Must have FEMA approved mitigation plan
- Activities must be cost effective
- Eligible projects include elevation, localized flood control for critical facilities, relocation, stormwater mgmt. projects, retrofitting, vegetation restoration, voluntary acquisition

FEMA Mitigation Grant Programs

Repetitive Flood Claims Program (RFC):

- Targets insured repetitive loss properties
- Acquisition, structure demolition, and relocation with deed restriction for open space are considered
- Grants can be 100% federally funded if State or community cannot meet the cost-share requirements of the FMA program
- Priority goes to acquisitions that equal most savings for National Flood Insurance Fund

FEMA Mitigation Grant Programs

Severe Repetitive Loss Program (SRL): Residential properties with severe repeat loss history:

- Four or more claims that:
  - ✓ each exceed $5,000 with at least two in a 10-year period

    -- OR --
  - ✓ 2 or more claims that cumulatively exceed the value of the building

UNIT VI – Summary Review

Flood Hazard Mitigation

- Disaster Operations
- Recovery to Reduce Risk
- Mitigation Planning
- Mitigation Assistance Programs

Course Summary Review

UNIT I	Floodplain Management Concepts
UNIT II	Floodplain Mapping
UNIT III	NFIP Regulations & Administrative Procedures

Course Summary Review

UNIT IV Elevation Certificates

UNIT V Flood Insurance

UNIT VI Flood Hazard Mitigation

Good luck

on the exam!!

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Job Aids

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Mitigation – Job Aid

Disaster Operations

- ✓ Prepare
- ✓ Recover
- ✓ Respond
- ✓ Mitigate

Permits expedited if clean up & repairs limited to:

- Removal & disposal of damaged items
- Hosing, scrubbing, or cleaning damage
- Covering holes to prevent further damage
- Making building safe to enter (removing sagging ceilings, shoring-up foundations)

Responsibilities	
Emergency Manager	**Floodplain Administrator**
✓ Evacuation and evacuation planning, rescue, sandbagging ✓ Coordination of emergency response with FEMA and the state state ✓ Opening the emergency operations center ✓ Complete damage assessment to see if state or federal government assistance needed for response and recovery	✓ Substantial damage inspections and determinations ✓ Document the event and high water marks ✓ Identify opportunities to reduce future risk ✓ Ensure permits are obtained - *permit requirement cannot be waived!* ✓ Educate media, public, policy makers, responders on FPM ordinances and importance of compliance

Recovery to Reduce Risk

Enforcement:

- Inspections of all flood properties
- Post your determination on each building
- Follow-up to ensure recovery is compliant

INSPECTIONS

- Of all flood properties to determine if permit is needed and substantially damage

POSTING

- Substantial damage determinations for NFIP compliance. Pre-FIRM substantially damaged buildings ***must*** comply with the current community FPM regulations.
- Focus substantial damage on pre-FIRM; if community has had map updates that change BFEs, there may also be a need to review post-FIRM.

FOLLOW UP

- Contacting utility companies to deny reconnection to homes that are not in compliance
- Ask police, fire, etc. to report any construction going on
- Additional inspection to ensure no one is constructing
- Maintain detailed records of all of inspection findings
- Manufactured homes w/o substantial damage may be elevated on reinforced piers that are 36" above grade or be elevated to or above BFE

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Mitigation Planning

Disaster Mitigation Act of 2000: pushes communities to integrate mitigation into daily decisions about land use and development. Identify risk / vulnerabilities and develop long term strategies for protecting people and property.

Mitigation Planning Key Elements:

- Public Involvement
- Risk Assessment
- Mitigation Strategy

Prevention

- Ensures development does not increase damage
- Includes planning and zoning, open space preservation, floodplain regulations, stormwater mgmt., maintenance of drainage systems and dunes in coastal areas

Property Protection

- Modifies the buildings susceptibility to flooding
- Includes acquisition, relocation, elevation, floodproofing, insurance

Protection of Natural Resources

- Flood damage reduction and improved water quality and habitat
- Includes wetland protection, open space preservation, erosion and sediment control, etc.

Emergency Services

- Protect people from the flood risk by improving warning and response ability

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Mitigation Assistance Programs

Hazard Mitigation Grant Program (HMGP): .fema.gov/government/grant/hmgp/index

- ✓ Requires Federal disaster declaration
- ✓ State and communities must have FEMA approved mitigation plan
- ✓ $ dependent on state mitigation plan; usually 75% federal 25% nonfederal monies
- ✓ Elevation, acquisition (demolition or relocation), retrofitting and minor flood control are eligible projects
- ✓ HMGP can be open to all areas of a state, not just the declared areas.
- ✓ Communities apply on behalf of affected individuals and businesses

Flood Mitigation Assist. Program (FMA): .fema.gov/government/grant/fma/index

- ✓ Applies to NFIP insured structures
- ✓ Planning grants support risk assessment and development of mitigation plans
- ✓ Project grants implement elevation, demolition, relocation or acquisition activities
- ✓ Technical assist. grants to develop FMA applications and implement projects

Pre-Disaster Mitigation Program (PDM): .fema.gov/government/grant/pdm/index

- ✓ Nationally competitive program for States and communities
- ✓ Must have FEMA approved mitigation plan
- ✓ Activities must be cost effective
- ✓ Eligible projects include elevation, localized flood control for critical facilities, relocation, stormwater mgmt. projects, retrofitting, vegetation restoration, voluntary acquisition

Repetitive Flood Claims Program (RFC): .fema.gov/government/grant/rfc/index

- ✓ Targets insured repetitive loss properties
- ✓ Acquisition, structure demolition, and relocation with deed restriction for open space are considered
- ✓ Can be 100% federally funded if state / community can't meet the cost-share req. of **FMA** program
- ✓ Priority goes to acquisitions that equal most savings for National Flood Insurance Fund

Severe Repetitive Loss Program (SRL): .fema.gov/government/grant/srl.index

- ✓ Residential properties with severe repeat loss history:
  - Four or more claims that each exceed $5,000 with at least two in a 10-year period
  - 2 or more claims that cumulatively exceed the value of the building
- ✓ States receive funding annually based upon the number of SRLs
- ✓ Eligible projects include elevation, relocation, demolition, floodproofing historical properties, demolition/rebuild to BFE
- ✓ Usually 75% Federal funding; non-Federal share can be adjusted to 10% if state has FEMA approved mitigation plan with strategy to address SRL properties

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Comparison of Mitigation Grant Programs

	HMGP	FMA	PDM	RFC	SRL
Requires Federal Disaster Declaration	✓				
Must have FEMA approved Mitigation Plan	✓		✓		
Nationally Competitive Program			✓		✓
Shared Funding mix of Fed / non-Fed $	✓				✓
May be 100% Federally Funded				✓	
Activities must be Cost-Effective			✓		
Elevation	✓	✓	✓		✓
Acquisition	✓	✓		✓	
Acquisition - Voluntary			✓		
Demolition	✓	✓		✓	✓
Demolition / Rebuild to BFE					✓
Flood Control - minor measures	✓				
Flood Control - critical facilities			✓	✓	
Floodproofing - historical properties					✓
Relocation	✓	✓	✓		✓
Relocation - w/Deed Restriction: Open Space				✓	
Retrofitting	✓		✓	✓	
Stormwater Management Projects			✓	✓	
Vegetation Restoration			✓	✓	
Priority - Insured Properties		✓		✓	
Priority - Repetitive Loss Properties				✓	✓
Priority - acquisitions save NFIP fund most $				✓	
Grants - technical assistance to develop FMA applications & implement projects		✓			
Grants - for risk assessment planning & developing mitigation plans		✓			

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Appendix
A

Websites & Contact Information

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CFM Refresher Course: Websites & Contact Information

AGENCY / SERVICES	WEBSITE / CONTACT
Association of State Floodplain Managers (ASFPM) ➢ CFM Certification ➢ Training & Development ➢ Online Training (Red Vector) ➢ Professional Membership	www.floods.org P: 608-274-0123 F: 608-274-0696 2809 Fish Hatchery Rd., Suite 204 Madison, WI 53713 asfpm@floods.org
Code of Federal Regulations (CFR) ➢ 33CFR 230 (Proceed. Implement. NEPA) ➢ 44CFR 10 (Environmental Considerations) ➢ 44CFR 59 (General Provisions) ➢ 44CFR 60 (Land Mgmt. & Use) ➢ 44CFR 60.2 (Minimum NFIP) ➢ 44CFR 60.3 (FPM Criteria) ➢ 44CFR 65.1 (Mapping SFHA) ➢ 44CFR 65.3 (Require to Submit Data) ➢ 44CFR 65.4 (Right to Submit Data) ➢ 44CFR 65.5 (LOMRs) ➢ 44CFR 70 (Map Correction)	www.gpoaccess.gov/CFR/INDEX.HTML
Community Rating System (CRS) ➢ CRS Resources ➢ CRS Worksheets	www.training.fema.gov/EMIWeb/CRS/ www.training.fema.gov/EMIWeb/CRS/docs/462006ActivityWorksheets.pdf
FEMA Community Rating System (CRS) ***Fact Sheet***	www.fema.gov/library/viewRecord.do?id=2635
FEMA Elevation Certificates (ECs) ➢ EC Forms & Instructions ➢ FEMA 467-1 (EC Bulletin) ➢ Surveyor's Guide to the EC	www.fema.gov/business/nfip/elvinst.shtm www.fema.gov/library/viewRecord.do?id=1727 http://training.nfipstat.com/ecsurveyor/
FEMA Emergency Management Institute (EMI) ➢ Online tutorials ➢ FPM & FPA Training ➢ CRS Program Training	www.training.fema.gov
FEMA FAAT book ➢ Acronyms, Abbreviations, & Terms	www.fema.gov/plan/prepare/faat.shtm
FEMA Flood Insurance Study (FIS) ***Tutorial***	www.fema.gov/media/fhm/fis/ot_fis.htm www.fema.gov/library/viewRecord.do?id=2325
FEMA Hazard Mitigation Grant Programs (HMGP) ***Fact Sheet***	www.fema.gov/library/viewRecord.do?id=2058

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CFM Refresher Course: Websites & Contact Information

AGENCY / SERVICES	WEBSITE / CONTACT
FEMA How to Read a Flood Insurance Rate Map (FIRM) ***Tutorial***	www.fema.gov/media/fhm/firm/ot_firm.htm www.fema.gov/library/viewRecord.do?id=2324
FEMA Levee Information	www.fema.gov/plan/prevent/fhm/lv_intro.shtm
FEMA Library ➢ Publicly available FEMA resources ➢ Search FEMA documents by topic, name, or number ➢ Technical bulletins ➢ CRS worksheets ➢ FEMA Documents & Publications ➢ RSDE Software	www.fema.gov/library/viewRecord.do?id=2894 P: 1-800-480-2520 M-F 8-5 EST F: 301-362-5335 FEMA PO Box 2012 Jessup, MD 20794-2012
FEMA LOMC Tutorials	www.fema.gov/plan/prevent/fhm/ot_lmreq.shtm
FEMA Map Service Center (MSC) ➢ Records of map changes ➢ Online scanned maps, DFIRMS, FIRMs, FIRMettes ➢ Flood Insurance Studies (FIS)	www.msc.fema.gov
FEMA Regions ➢ Regional Contacts ➢ RSDE training ➢ Training	www.fema.gov/about/contact/regions.shtm
FEMA Technical Bulletins	www.fema.gov/plan/prevent/floodplain/techbul.shtm
Fifth Amendment of the US Constitution ➢ Limits / restrictions on takings	www.archives.gov/exhibits/charters/bill_of_rights_transcript.html
Fourteenth Amendment of the US Constitution ➢ Just compensation for taking under eminent domain	www.archives.gov/exhibits/charters/constitution_amendments_11-27.html
NFIP website ➢ Flood Insurance Info. & Resources	www.floodsmart.gov
NFIP Acronyms & Glossary ➢ Flood Zone definitions ➢ NFIP terms	www.nfipnextgen.com/acronym.htm
NFIP Documents	www.fema.gov/business/nfip/libfacts.shtm

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AGENCY / SERVICES	WEBSITE / CONTACT
NFIP Insurance Manual	www.fema.gov/business/nfip/manual.shtm
NFIP Summary of Coverage ➢ FEMA F679	www.fema.gov/library/viewRecord.do?id=3011
National Pollutant Discharge Elimination System (NPDES) Clean Water Act ➢ EPA's Clean Water Act 1987	http://cfpub.epa.gov/npdes/index.cfm
Special Flood Hazard Determination Form ➢ Form for determining if a building is in the SFHA for insurance purposes	www.fema.gov/business/nfip/sfhdform.shtm
US Army Corps of Engineers (USACE) ➢ List of Levees with maintenance issues	www.usace.army.mil/ www.hq.**usace**.army.mil/cepa/releases/leveelist.pdf

FEMA Documents, Bulletins, and Publications Referenced:

- **33CFR 230,** Code of Federal Regulations: Procedures for Implementing NEPA
- **44CFR 10**, Code of Federal Regulations: Environmental Considerations
- **44CFR 59**, Code of Federal Regulations: NFIP General Provisions
- **44CFR 60**, Code of Federal Regulations: Criteria for Land Management and Use
- **44CFR 60.2**, Code of Federal Regulations: Minimum Compliance with Floodplain Management Criteria
- **44CFR 60.3**, Code of Federal Regulations: Floodplain Management Criteria for Flood-Prone Areas
- **44CFR 65.1**, Code of Federal Regulations: Identification and Mapping of Special Flood Hazard Areas
- **44CFR 65.3**, Code of Federal Regulations: Requirement to Submit New Technical Data
- **44CFR 65.4**, Code of Federal Regulations: Right to Submit New Technical Data
- **44CFR 65.5**, Code of Federal Regulations: Governs decisions for Letters of Map Revisions
- **44CFR 70**, Code of Federal Regulations: Procedure for Map Correction
- **CRS Worksheets**
- **FEMA 85**, Manufactured Home Installation in Flood Hazard Areas
- **FEMA 100**, A Unified National Program for Floodplain Management
- **FEMA 186 F-083**, Mandatory Purchase of Flood Insurance Guidelines
- **FEMA 213**, Answers to Questions About Substantially Damaged Buildings
- **FEMA 265**, Managing Floodplain Development in Approximate Zone-A Areas—A Guide for Obtaining and Developing Base (1% Chance) Flood Elevations
- **FEMA 268**, Protecting Floodplain Resources-A Guidebook for Communities
- **FEMA 301**, Increase Cost of Compliance Coverage—Guidance for State & Local Officials
- **FEMA 467**, Elevation Certificate
- **FEMA 480**, NFIP Floodplain Management Requirements: A Study Guide and Desk Reference for Local Officials
- **FEMA 499**, Home Builder's Guide to Coastal Construction: Technical Fact Sheets 1-30
- **FEMA 663**, NFIP Increased Cost of Compliance (ICC) Coverage
- **FEMA D671**, Cheaper Flood Insurance
- **FEMA F-001,** NFIP What You Need TO Know About Federal Disaster Assistance and National Flood Insurance
- **FEMA F-002,** Myths and Facts About the NFIP
- **FEMA F-025**, How the NFIP Works

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- **FEMA F-068**, Top Ten Facts Insurance Agents Need to Know About the NFIP
- **FEMA F-080,** NFIP Nothing Could Dampen the Joy of Home Ownership
- **FEMA F-084**, NFIP Answers to Questions About the NFIP
- **FEMA F-217**, NFIP The Benefits of Flood Insurance vs. Disaster Assistance
- **FEMA F-301,** NFIP Top Ten Facts Consumers Need to Know About the NFIP
- **FEMA F-679,** NFIP Summary of Coverage
- **FEMA F-683**, NFIP Why You Need Flood Insurance
- **FEMA F-684**, NFIP Flood Preparation Safety
- **FEMA F-685**, NFIP Managing Your Flood Insurance Claim
- **FEMA FIA-TB-0**, User's Guide to Technical Bulletins
- **FEMA FIA-TB-3**, Non-Residential Floodproofing
- **FEMA FIA-TB-7**, Wet Floodproofing Requirements
- **FEMA Community Rating System Fact Sheet**
- **FEMA FAAT** book (FEMA Acronyms Abbreviations & Terms)
- **FEMA Mandatory Purchase of Flood Insurance Guidelines**
- **FEMA Hazard Mitigation Grant Programs (HMGP) Fact Sheet**
- **Letters of Map Change** (LOMC) forms (MT-1, MT-2, MT-EZ)
- **NFIP Insurance Manual**
- **Procedure Memorandum 34**
- **Procedure Memorandum 43**

Other Information Referenced:

- Clean Water Act of 1977 (NPDES) http://cfpub.epa.gov/npdes/index.cfm
- Coastal Barriers Resources Act 1983 (CBRA): www.fema.gov/pdf/nfip/cbrsact2.pdf
- Coastal Barriers Resources Act (CBRA) Improvement Act 1991
- Disaster Mitigation Act of 2000: www.fema.gov/library/viewRecord.do?id=1935
- Endangered Species Act 1973: www.access.gpo.gov/nara/cfr/waisidx_08/50cfr402_08.html
- Executive Order 11988 (EO 11988) Floodplain Management: www.fema.gov/plan/prevent/floodplain/eo_11988.shtm
- Executive Order 11990 (EO 11990) Protection of Wetlands: www.fema.gov/plan/prevent/floodplain/eo_11990.shtm
- Executive Order 13406 P(EO 13406) Protecting the Property Rights of the American People: http://edocket.access.gpo.gov/2006/pdf/06-5828.pdf
- Flood Disaster Protection Act of 1973: www.fema.gov/library/viewRecord.do?id=2216
- National Environmental Policy Act (NEPA): http://ceq.hss.doe.gov/Nepa/regs/nepa/nepaeqia.htm
- National Flood Insurance Act 1968 , www.fema.gov/pdf/fhm/frm_acts.pdf
- National Flood Insurance Reform Act of 1994, www.fema.gov/library/viewRecord.do?id=2217
- Flood Insurance Reform Act of 2004, www.fema.gov/pdf/nfip/fira2004.pdf
- No Adverse Impact (NAI) Toolkit: www.floods.org

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Appendix B

Bibliography

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CFM Refresher Course
Bibliography

Augustino, Jocelyn. "Displaced Deer, ID: 36502" (June 21, 2008). *FEMA News Photo.* [Online]. Available: http://www.photolibrary.fema.gov/photolibrary/photo_details.do?id=36502. [January 14, 2009].

Bicknell, Amanda. "Marting Mountain Road Erosion, ID: 3618" (July 9, 2001). *FEMA News Photo.* [Online]. Available: http://www.photolibrary.fema.gov/photolibrary/photo_details.do?id=3618. [January 14, 2009].

Clean Water Act of 1977 (CWA), 33 USC § 1251, *et. seq.*

Coastal Barrier Resources Act of 1982 (CBRA), 16 USC § 3510, *et. seq.*

Coastal Zone Management Act (CZMA), 16 USC § 1451, *et. seq.*

Criteria for Land Use Management, 44 CFR § 60 (2008).

Disaster Mitigation Act of 2000, 42 USC § 5121, *et. seq.*

Endangered Species Act of 1973 (16 USC § 1531-1544, 87 Stat. 884), as amended – Pub. L. 93-205, approved December 28, 1973, repealed the Endangered Species Conservation Act of December 5, 1969 (Pub. L. 91-135, 83 Stat. 275). The 1969 Act had amended the Endangered Species Preservation Act of October 15, 1966 (Pub. L. 89-669, 80 Stat. 926).

Environmental Considerations, 44 CFR § 10 (2008).

Environmental Review Criteria for Deepwater Ports, 33 CFR § 148 (2008).

Executive Order No. 11988, 42 Fed. Reg. 26971. (May 24, 1977).

Executive Order No. 11990, 42 Fed. Reg. 26961. (May 24, 1977).

Executive Order No. 13406, 71 Fed. Reg. 36973. (June 28, 2006).

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FEMA. "FEMA 480, Figure 1-2. Riverine Watershed and Floodplain," (February 2005). *ASFPM website*. [Online]. Available: http://www.floods.org/Certification/FEMA_480/NFIP_SG_Unit_1_Floodplain_Management.pdf. [January 14, 2009].

FEMA. "FEMA 480, Figure 7-7. Pre-FIRM Building," (February 2005). *ASFPM website*. [Online]. Available: http://www.floods.org/Certification/FEMA_480/NFIP_SG_Unit_7_Ordinance_Administration.pdf. [January 14, 2009].

FEMA. "FEMA 480, Figure 7-9. Repaired—variance issued," (February 2005). *ASFPM website*. [Online]. Available: http://www.floods.org/Certification/FEMA_480/NFIP_SG_Unit_7_Ordinance_Administration.pdf. [January 14, 2009].

FEMA. "Flood County, USA: FIRM Maps, Index, and FIS". Map. [August 19, 1998]. *FEMA.* [Online]. Available: http://www.msc.fema.gov. [January 14, 2009].

FEMA. *Community Rating System Fact Sheet.* August 2008.

FEMA. *FEMA 100, A Unified National Program for Floodplain Management*. March 1986.

FEMA. *FEMA 213, Answers to Questions about Substantially Damaged Buildings*. May 1991.

FEMA. *FEMA 268, Protecting Floodplain Resources - A Guidebook for Communities*. June 1996.

FEMA. *FEMA 467-1, Elevation Certificate Floodplain Management Bulletin.* May 2004.

FEMA. *FEMA 499: Technical Fact Sheet #30, Home Builder's Guide to Coastal Construction: Repairs, Remodeling, Additions, and Retrofitting.* August 2005.

FEMA. *FEMA F679, NFIP Summary of Coverage*. March 2007.

FEMA. *FEMA Form 81-31, Elevation Certificate.* February 2006.

FEMA. *Flood Insurance Study Tutorial.* Updated June 2003. www.fema.gov/plan/prevent/fhm/ot_fisr.shtm

FEMA. *Hazard Mitigation Grant Program: Building Stronger and Safer Fact Sheet*. Spring/Summer 2008.

FEMA. *How to Read a Flood Insurance Rate Map Tutorial.* Updated June 2003. www.fema.gov/media/fhm/firm/ot_firm.htm

FEMA. *NFIP Floodplain Management Requirements*. FEMA 480. February 2005.

Flood Disaster Protection Act of 1973, Pub. L. 93-234, 87 Stat. 975.

General Provisions, 44 CFR § 59 (2008).

GovTrack.us. H.R. 3474--103rd Congress (1993): Riegle Community Development and Regulatory Improvement Act of 1994, *GovTrack.us (database of federal legislation)* <http://www.govtrack.us/congress/bill.xpd?bill=h103-3474&tab=summary> (accessed Dec 31, 2008)

GovTrack.us. S. 2238--108th Congress (2004): Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, *GovTrack.us (database of federal legislation)* <http://www.govtrack.us/congress/bill.xpd?bill=s108-2238> (accessed Dec 31, 2008)

Henshall, Greg. "FEMA Worker Helps Residents, ID: 37445" (August 4, 2008). *FEMA News Photo.* [Online]. Available: http://www.photolibrary.fema.gov/photolibrary/photo_details.do?id=37445. [January 14, 2009].

Identification and Mapping of Special Flood Hazard Areas, 44 CFR § 65 (2008).

Interagency Cooperation –Endangered Species Act of 1973 as amended, 50 CFR § 402 (2008).

Jennings, Walter. "FEMA and Police Inspections, ID: 37357" (July 25, 2008). *FEMA News Photo.* [Online]. Available: http://www.photolibrary.fema.gov/photolibrary/photo_details.do?id=37357. [January 14, 2009].

Jennings, Walter. "Flood Inspections, ID: 37356" (July 25, 2008). *FEMA News Photo.* [Online]. Available: http://www.photolibrary.fema.gov/photolibrary/photo_details.do?id=37356. [January 14, 2009].

McClosky, Don. "Paris Road Bridge Storm Surge". *MRGO Storm Surge Page.* [Online]. Available: http://www.mgcollins.com/Katrina/MRGOPage.html . [January 14, 2009].

McMillan, Bob. "*Cibolo Creek Flooding, ID: 7354*" (July 4, 2002). *FEMA News Photo.* [Online] Available: http://www.photolibrary.fema.gov/photolibrary/photo_details.do?id=7354. [January 14, 2009].

National Environmental Policy Act of 1969, 42 USC § 4321, *et. seq.*

National Flood Insurance Act of 1968, 42 USC § 4001, *et. seq.*

Ohio Department of Natural Resources. *Floodplain Management Training Course.* October 2007.

Procedure for Map Correction, 44 CFR § 70 (2008).

Procedures for Implementing NEPA, 33 CFR § 230 (2008).

Roll, Liz. "House with Flood Wall, ID: 12782" (April 26, 2005). *FEMA News Photo.* [Online]. Available: http://www.photolibrary.fema.gov/photolibrary/photo_details.do?id=12782. [January 14, 2009].

Westervelt, Anita. "National Guard Levee Reinforcement, ID: 1476" (May 6, 2001). *FEMA News Photo.* [Online]. Available:

http://www.photolibrary.fema.gov/photolibrary/photo_details.do?id=1476. [January 14, 2009].

Wolfe, Mark. "Elevated House, ID: 14191" (July 26, 2005). *FEMA News Photo.* [Online]. Available: http://www.photolibrary.fema.gov/photolibrary/photo_details.do?id=14191. [January 14, 2009].

Wolfe, Mark. "Preliminary Damage Assessment Presentation, ID: 32364" (September 4, 2007). *FEMA News Photo.* [Online]. Available: http://www.photolibrary.fema.gov/photolibrary/photo_details.do?id=32364. [January 14, 2009].

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Appendix C

44 CFR 59 General Provisions

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44 CFR 59 - General Provisions

SUBCHAPTER B—INSURANCE AND HAZARD MITIGATION

PARTS 50–54 [RESERVED]

NATIONAL INSURANCE DEVELOPMENT PROGRAM

PARTS 55–58 [RESERVED]

NATIONAL FLOOD INSURANCE PROGRAM

PART 59—GENERAL PROVISIONS

Subpart A—General

Sec.
59.1 Definitions.
59.2 Description of program.
59.3 Emergency program.
59.4 References.

Subpart B—Eligibility Requirements

59.21 Purpose of subpart.
59.22 Prerequisites for the sale of flood insurance.
59.23 Priorities for the sale of flood insurance under the regular program.
59.24 Suspension of community eligibility.

Subpart C—Pilot Inspection Program

59.30 A pilot inspection procedure.

AUTHORITY: 42 U.S.C. 4001 *et seq.;* Reorganization Plan No. 3 of 1978, 43 FR 41943, 3 CFR, 1978 Comp., p. 329; E.O. 12127 of Mar. 31, 1979, 44 FR 19367, 3 CFR, 1979 Comp., p. 376.

Subpart A—General

§ 59.1 Definitions.

As used in this subchapter—

Act means the statutes authorizing the National Flood Insurance Program that are incorporated in 42 U.S.C. 4001–4128.

Actuarial rates—see *risk premium rates.*

Administrator means the Federal Insurance Administrator.

Agency means the Federal Emergency Management Agency, Washington DC.

Alluvial fan flooding means flooding occurring on the surface of an alluvial fan or similar landform which originates at the apex and is characterized by high-velocity flows; active processes of erosion, sediment transport, and deposition; and, unpredictable flow paths.

Apex means a point on an alluvial fan or similar landform below which the flow path of the major stream that formed the fan becomes unpredictable and alluvial fan flooding can occur.

Applicant means a community which indicates a desire to participate in the Program.

Appurtenant structure means a structure which is on the same parcel of property as the principal structure to be insured and the use of which is incidental to the use of the principal structure.

Area of future-conditions flood hazard means the land area that would be inundated by the 1-percent-annual-chance (100-year) flood based on future-conditions hydrology.

Area of shallow flooding means a designated AO, AH, AR/AO, AR/AH, or VO zone on a community's Flood Insurance Rate Map (FIRM) with a 1 percent or greater annual chance of flooding to an average depth of 1 to 3 feet where a clearly defined channel does not exist, where the path of flooding is unpredictable, and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.

Area of special flood-related erosion hazard is the land within a community which is most likely to be subject to severe flood-related erosion losses. The area may be designated as Zone E on the Flood Hazard Boundary Map (FHBM). After the detailed evaluation of the special flood-related erosion hazard area in preparation for publication of the FIRM, Zone E may be further refined.

Area of special flood hazard is the land in the flood plain within a community subject to a 1 percent or greater chance of flooding in any given year. The area may be designated as Zone A on the FHBM. After detailed ratemaking has been completed in preparation for publication of the flood insurance rate map, Zone A usually is refined into Zones A, AO, AH, A1–30, AE, A99, AR, AR/A1–30, AR/AE, AR/AO, AR/AH, AR/A, VO, or V1–30, VE, or V. For purposes of these regulations, the term ''special flood hazard area'' is synonymous in

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Appendix D

44 CFR 60 Criteria for Land Management & Use

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44 CFR Part 60 Criteria for Land Management and Use

pre-FIRM and post-FIRM flood insurance policies in SFHAs to confirm that the start of construction or substantial improvement of insured pre-FIRM buildings occurred on or before December 31, 1974, and to identify possible violations of insured post-FIRM buildings. The community will provide to FEMA a list of insured buildings incorrectly rated as pre-FIRM and a list of insured post-FIRM buildings that the community identifies as possible violations.

(5) *SFIP endorsement.* In the communities that undertake the pilot inspection procedure, all new and renewed flood insurance policies that become effective on and after the date that we and the community establish for the start of the inspection procedure will contain an endorsement to the Standard Flood Insurance Policy that an inspection may be necessary before a subsequent policy renewal [see Part 61, Appendices A(4), (5), and (6)].

(6) *Notice from insurer.* For a building identified as a possible violation under paragraph (c)(4) of this section, the insurer will send a notice to the policyholder that an inspection is necessary in order to renew the policy and that the policyholder must submit a community inspection report as part of the policy renewal process, which includes the payment of the premium. The insurer will send this notice about 6 months before the Standard Flood Insurance Policy expires.

(7) *Conditions for renewal.* If a policyholder receives a notice under paragraph (c)(6) of this section that an inspection is necessary in order to renew the Standard Flood Insurance Policy the following conditions apply:

(i) If the policyholder obtains an inspection from the community and the policyholder sends the community inspection report to the insurer as part of the renewal process, which includes the payment of the premium, the insurer will renew the policy and will verify the flood insurance rate, or

(ii) If the policyholder does not obtain and submit a community inspection report the insurer will not renew the policy.

(8) *Community responsibilities.* For insured post-FIRM buildings that the community inspects and determines to violate the community's floodplain management regulations, the community must demonstrate to FEMA that the community is undertaking measures to remedy the violation to the maximum extent possible. Nothing in this section modifies the community's responsibility under the NFIP to enforce floodplain management regulations adequately that meet the minimum requirements in §60.3 for all new construction and substantial improvements within the community's SFHAs. The community's responsibility also includes the insured buildings where the policyholder did not obtain an inspection report, and non-insured buildings that this procedure does not cover.

(d) *Restoration of flood insurance coverage.* Insurers will not provide new flood insurance on any building if a property owner does not obtain a community inspection report or if the property owner obtains a community inspection report but does not submit the report with the renewal premium payment. Flood insurance policies sold on a building ineligible in accordance with paragraph (c)(6)(ii) of this section are void under the Standard Flood Insurance Policy inspection endorsements [44 CFR part 61, Appendices (A)(4), (A)(5), and (A)(6)]. When the property owner applies for a flood insurance policy and submits a completed community inspection report by the community with an application and renewal premium payment, the insurer will issue a flood insurance policy.

(Approved by the Office of Management and Budget under Control Number 3067–0275)

[65 FR 39748, June 27, 2000, as amended at 67 FR 10633, Mar. 8, 2002]

PART 60—CRITERIA FOR LAND MANAGEMENT AND USE

Subpart A—Requirements for Flood Plain Management Regulations

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60.3 Flood plain management criteria for flood-prone areas.
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60.22 Planning considerations for flood-prone areas.
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60.24 Planning considerations for flood-related erosion-prone areas.
60.25 Designation, duties, and responsibilities of State Coordinating Agencies.
60.26 Local coordination.

AUTHORITY: 42 U.S.C. 4001 *et seq.*; Reorganization Plan No. 3 of 1978, 43 FR 41943, 3 CFR, 1978 Comp., p. 329; E.O. 12127 of Mar. 31, 1979, 44 FR 19367, 3 CFR, 1979 Comp., p. 376.

SOURCE: 41 FR 46975, Oct. 26, 1976, unless otherwise noted. Redesignated at 44 FR 31177, May 31, 1979.

Subpart A—Requirements for Flood Plain Management Regulations

§60.1 Purpose of subpart.

(a) The Act provides that flood insurance shall not be sold or renewed under the program within a community, unless the community has adopted adequate flood plain management regulations consistent with Federal criteria. Responsibility for establishing such criteria is delegated to the Administrator.

(b) This subpart sets forth the criteria developed in accordance with the Act by which the Administrator will determine the adequacy of a community's flood plain management regulations. These regulations must be legally-enforceable, applied uniformly throughout the community to all privately and publicly owned land within flood-prone, mudslide (i.e., mudflow) or flood-related erosion areas, and the community must provide that the regulations take precedence over any less restrictive conflicting local laws, ordinances or codes. Except as otherwise provided in §60.6, the adequacy of such regulations shall be determined on the basis of the standards set forth in §60.3 for flood-prone areas, §60.4 for mudslide areas and §60.5 for flood-related erosion areas.

(c) Nothing in this subpart shall be construed as modifying or replacing the general requirement that all eligible communities must take into account flood, mudslide (i.e., mudflow) and flood-related erosion hazards, to the extent that they are known, in all official actions relating to land management and use.

(d) The criteria set forth in this subpart are minimum standards for the adoption of flood plain management regulations by flood-prone, mudslide (i.e., mudflow)-prone and flood-related erosion-prone communities. Any community may exceed the minimum criteria under this part by adopting more comprehensive flood plain management regulations utilizing the standards such as contained in subpart C of this part. In some instances, community officials may have access to information or knowledge of conditions that require, particularly for human safety, higher standards than the minimum criteria set forth in subpart A of this part. Therefore, any flood plain management regulations adopted by a State or a community which are more restrictive than the criteria set forth in this part are encouraged and shall take precedence.

[41 FR 46975, Oct. 26, 1976. Redesignated at 44 FR 31177, May 31, 1979, as amended at 48 FR 44552, Sept. 29, 1983; 49 FR 4751, Feb. 8, 1984]

§60.2 Minimum compliance with flood plain management criteria.

(a) A flood-prone community applying for flood insurance eligibility shall meet the standards of §60.3(a) in order to become eligible if a FHBM has not been issued for the community at the time of application. Thereafter, the community will be given a period of six months from the date the Administrator provides the data set forth in

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Appendix
E

44 CFR 60.3
Floodplain Management Criteria for Flood-prone Areas

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44 CFR 60.3

§ 60.3 (b), (c), (d), (e) or (f), in which to meet the requirements of the applicable paragraph. If a community has received a FHBM, but has not yet applied for Program eligibility, the community shall apply for eligibility directly under the standards set forth in § 60.3(b). Thereafter, the community will be given a period of six months from the date the Administrator provides the data set forth in § 60.3 (c), (d), (e) or (f) in which to meet the requirements of the applicable paragraph.

(b) A mudslide (i.e., mudflow)-prone community applying for flood insurance eligibility shall meet the standards of § 60.4(a) to become eligible. Thereafter, the community will be given a period of six months from the date the mudslide (i.e., mudflow) areas having special mudslide hazards are delineated in which to meet the requirements of § 60.4(b).

(c) A flood-related erosion-prone community applying for flood insurance eligibility shall meet the standards of § 60.5(a) to become eligible. Thereafter, the community will be given a period of six months from the date the flood-related erosion areas having special erosion hazards are delineated in which to meet the requirements of § 60.5(b).

(d) Communities identified in part 65 of this subchapter as containing more than one type of hazard (e.g., any combination of special flood, mudslide (i.e., mudflow), and flood-related erosion hazard areas) shall adopt flood plain management regulations for each type of hazard consistent with the requirements of §§ 60.3, 60.4 and 60.5.

(e) Local flood plain management regulations may be submitted to the State Coordinating Agency designated pursuant to § 60.25 for its advice and concurrence. The submission to the State shall clearly describe proposed enforcement procedures.

(f) The community official responsible for submitting annual or biennial reports to the Administrator pursuant to § 59.22(b)(2) of this subchapter shall also submit copies of each annual or biennial report to any State Coordinating Agency.

(g) A community shall assure that its comprehensive plan is consistent with the flood plain management objectives of this part.

(h) The community shall adopt and enforce flood plain management regulations based on data provided by the Administrator. Without prior approval of the Administrator, the community shall not adopt and enforce flood plain management regulations based upon modified data reflecting natural or man-made physical changes.

[41 FR 46975, Oct. 26, 1976. Redesignated at 44 FR 31177, May 31, 1979, as amended at 48 FR 29318, June 24, 1983; 48 FR 44552, Sept. 29, 1983; 49 FR 4751, Feb. 8, 1984; 50 FR 36024, Sept. 4, 1985; 59 FR 53598, Oct. 25, 1994; 62 FR 55716, Oct. 27, 1997]

§ 60.3 Flood plain management criteria for flood-prone areas.

The Administrator will provide the data upon which flood plain management regulations shall be based. If the Administrator has not provided sufficient data to furnish a basis for these regulations in a particular community, the community shall obtain, review and reasonably utilize data available from other Federal, State or other sources pending receipt of data from the Administrator. However, when special flood hazard area designations and water surface elevations have been furnished by the Administrator, they shall apply. The symbols defining such special flood hazard designations are set forth in § 64.3 of this subchapter. In all cases the minimum requirements governing the adequacy of the flood plain management regulations for flood-prone areas adopted by a particular community depend on the amount of technical data formally provided to the community by the Administrator. Minimum standards for communities are as follows:

(a) When the Administrator has not defined the special flood hazard areas within a community, has not provided water surface elevation data, and has not provided sufficient data to identify the floodway or coastal high hazard area, but the community has indicated the presence of such hazards by submitting an application to participate in the Program, the community shall:

(1) Require permits for all proposed construction or other development in

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the community, including the placement of manufactured homes, so that it may determine whether such construction or other development is proposed within flood-prone areas;

(2) Review proposed development to assure that all necessary permits have been received from those governmental agencies from which approval is required by Federal or State law, including section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334;

(3) Review all permit applications to determine whether proposed building sites will be reasonably safe from flooding. If a proposed building site is in a flood-prone area, all new construction and substantial improvements shall (i) be designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, (ii) be constructed with materials resistant to flood damage, (iii) be constructed by methods and practices that minimize flood damages, and (iv) be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

(4) Review subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, to determine whether such proposals will be reasonably safe from flooding. If a subdivision proposal or other proposed new development is in a flood-prone area, any such proposals shall be reviewed to assure that (i) all such proposals are consistent with the need to minimize flood damage within the flood-prone area, (ii) all public utilities and facilities, such as sewer, gas, electrical, and water systems are located and constructed to minimize or eliminate flood damage, and (iii) adequate drainage is provided to reduce exposure to flood hazards;

(5) Require within flood-prone areas new and replacement water supply systems to be designed to minimize or eliminate infiltration of flood waters into the systems; and

(6) Require within flood-prone areas (i) new and replacement sanitary sewage systems to be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters and (ii) onsite waste disposal systems to be located to avoid impairment to them or contamination from them during flooding.

(b) When the Administrator has designated areas of special flood hazards (A zones) by the publication of a community's FHBM or FIRM, but has neither produced water surface elevation data nor identified a floodway or coastal high hazard area, the community shall:

(1) Require permits for all proposed construction and other developments including the placement of manufactured homes, within Zone A on the community's FHBM or FIRM;

(2) Require the application of the standards in paragraphs (a) (2), (3), (4), (5) and (6) of this section to development within Zone A on the community's FHBM or FIRM;

(3) Require that all new subdivision proposals and other proposed developments (including proposals for manufactured home parks and subdivisions) greater than 50 lots or 5 acres, whichever is the lesser, include within such proposals base flood elevation data;

(4) Obtain, review and reasonably utilize any base flood elevation and floodway data available from a Federal, State, or other source, including data developed pursuant to paragraph (b)(3) of this section, as criteria for requiring that new construction, substantial improvements, or other development in Zone A on the community's FHBM or FIRM meet the standards in paragraphs (c)(2), (c)(3), (c)(5), (c)(6), (c)(12), (c)(14), (d)(2) and (d)(3) of this section;

(5) Where base flood elevation data are utilized, within Zone A on the community's FHBM or FIRM:

(i) Obtain the elevation (in relation to mean sea level) of the lowest floor (including basement) of all new and substantially improved structures, and

(ii) Obtain, if the structure has been floodproofed in accordance with paragraph (c)(3)(ii) of this section, the elevation (in relation to mean sea level)

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to which the structure was floodproofed, and

(iii) Maintain a record of all such information with the official designated by the community under § 59.22 (a)(9)(iii);

(6) Notify, in riverine situations, adjacent communities and the State Coordinating Office prior to any alteration or relocation of a watercourse, and submit copies of such notifications to the Administrator;

(7) Assure that the flood carrying capacity within the altered or relocated portion of any watercourse is maintained;

(8) Require that all manufactured homes to be placed within Zone A on a community's FHBM or FIRM shall be installed using methods and practices which minimize flood damage. For the purposes of this requirement, manufactured homes must be elevated and anchored to resist flotation, collapse, or lateral movement. Methods of anchoring may include, but are not to be limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable State and local anchoring requirements for resisting wind forces.

(c) When the Administrator has provided a notice of final flood elevations for one or more special flood hazard areas on the community's FIRM and, if appropriate, has designated other special flood hazard areas without base flood elevations on the community's FIRM, but has not identified a regulatory floodway or coastal high hazard area, the community shall:

(1) Require the standards of paragraph (b) of this section within all A1–30 zones, AE zones, A zones, AH zones, and AO zones, on the community's FIRM;

(2) Require that all new construction and substantial improvements of residential structures within Zones A1–30, AE and AH zones on the community's FIRM have the lowest floor (including basement) elevated to or above the base flood level, unless the community is granted an exception by the Administrator for the allowance of basements in accordance with § 60.6 (b) or (c);

(3) Require that all new construction and substantial improvements of non-residential structures within Zones A1–30, AE and AH zones on the community's firm (i) have the lowest floor (including basement) elevated to or above the base flood level or, (ii) together with attendant utility and sanitary facilities, be designed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy;

(4) Provide that where a non-residential structure is intended to be made watertight below the base flood level, (i) a registered professional engineer or architect shall develop and/or review structural design, specifications, and plans for the construction, and shall certify that the design and methods of construction are in accordance with accepted standards of practice for meeting the applicable provisions of paragraph (c)(3)(ii) or (c)(8)(ii) of this section, and (ii) a record of such certificates which includes the specific elevation (in relation to mean sea level) to which such structures are floodproofed shall be maintained with the official designated by the community under § 59.22(a)(9)(iii);

(5) Require, for all new construction and substantial improvements, that fully enclosed areas below the lowest floor that are usable solely for parking of vehicles, building access or storage in an area other than a basement and which are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or meet or exceed the following minimum criteria: A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided. The bottom of all openings shall be no higher than one foot above grade. Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

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(6) Require that manufactured homes that are placed or substantially improved within Zones A1–30, AH, and AE on the community's FIRM on sites

(i) Outside of a manufactured home park or subdivision,

(ii) In a new manufactured home park or subdivision,

(iii) In an expansion to an existing manufactured home park or subdivision, or

(iv) In an existing manufactured home park or subdivision on which a manufactured home has incurred ''substantial damage'' as the result of a flood, be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated to or above the base flood elevation and be securely anchored to an adequately anchored foundation system to resist floatation collapse and lateral movement.

(7) Require within any AO zone on the community's FIRM that all new construction and substantial improvements of residential structures have the lowest floor (including basement) elevated above the highest adjacent grade at least as high as the depth number specified in feet on the community's FIRM (at least two feet if no depth number is specified);

(8) Require within any AO zone on the community's FIRM that all new construction and substantial improvements of nonresidential structures (i) have the lowest floor (including basement) elevated above the highest adjacent grade at least as high as the depth number specified in feet on the community's FIRM (at least two feet if no depth number is specified), or (ii) together with attendant utility and sanitary facilities be completely floodproofed to that level to meet the floodproofing standard specified in §60.3(c)(3)(ii);

(9) Require within any A99 zones on a community's FIRM the standards of paragraphs (a)(1) through (a)(4)(i) and (b)(5) through (b)(9) of this section;

(10) Require until a regulatory floodway is designated, that no new construction, substantial improvements, or other development (including fill) shall be permitted within Zones A1–30 and AE on the community's FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.

(11) Require within Zones AH and AO, adequate drainage paths around structures on slopes, to guide floodwaters around and away from proposed structures.

(12) Require that manufactured homes to be placed or substantially improved on sites in an existing manufactured home park or subdivision within Zones A–1–30, AH, and AE on the community's FIRM that are not subject to the provisions of paragraph (c)(6) of this section be elevated so that either

(i) The lowest floor of the manufactured home is at or above the base flood elevation, or

(ii) The manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches in height above grade and be securely anchored to an adequately anchored foundation system to resist floatation, collapse, and lateral movement.

(13) Notwithstanding any other provisions of §60.3, a community may approve certain development in Zones Al–30, AE, and AH, on the community's FIRM which increase the water surface elevation of the base flood by more than one foot, provided that the community first applies for a conditional FIRM revision, fulfills the requirements for such a revision as established under the provisions of §65.12, and receives the approval of the Administrator.

(14) Require that recreational vehicles placed on sites within Zones A1–30, AH, and AE on the community's FIRM either

(i) Be on the site for fewer than 180 consecutive days,

(ii) Be fully licensed and ready for highway use, or

(iii) Meet the permit requirements of paragraph (b)(1) of this section and the elevation and anchoring requirements for ''manufactured homes'' in paragraph (c)(6) of this section.

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A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions.

(d) When the Administrator has provided a notice of final base flood elevations within Zones A1–30 and/or AE on the community's FIRM and, if appropriate, has designated AO zones, AH zones, A99 zones, and A zones on the community's FIRM, and has provided data from which the community shall designate its regulatory floodway, the community shall:

(1) Meet the requirements of paragraphs (c) (1) through (14) of this section;

(2) Select and adopt a regulatory floodway based on the principle that the area chosen for the regulatory floodway must be designed to carry the waters of the base flood, without increasing the water surface elevation of that flood more than one foot at any point;

(3) Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge;

(4) Notwithstanding any other provisions of § 60.3, a community may permit encroachments within the adopted regulatory floodway that would result in an increase in base flood elevations, provided that the community first applies for a conditional FIRM and floodway revision, fulfills the requirements for such revisions as established under the provisions of § 65.12, and receives the approval of the Administrator.

(e) When the Administrator has provided a notice of final base flood elevations within Zones A1–30 and/or AE on the community's FIRM and, if appropriate, has designated AH zones, AO zones, A99 zones, and A zones on the community's FIRM, and has identified on the community's FIRM coastal high hazard areas by designating Zones V1–30, VE, and/or V, the community shall:

(1) Meet the requirements of paragraphs (c)(1) through (14) of this section;

(2) Within Zones V1–30, VE, and V on a community's FIRM, (i) obtain the elevation (in relation to mean sea level) of the bottom of the lowest structural member of the lowest floor (excluding pilings and columns) of all new and substantially improved structures, and whether or not such structures contain a basement, and (ii) maintain a record of all such information with the official designated by the community under § 59.22(a)(9)(iii);

(3) Provide that all new construction within Zones V1–30, VE, and V on the community's FIRM is located landward of the reach of mean high tide;

(4) Provide that all new construction and substantial improvements in Zones V1–30 and VE, and also Zone V if base flood elevation data is available, on the community's FIRM, are elevated on pilings and columns so that (i) the bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) is elevated to or above the base flood level; and (ii) the pile or column foundation and structure attached thereto is anchored to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Water loading values used shall be those associated with the base flood. Wind loading values used shall be those required by applicable State or local building standards. A registered professional engineer or architect shall develop or review the structural design, specifications and plans for the construction, and shall certify that the design and methods of construction to be used are in accordance with accepted standards of practice for meeting the provisions of paragraphs (e)(4) (i) and (ii) of this section.

(5) Provide that all new construction and substantial improvements within Zones V1–30, VE, and V on the community's FIRM have the space below the lowest floor either free of obstruction or constructed with non-supporting breakaway walls, open wood lattice-

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work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system. For the purposes of this section, a breakway wall shall have a design safe loading resistance of not less than 10 and no more than 20 pounds per square foot. Use of breakway walls which exceed a design safe loading resistance of 20 pounds per square foot (either by design or when so required by local or State codes) may be permitted only if a registered professional engineer or architect certifies that the designs proposed meet the following conditions:

(i) Breakaway wall collapse shall result from a water load less than that which would occur during the base flood; and,

(ii) The elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement, or other structural damage due to the effects of wind and water loads acting simultaneously on all building components (structural and non-structural). Water loading values used shall be those associated with the base flood. Wind loading values used shall be those required by applicable State or local building standards.

Such enclosed space shall be useable solely for parking of vehicles, building access, or storage.

(6) Prohibit the use of fill for structural support of buildings within Zones V1–30, VE, and V on the community's FIRM;

(7) Prohibit man-made alteration of sand dunes and mangrove stands within Zones V1–30, VE, and V on the community's FIRM which would increase potential flood damage.

(8) Require that manufactured homes placed or substantially improved within Zones V1–30, V, and VE on the community's FIRM on sites

(i) Outside of a manufactured home park or subdivision,

(ii) In a new manufactured home park or subdivision,

(iii) In an expansion to an existing manufactured home park or subdivision, or

(iv) In an existing manufactured home park or subdivision on which a manufactured home has incurred ''substantial damage'' as the result of a flood, meet the standards of paragraphs (e)(2) through (7) of this section and that manufactured homes placed or substantially improved on other sites in an existing manufactured home park or subdivision within Zones VI–30, V, and VE on the community's FIRM meet the requirements of paragraph (c)(12) of this section.

(9) Require that recreational vehicles placed on sites within Zones V1–30, V, and VE on the community's FIRM either

(i) Be on the site for fewer than 180 consecutive days,

(ii) Be fully licensed and ready for highway use, or

(iii) Meet the requirements in paragraphs (b)(1) and (e) (2) through (7) of this section.

A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions.

(f) When the Administrator has provided a notice of final base flood elevations within Zones A1–30 or AE on the community's FIRM, and, if appropriate, has designated AH zones, AO zones, A99 zones, and A zones on the community's FIRM, and has identified flood protection restoration areas by designating Zones AR, AR/A1–30, AR/AE, AR/AH, AR/AO, or AR/A, the community shall:

(1) Meet the requirements of paragraphs (c)(1) through (14) and (d)(1) through (4) of this section.

(2) Adopt the official map or legal description of those areas within Zones AR, AR/A1–30, AR/AE, AR/AH, AR/A, or AR/AO that are designated developed areas as defined in §59.1 in accordance with the eligibility procedures under §65.14.

(3) For all new construction of structures in areas within Zone AR that are designated as developed areas and in other areas within Zone AR where the AR flood depth is 5 feet or less:

(i) Determine the lower of either the AR base flood elevation or the elevation that is 3 feet above highest adjacent grade; and

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(ii) Using this elevation, require the standards of paragraphs (c)(1) through (14) of this section.

(4) For all new construction of structures in those areas within Zone AR that are not designated as developed areas where the AR flood depth is greater than 5 feet:

(i) Determine the AR base flood elevation; and

(ii) Using that elevation require the standards of paragraphs (c)(1) through (14) of this section.

(5) For all new construction of structures in areas within Zone AR/A1–30, AR/AE, AR/AH, AR/AO, and AR/A:

(i) Determine the applicable elevation for Zone AR from paragraphs (a)(3) and (4) of this section;

(ii) Determine the base flood elevation or flood depth for the underlying A1–30, AE, AH, AO and A Zone; and

(iii) Using the higher elevation from paragraphs (a)(5)(i) and (ii) of this section require the standards of paragraphs (c)(1) through (14) of this section.

(6) For all substantial improvements to existing construction within Zones AR/A1–30, AR/AE, AR/AH, AR/AO, and AR/A:

(i) Determine the A1–30 or AE, AH, AO, or A Zone base flood elevation; and

(ii) Using this elevation apply the requirements of paragraphs (c)(1) through (14) of this section.

(7) Notify the permit applicant that the area has been designated as an AR, AR/A1–30, AR/AE, AR/AH, AR/AO, or AR/A Zone and whether the structure will be elevated or protected to or above the AR base flood elevation.

[41 FR 46975, Oct. 26, 1976]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 60.3, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and on GPO Access.

§ 60.4 Flood plain management criteria for mudslide (i.e., mudflow)-prone areas.

The Administrator will provide the data upon which flood plain management regulations shall be based. If the Administrator has not provided sufficient data to furnish a basis for these regulations in a particular community, the community shall obtain, review, and reasonably utilize data available from other Federal, State or other sources pending receipt of data from the Administrator. However, when special mudslide (i.e., mudflow) hazard area designations have been furnished by the Administrator, they shall apply. The symbols defining such special mudslide (i.e., mudflow) hazard designations are set forth in § 64.3 of this subchapter. In all cases, the minimum requirements for mudslide (i.e., mudflow)-prone areas adopted by a particular community depend on the amount of technical data provided to the community by the Administrator. Minimum standards for communities are as follows:

(a) When the Administrator has not yet identified any area within the community as an area having special mudslide (i.e., mudflow) hazards, but the community has indicated the presence of such hazards by submitting an application to participate in the Program, the community shall

(1) Require permits for all proposed construction or other development in the community so that it may determine whether development is proposed within mudslide (i.e., mudflow)-prone areas;

(2) Require review of each permit application to determine whether the proposed site and improvements will be reasonably safe from mudslides (i.e., mudflows). Factors to be considered in making such a determination should include but not be limited to (i) the type and quality of soils, (ii) any evidence of ground water or surface water problems, (iii) the depth and quality of any fill, (iv) the overall slope of the site, and (v) the weight that any proposed structure will impose on the slope;

(3) Require, if a proposed site and improvements are in a location that may have mudslide (i.e., mudflow) hazards, that (i) a site investigation and further review be made by persons qualified in geology and soils engineering, (ii) the proposed grading, excavations, new construction, and substantial improvements are adequately designed and protected against mudslide (i.e., mudflow)

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FPM 101 & CRC Glossary of Terms

Acronyms

ACV	Actual Cash Value
BFE	Base Flood Elevation
CAC	Community Assistance Contact (CAP)
CAP	Community Assistance Program
CAV	Community Assistance Visit (CAP)
CBRA	Coastal Barriers Resources Act
CBRS	Coastal Barriers Resource System
CFM	Certified Floodplain Manager
CFR	Code of Federal Regulations
CHAMP	Coastal Hazard Analysis Modeling Program
CID	Community Identification Number (on FIRM)
CLOMA	Conditional Letter Of Map Amendment
CLOMR	Conditional Letter Of Map Revision
CRS	Community Rating System
DFIRM	Digital Flood Insurance Rate Map
DLG	Digital Line Graph
EC	Elevation Certificate
FBFM	Flood Boundary Floodway Map
FEMA	Federal Emergency Management Agency
FHBM	Flood Hazard Boundary Map
FIA	Federal Insurance Administration
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
FMA	Flood Mitigation Assistance
FPA	Floodplain Administrator
FPM	Floodplain Manager
GIS	Geographic Information System
HAG	Highest Adjacent Grade
HMGP	Hazard Mitigation Grant Program (FEMA)
HUD	Housing & Urban Development
ICC	Increased Cost of Compliance
ISO	Insurance Services Office (NFIP)
LAG	Lowest Adjacent Grade
LMMP	Limited Map Maintenance Project
LOMA	Letter Of Map Amendment
LOMC	Letter Of Map Change
LOMR	Letter Of Map Revision
LOMR-F	Letter Of Map Revision based on Fill
MOM	Multiple Objective Management
MSC	Map Service Center (FEMA)
NAI	No Adverse Impact
NBF	Natural and Beneficial Functions
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NGVD	National Geodetic Vertical Datum
NPDES	National Pollutant Discharge Elimination System
OPA	Otherwise Protected Areas
PDM	Pre-Disaster Mitigation Program
PRP	Preferred Risk Policy
RSDE	Residential Substantial Damage Estimator
RFC	Repetitive Flood Claims Program
SFHA	Special Flood Hazard Area
SRL	Severe Repetitive Loss Program
STR	Section / Township / Range
USACE	US Army Corps of Engineers
USGS	US Geological Survey
WSEL	Water Surface Elevation
WYO	Write Your Own

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Definition of Terms

1% Chance Flood (1% Annual Chance Flood): See Base Flood.

44 CFR §59: NFIP General Provisions according to the Code of Federal Regulations. Parts 59 and 60 include the definitions and standards that should be reflected in community floodplain regulations.

44 CFR §60: Criteria for Land Management and Use according to the Code of Federal Regulations. Parts 59 and 60 include the definitions and standards that should be reflected in community floodplain regulations.

44 CFR §60.3: Floodplain Management Criteria for Flood-Prone Areas according to the Code of Federal Regulations.

44 CFR §65.5: Governs decisions for Letters of Map Revisions according to the Code of Federal Regulations.

44 CFR §70: Procedure for Map Correction according to the Code of Federal Regulations.

100 Year Flood: See Base Flood.

A Zones: The Special Flood Hazard Area (except coastal V zones) shown on a community's Flood Insurance Rate Map. There are seven types of A Zones:

- A: SFHA where no base flood elevation is provided
- A#: Numbered A Zones (e.g. A7 or A14), SFHA where the FIRM shows a base flood elevation in relation to NGVD
- AE: SFHA where base flood elevations are provided. AE Zone delineations are now used on new FIRMs instead of A# Zones.
- AO: SFHA with sheet flow, ponding, or shallow flooding. Base flood depths (feet above grade) are provided.
- AH: Shallow flooding SFHA. Base flood elevations in relation to NGVD are provided.
- AR: A temporary designation for an area where a flood control system that no longer provides protection from the base flood is expected to be improved so it will provide protection to the base flood again in the future. This zone is not considered a SFHA or "regulatory floodplain" for Community Rating System purposes.
- A99: A mapped floodplain that will be protected by a federal flood protection system where construction has reached specified statutory milestones. This zone is not considered a SFHA or "regulatory floodplain" for Community Rating System purposes.

Accessory Structures: Lost-cost structures that do not have at least two rigid walls, open structures, or buildings that may be wet-floodproofed. The following criteria apply:

- Variance must be obtained
- Use must be limited to parking or storage
- Requires openings for entry and exit of floodwater
- Must use flood resistant materials below the BFE
- Utilities must be dry floodproofed or elevated ***and*** anchored to resist flotation, collapse and lateral movement.

Accredited Levee: If a levee can be shown that it provides the appropriate level of protection from a Base Flood, then FEMA will "accredit" or recognize, the levee as providing adequate

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protection on flood hazard maps, and the area behind it will be shown as a moderate risk zone (shaded X).

Accrete: (FEMA 480) to build up a shoreline by depositing sand, either by nature or human actions.

Actual Cash Value (ACV): (FEMA 480) the replacement cost for a building, minus a depreciation percentage based on age and condition.

Approximate A Zones: A Zones have either a letter following the A, such as AE zones, or have a number, such as A1 or A-30. Approximate A Zones are also called "unnumbered" A Zones.

Approximate Studies: (FEMA 480) Flood hazard mapping done using *approximate* study methods that show the *approximate* outline of the base floodplain. An approximate study does not produce a Base Flood Elevation (BFE).

B Zone: Area of moderate flood hazard usually depicted on FIRMs as between the limits of the base and 500-year floods of the primary source of flooding. B Zones may have local, shallow flooding problems. B Zones are also used to designate areas protected by levees and base floodplains of the little hazard, such as those with average depths of less than 1 foot. On newer FIRMs, may show as a shaded Zone X.

Base Flood: The NFIP flood level used for regulatory purposes. A flood with a 1% chance of occurring in any given year. Also known as the "100 Year Flood".

Base Flood Elevation (BFE): Water surface elevation resulting from the Base Flood (or "1% Chance Flood") that is tied into a known vertical datum. The base flood is used by the NFIP as the basis for mapping, insurance rating, and regulating new construction.

Base Flood Depth: (FEMA 480) a measurement of the base flood in feet above ground, used for shallow flooding.

Base Floodplain: (FEMA 480) the area of water and land inundated by the base flood.

Basement: (FEMA 480) any area of the building having its flood sub-grade (below ground level) on all sides. Flood Insurance allows:

- No building coverage for wallpaper, carpeting and furnishings in a basement
- Only contents coverage for portable AC units, washers, dryers, flood freezer (not walk-in) and food in freezer.

Building: (NFIP) A "building" as defined by NFIP is for insurance purposes, and is not necessarily the same as a "structure" for floodplain management purposes. Criteria for a building:

- Walled and roofed, has two or more rigid walls and a roof attached
- 51% or more of the actual cash value above ground (51% is criterion for "principally"
- Affixed permanently to the site ("mobile homes" must be built on permanent chassis and designed for use without a permanent foundation when attached to utilities

Building Insurance Coverage: Flood insurance coverage that is mandatory for homeowners. Includes things that typically stay with a house when it is sold, such as utility equipment, wall to wall carpet, wallpaper, paneling, and built-in furniture.

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- Building Property Coverage = up to $250,000 Residential, $500,000 Commercial
- Contents Coverage (removable items inside buildings) = up to $100,000 Residential, $500,000 Commercial

C Zone: Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level of the primary source of flooding. C Zones may have local, shallow flooding problems. B and C Zones may have flooding that does not meet the criteria to be mapped as a SFHA, especially ponding and local drainage problems. On newer FIRMs, may show as an unshaded Zone X.

CBRA Area: Designation for areas in Coastal Barriers Resources System (CBRS) or Other Protected Area (OPA). Buildings shown in these areas are not eligible for flood insurance if built or substantially improved after specified dates. Some insurance may be available in OPAs for new structures that support conservation uses.

Certified Levee: A levee is certified if evidence, typically a statement by a licensed professional engineer or Federal agency responsible for levee design, has been presented showing that the structure meets current design, construction, maintenance, and operation standards to provide protection from the 1% annual chance flood.

Coastal Hazard Analysis Modeling Program (CHAMP): is a software program available from FEMA; designed to enable the user to perform storm-induced erosion treatments, wave height analyses, and wave runup analyses associated with coastal flood hazard assessments. The tutorial will demonstrate the many functions of the program including entering, visualizing, tabulating and charting data, and performing coastal engineering analyses within a user-friendly environment.

Channel: (FEMA 480) Defined landforms that carry water.

CHECK-RAS: A software program available from FEMA; a program designed to verify the validity of an assortment of parameters found in the HEC-RAS hydraulics program. The CHECK-RAS tutorial will demonstrate the many functions of the program, including basic information about the U.S. Army Corps of Engineers HEC-RAS program.

Coastal Barriers Resources Act (CBRA): (FEMA 480) The act which identified undeveloped portions of coastal barriers. CBRA restricts Federal spending and financial assistance to discourage development of coastal barriers; private funds not impacted.

Coastal Erosion: A natural process that affects whether shoreline is receding or accreting. Coastal erosion is a long-term process that shapes shorelines. Human activity – such as construction of groins or seawalls, the dredging of channels and placement of sandbags – can contribute to coastal erosion by contributing to the natural process of sand transport.

Coastal Flooding: (FEMA 480) Occurs along the coast of oceans and large lakes. It has two types of flood problems not found in riverine areas: *coastal storms* and *coastal erosion*.

Coastal Storms: High winds and air pressure changes in coastal storms create "storm surge" by pushing water toward shore, increasing water level and destructive waves. Protective landforms such as dunes, bluffs and barrier islands are significantly changed by major coastal storms.

Code of Federal Regulations (CFR): Documents the development standards that should be in a community's ordinance if they participate in the NFIP.

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Community: (NFIP) A political entity that has the authority to adopt and enforce floodplain ordinance for the area under its jurisdiction.

Community Assistance Contact (CAC): A contact with a NFIP participating community to determine how well the community is meeting NFIP responsibilities and determine if the more extensive CAV is needed. The CAC is generally conducted via phone and does not include a tour of the community.

Community Assistance Program (CAP): (FEMA 480) A FEMA program that funds state activities that help communities in the NFIP. (FEMA) States that are participating in the NFIP are eligible for this Federally funded assistance. The CAP is intended to help States identify, prevent, and resolve floodplain management issues in participating communities *before* a flood event.

Community Assistance Visit (CAV): A visit to a community participating in the NFIP for the purpose of: (a) Conducting a comprehensive assessment of the community's floodplain management program; (b) assisting the community and its staff in understanding the NFIP and its requirements; and (c) assisting the community in implementing effective flood loss reduction measures when program deficiencies or violations are discovered.

Community Rating System (CRS): A voluntary program established by the NFIP to assist communities who want to do more than the minimum to reduce flood losses and make their communities safer. (FEMA 480) A program that provides a flood insurance premium rate reduction based on a community's floodplain management activities.

Conditional Letter of Map Amendment (CLOMA): A letter of map amendment for a proposed structure to be built on the natural grade. CLOMAs can be issued by FEMA for both revisions as well as for amendments. A CLOMA is a statement from FEMA that if a project is constructed as planned, a Letter of Map Amendment can be issued later.

Conditional Letter of Map Revision (CLOMR): (FEMA 480) A statement from FEMA that is a project is constructed as planned, a Letter of Map Revision can be issued later.

Contents Insurance Coverage: Flood insurance coverage which is optional, and the only kind of flood insurance available to renters. Contents coverage includes only removable items inside an insurable building. It cannot include animals, licensed vehicles, certain items (such as furs) valued at more than $250, money or papers, or items inside an uninsurable building.

Critical Development: A community may require that certain structures, such as jails, fire stations, hospitals, nursing homes, and other critical care facilities be placed outside of the SFHA or be additionally protected from flooding.

Cross Section: (FEMA 480) Surveyed information that describes the stream and the floodplain at a particular point along the stream.

Datum: (FEMA 480) A common vertical reference point, usually in relation to sea level.

Detailed Studies: (FEMA 480) Flood hazard mapping studies that are done use hydrologic and hydraulic methods that produce base flood elevations, floodways, and other pertinent flood data.

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Development: (CFR 59.1) Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment and materials. Means anything from placing a fence in the floodplain or floodway to building a structure, or even moving soil around.

Disaster Mitigation Act of 2000: The Act pushes communities to integrate mitigation into daily decisions about land use and development with all community actions and projections.

Discharge: (FEMA 480) The amount of water that passes a point in a given period of time. Rate of discharge is usually measured in cubic feet per second (cfs).

Elevation Certificate (EC): An Elevation Certificate form is used to report structural elevation, and verify compliance for the local FPM. ECs submitted at different points in the construction process, serves as proof that different parts of the development were built correctly. The EC is an important administrative tool of the 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 LOMA or LOMR-F. The EC is required in order to properly rate post-FIRM buildings.

Eminent Domain: (FEMA 480) Governmental power to acquire a property without the owner's consent for public purpose. See also "taking".

Excess Insurance Coverage: Flood insurance coverage above the limit set for NFIP policies purchased separately from a private insurer. Excess coverage is optional.

Executive Order 11988 (EO 11988): (FEMA 480) EO 11988 is a directive by the President that sets procedures Federal agencies must follow before they take or fund an action in the floodplain.

Executive Order 11990 (EO 11990): EO 11990 is a directive by the President that sets procedures Federal agencies must follow before they take or fund an action impacting wetlands.

Executive Order 13406 (EO13406): EO 13406 is a directive by the President that sets procedures government agencies must follow before they can "take" (under eminent domain) a property from a property owner or limit its use to such an extent that it is considered a "taking"

Federal Insurance Administration (FIA): (FEMA 480) FIA was the part of FEMA that administered the NFIP. This is now the responsibility of FEMA's Mitigation Division.

FIRMette: Smaller version of the FIRM for a specific address. Can be created by going to the MSC website.

Flash Flood: (FEMA 480) A flood in hilly or mountainous areas that may come scant minutes after a heavy rain. One can also occur in urban areas where pavements and drainage improvements speed runoff to a stream.

Flood: (NFIP) General and temporary condition of partial or complete inundation of 2 or more acres of normally dry land or 2 or more properties from:

- Overflow of inland or tidal waters
- Unusual and rapid accumulation or runoff of surface waters from any source
- Mudflow

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- Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above

Flood Hazard Boundary Map (FHBM): (FEMA 480) Official map of a community issued by FEMA, where the boundaries of the flood, mudflow, and related erosion areas having special flood hazards have been designated. The FHBM is generally the initial map provided the community and is eventually superseded by a FIRM. The FHBM was prepared without the benefit of detailed studies or hydraulic analyses and **contains no BFEs.**

Flood Hazard Mitigation: (FEMA 480) All actions that can be taken to reduce property damage and the threat to life an public health from flooding.

Flood Insurance: (NFIP) Flood insurance through the NFIP is only available to people in NFIP participating communities. Insurance is required for anyone in a SFHA with a federally backed mortgage loan, *whether or not they live in a participating community*. Flood insurance is available to both homeowners and renters. There are two types of flood insurance: building and contents coverage. Building coverage is mandatory (not available to renters), contents coverage is optional (available to renters).

Flood Insurance Rate Map (FIRM): (FEMA 480) An official map of a community, on which FEMA has delineated both the Special Flood Hazard Areas (SFHAs) and the risk premium zones applicable to the community.

Flood Insurance Study (FIS): (FEMA 480) A report published by FEMA for a community issued along with the community's FIRM. The study contains such background data as the base flood discharges and water surface elevations that were used to prepare the FIRM.

Flood Mitigation Assistance Program (FMA): Grant program operated on an annual cycle and priority is to fund actions that reduce / eliminate long-term risk of flooding to insured properties.

- Applies to NFIP insured structures.
- Planning grants support risk assessment and development of mitigation plans.
- Project grants implement elevation, demolition, relocation, acquisition activities.
- Technical assistance grants for states and communities to develop FMA applications and implement projects.

Floodplain: Any land area susceptible to being inundated by flood waters from any sources. (a) A river or stream channel up to natural banks, (b) low-lying area along a river, stream, or coast subject to flooding, (c) area along a river, stream, or coast subject to flooding by the 1% chance flood, (d) area along a river, stream, or coast that is developed and subject to flooding.

Floodproofing Certificate: A registered professional engineer's certification that a non-residential building is properly floodproofed. Used for insurance rating purposes certifying that the building's floodproofed elevation is at least one foot above the BFE. A certificate supports the NFIP requirements that nonresidential buildings may be designed to be watertight or substantially impermeable to floodwaters. This form is used less frequently than an EC, primarily because residential development does ***not*** have the option to floodproof based on the NFIP criteria.

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Floodway: (FEMA) For most waterways, the floodway is where the water is likely to be deepest and fastest. It is the area of the floodplain that should be reserved (kept free of obstructions) to allow floodwaters to move downstream. Placing fill or buildings in a floodway may block the flow of water and increase flood heights.

- Floodway calculations are accomplished with computer modeling. Beginning with the edges of the floodplain, the computer model assumes "filling" of the floodplain, thus "squeezing" the floodwater toward the channel and causes the flood level to rise. At the point where this process reaches a one foot rise in surface level elevation, the floodway boundaries are established. The plotted points from each cross section are connected to develop the floodway and flood fringe on the floodplain map.

Floodway Fringe: (FEMA 480) The portion of the floodplain lying outside of the floodway.

Floodway Data Table: Part of the FIS, the Floodway Data Table provides information to support the design and floodproofing decisions (e.g. velocity, flow, floodway boundary).

Freeboard: The designated height above the existing BFE to which structures and levees must be elevated or constructed. A margin of safety added to the BFE to account for waves, debris, miscalculations, or lack of data.

Geographic Information System (GIS): (FEMA 480) Computer based map systems that allow the user to keep a map updated easily and to correlate geographic information with other data, such as tax records on properties.

H & H Engineering Studies: Hydrologic and Hydraulic engineering studies.

Hazard Mitigation Grant Program (HMGP): (FEMA 480) A FEMA disaster assistance grant that funds mitigation projects. Requires: Federal Disaster Declaration, that State and Communities have FEMA approved mitigation plans in place.

- Funding is sliding scale formula dependent on State Mitigation Plan; usually 75% Federal, 25% Non-Federal.
- Elevation, acquisition (demolition or relocation), retrofitting, and minor flood control are eligible projects.
- Can be open to all areas of state, not just declared areas.
- Communities apply on behalf of affected individuals and businesses.

Historic Structure: Structure must be registered by national or state and local preservation districts or agencies to be called a "historic structure."

Hydraulic: Operated, moved, or effected by means of water.

Hydrodynamic Force: The force of moving water including the impact of debris and high velocities pushing against a solid object.

Hydrologic: (adj.) description of the properties, distribution, and circulation of water on the earth's surface and in the atmosphere

Hydrology: (FEMA 480) The science dealing with the waters of the earth. A flood discharge is developed by a hydrologic study.

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Hydrostatic Force: The force of standing water on a solid object; force increases as depth increases.

Ice Jam: (FEMA 480) Flooding that occurs when warm weather and rain break up frozen rivers and the broken ice floats downriver until it is blocked by an obstruction, creating an ice dam that blocks the channel and causes flooding upstream.

Inadvertent Inclusions: A situation where the map shows that a natural rise in land got included in a SFHA. It must be a natural occurrence to qualify for a LOMA.

Increased Cost of Compliance (ICC): Provides help to homeowner to bring non-compliant structures into compliance with floodplain regulations: post-flood, for structures in SFHA, included in Standard and Preferred Risk policies. This program provides additional money to the homeowner on top of a claim payment under their flood insurance policy; this is automatically included as a fee when the flood insurance policy is written. (FEMA 480) An additional claim payment made to a flood insurance policy holder to help cover the cost of bringing a substantially damaged or repetitively damaged building into compliance with the community's floodplain management ordinance.

"Insurable" Building: Building that is "walled and roofed" with two or more exterior rigid walls with roof fully secured that is "principally above ground" with at least 51% of actual cash value (including equipment and machinery) above ground ***OR*** a "manufactured home" transportable on a permanent chassis designed for use with or without permanent foundation when attached to required utilities.

Insurance Services Office (ISO): The Insurance Services Office runs the Community Rating System (CRS) program for the NFIP.

Inverse Condemnation: A standard enacted that limits an owners' use of land to such an extent as to deprive an owner of all economic interest. See also "taking".

Letter Of Map Amendment (LOMA): An amendment to the currently effective FEMA map which establishes that a property is not located in a SFHA (due to ***natural*** occurrences in the landscape). A LOMA is issued only by FEMA, and is the only way to remove a structure or parcel of land from the SFHA.

Letter of Map Change (LOMC or "LO-Mac"): There are two types of LOMCs:

- Letters of Map Amendment (LOMA)
- Letters of Map Revision (LOMR)

Letter of Map Revision (LOMR): A letter of map revision for ***manmade*** changes of which there are two types: adding fill to raise the ground up, and work that changes the physical characteristics of the floodplain (for physical changes, FEMA may choose to do a physical map revision that results in a new map rather than a LOMR).

Limited Map Maintenance Project (LMMP): LMMP is a small-scale restudy that is limited in size and cost. This is one of four approaches FEMA uses for changing maps.

Mandatory Purchase Requirement: Applies to the purchase, repair, construction or improvement of private and publicly owned buildings with federally backed mortgages. If the property is determined to within the SFHA, the lender must require the borrower to purchase

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flood insurance. If not in the SFHA, the lender has discretion as to whether they will require the borrower to purchase flood insurance.

Manufactured Home: (FEMA 480) A building that is transportable in one or more sections, which is build on a permanent chassis and is designed for use with out without permanent foundation when attached to the required utilities. It includes mobile homes and "double wides."

Map Modernization ("MapMod"): One of FEMA's cyclical processes to revise and update flood maps.

Map Service Center (MSC): Division of FEMA that provides access to maps and their related data, such as Flood Insurance Studies and letters relating to changes on the maps.

Market Value: (FEMA 480) The price a willing buyer and seller agree upon.

Meander: (FEMA 480) Curve within a river or channel.

Mitigation Division: (FEMA 480) The FEMA office that sets national policy for the NFIP and administers the mapping program.

Mitigation Planning: A process to identify risk and vulnerability to flooding followed by development of long-term strategies for protecting people and property. Key elements include: public involvement, risk assessment, and mitigation strategy.

Mudslide (i.e. mudflow): (FEMA 480) A condition where there is a river, flow or inundation of liquid mud down a hillside.

Multiple Objective Management (MOM): An approach to reduce flood losses while addressing other community concerns. MOM approach treats a river's floodplain and watershed as a resource. MOM process makes sure that flood projects don't undermine other community objectives or degrade the natural environment.

National Environmental Policy Act (NEPA): (FEMA 480) A Federal law that requires agencies to evaluate the environmental impact of a proposed project.

National Flood Insurance Act of 1967: (FEMA) This Act authorizes a national program under which flood insurance is made available to occupants of flood prone areas through the cooperative efforts of the Federal government and the private insurance industry.

National Geodetic Vertical Datum (NGVD): (FEMA 480) NGVD of 1929, the national datum used by the NFIP based on mean sea level. It is known formerly as the "Mean Sea Level Datum of 1929 (MSL)."

Natural and Beneficial Functions (NBF): Rivers and their floodplains provide important social, economic, and environmental benefits. Floodplain natural resources include: soils, nutrients, water quality and quantity, diversity in species of plants and animals. Floodplain functions include: fertile environment for vegetation, habitat for wide variety of wildlife and small organisms, filtering of pollutants, groundwater recharge, wetlands, recreation, and improved surface water quality).

- Social Resources: directly benefit human society
- Living Resources: benefit plants and animals

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- Water Resources: provide benefit to the hydrologic cycles of surface and groundwater

No Adverse Impact (NAI): (ASFPM) No Adverse Impact is an approach that ensures the action of any property owner, public or private, does not adversely impact the property and rights of others.

No Rise Certification: (FEMA 480) A certification by an engineer that a project will not cause a set increase in flood heights.

Ordinance: (FEMA 480) A generic term for a law passed by a local government regulating development. Ordinances should be legally enforceable and enforced uniformly throughout a community.

Permit: Document verifying approval of community for development in floodplain, containing: application form, supporting documents, mandated elevation requirement, and signatures – property owner, FPA. A permit authorizes the start of development and serves as a legal record of development.

Ponding: (FEMA 480) Runoff that collects in depressions and cannot drain out, creating a temporary pond.

Post-FIRM: Built in the SFHA or pre-FIRM structures that have been substantially damaged or improved. For a community that participated in the NFIP when its initial FIRM was issued, post-FIRM buildings are the same as the new construction and must meet the NFIP minimum floodplain management standards.

Pre-Disaster Mitigation Program (PDM): Grant program on an annual cycle and that ***does not*** require a disaster event. PDM is a nationally competitive program for States and Communities.

- State and Community must have FEMA approved mitigation plan in place.
- Activities must be cost effective.
- Eligible projects include elevation, localized flood control for critical facilities, relocation, stormwater management projects, retrofitting, vegetation restoration, voluntary acquisition.

Pre-FIRM: Built before the first FIRM that shows the property in a SFHA or 12/31/1974, whichever is later. Most pre-FIRM buildings were constructed without taking the flood hazard into account.

Preferred Risk Policy (PRP): A lower-cost option for residential and nonresidential properties in the moderate-to-low risk areas with combinations of building and contents protection. (NFIP) A package flood insurance policy offering a variety of coverage combinations for both building and contents at a fixed premium. It is now available for all buildings located in B, C, and X Zones that meet eligibility requirements based on an entire flood loss history.

Probation: (NFIP) A FEMA-imposed change in a community's status resulting from violations and deficiencies in the administration and enforcement of NFIP local floodplain management regulations. Typically, the state NFIP Coordinating Office and/or FEMA has already worked with the community and repeatedly attempted to resolve the non-compliance issue or issues, with no successes. FEMA provides written notice of the deficiencies in the program, and the community has 90 days to fix the problem before puts the community on probation.

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Procedure Memorandum 34 (PM 34): Memorandum issued by FEMA highlighting three things issued a few days before Hurricane Katrina:

- Levees no longer grandfathered on FEMA maps
- Community / levee owner was responsible to provide certification information about the levee's ability to provide protection from the base flood.
- Levees not certified cannot be accredited on the new FEMA maps.

Procedure Memorandum 43 (PM 43): FEMA issued a year after Hurricane Katrina to allow Provisionally Accredited levees. PM 43 allows a community 24 months to gather data about a levee in exchange for FEMA allowing the levee to remain on the flood maps as providing protection.

Profile: (FEMA 480) A graph that shows elevations of various flood events.

Provisionally Accredited Levee (PAL): (FEMA) A Provisionally Accredited Levee, or PAL, is a levee that FEMA has previously credited with providing base flood protection on an effective map, for which FEMA is awaiting data and/or documentation that will show the levee's compliance with Section 65.10 of the NFIP regulations. A PAL is shown on a map as providing base flood protection, and the area behind the levee is shown as Zone X (shaded) except for areas shown as Special Flood Hazard Areas (SFHAs). If a levee has been removed from the Corps program due to maintenance concerns, it is no longer eligible for the Provisionally Accredited Levee program.

Quick-2: A software program available from FEMA; a hydraulic analysis program used to compute water-surface elevations in open channels of all types. The Quick-2 Tutorial exposes the user to single-lot and multiple-lot case studies, demonstrating much of the program's functionality along the way.

Regulatory Floodplain: For purposes of the CRS, the floodplain that is regulated by a community, including the SFHA. It covers a larger area in communities that regulate development in flood problem areas outside the SFHA as mapped by the Federal Insurance and Mitigation Administration.

Regulatory Floodway: The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

Residential Substantial Damage Estimator (RSDE): FEMA's software which provides guidance on determining if a building is substantially damaged in accordance with the NFIP regulations.

Repetitive Flood Claims Program (RFC): Grant program designed to complement the FMA. Priority is to fund acquisitions that equal most savings for the NFIP.

- Target is insured repetitive loss properties.
- Grants can be 100% federally funded if State or Community cannot meet the cost-share requirements of the FMA program.
- Acquisition, structure demolition, and relocation with deed restriction for open space are considered.

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Retrofitting: (FEMA 480) Retrofitting techniques include floodproofing, elevation, construction of small levees, and other modifications made to an existing building or its yard to protect it from flood damage.

Riverine: (FEMA 480) Of or produced by a river. Riverine floodplains have readily identifiable channels. Floodway maps can only be prepared for riverine floodplains.

Riverine Flooding: (FEMA 480) Flooding that occurs along a channel or river.

Riverine Overbank Flooding: (FEMA 480) Occurs when downstream channels receive more rain or snowmelt from their watershed than normal, or a channel is blocked by an ice jam or debris. Excess water overloads the channels and flows out onto the floodplain. Overbank flooding is the common type of flooding in the United States. Both size and terrain affect the speed of flood water or velocity.

Runoff: (FEMA 480) Rainfall and snowmelt that reaches a stream.

Section 404 Permit: Permit required by USACE regulating work in an identified wetlands area allowing for dredging in that area.

Section 1316 (Section 4023, USC 4001): Refers to the 1968 law. This was actually converted to Section 4023; USC 4001 after 1973 law was passed. Section 1316 is an action of last resort for communities to take against a floodplain ordinance violator. Community declares structure in violation at a public meeting, and sends a declaration/request to FEMA. This results in no flood insurance coverage for the structure, no grants, loans, or guarantees by federal agencies, and no federal disaster assistance after a flood.

Section / Township / Range (STR): Survey system found mostly west of the Mississippi River.

Severe Repetitive Loss Program (SRL): Grant program for residential properties with severe repeat loss history: (a) 4 or more claims that each exceed $5,000 with at least two in a ten year period, (b) 2 or more claims that cumulatively exceed the value of the building.

- States receive funding annually based upon the number of SRLs;
- Usually 75% Federal funding. Non-Federal share can be adjusted to 10% if state has FEMA approve mitigation plan with strategy to address SRL properties.
- Eligible projects include: elevation, relocation, demolition, floodproofing historical properties, demolition / rebuild to BFE.

Shallow Flooding: (FEMA 480) Occurs in flat areas with an absence of channels so drainage is not effective. It generally falls into one of three categories: *sheet flow*, *ponding*, and *urban drainage*.

Sheet Flow: (FEMA 480) Floodwater that spreads out over a large area that does not have defined channels at a somewhat uniform depth.

Special Flood Hazard Area (SFHA): (FEMA 480) The Base (1% chance of flood) floodplain displayed on FEMA maps. It includes the A and V zones.

Standard Flood Hazard Determination Form: FEMA Form 81-93, used by a lender, federal agency or third party to document determination of whether or not a building is located in the

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SFHA. If the building is found to be located in the SFHA, the borrower is notified of the requirement to buy flood insurance.

Storm Surge: (FEMA 480) Water that is pushed toward shore by persistent high wind and changes in air pressure.

Structural Flood Control: (FEMA 480) Measures that control floodwaters by construction of barriers or storage areas or by modifying or redirecting channels.

Subgrade: (FEMA 480) Below ground level.

Submit to Rate: (FEMA 480) A detailed underwriting analysis process used when an insurance agent cannot complete the rate calculation for a flood insurance policy. The application is sent to the WYO company or FEMA to be individually rated.

Substantial Compliance: Substantial compliance means there are actions to take to remedy a violation such as:

- Protecting, elevating or relocating utilities
- Diverting floodwaters from structure
- Make lower levels "uninhabitable"
- Prohibit further improvements
- Apply real actuarial rating for flood insurance
- Elevate or dry-floodproof structure
- Record violation on deed or title

Substantial Damage: (FEMA 480) Damage of any origin sustained by a building whereby the cost of restoring the building to its before-damaged condition would equal or exceed 50% of the market value of the building before the damage occurred.

Substantial Improvement: (FEMA 480) Any reconstruction, rehabilitation, addition, or other improvement of a building, the cost of which equals or exceeds 50% of the market value of the building before the "start of construction" of the improvement. Substantial improvement includes buildings that have incurred "substantial damage," regardless of the actual repair work performed. The term does not, however, include either any project for improvement of a building to correct existing state or local code violations or any alteration to a "historic building," provided that the alteration will not preclude the building's continued designation as a "historic building."

Suspension: (NFIP) FEMA's removal of an NFIP participating community from the program because the community has not enacted and/or enforced the proper floodplain management regulations required for participation. Suspension occurs when the community fails to solve its compliance problems or fails to adopt an adequate ordinance. If suspended by FEMA, the community becomes a non-participating community in the NFIP and flood insurance policies cannot be written or renewed. Policies in force at the time of suspension continue for the policy term.

- All other means of remedy must have been exhausted by the community first.

Taking: (FEMA 480) Obtaining private property with or without compensating the owner. The term also includes reducing the value of a private property to such an extent that the owner is deprived of all economic interest. This term is derived from the Fifth Amendment of the US Constitution.

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- Courts balance public and private interest in decisions about "taking".
- Performance-oriented standards of the NFIP have never been ruled as a taking, due to the public purpose involved.
- Regulatory standards should be: reasonable, tied to the flood hazard, and should support public objectives.

Thalwag: The bottom of the river channel most impacted by flood flows.

Three Legged Stool / Chair: Reference to the three aspects of the NFIP:
- Risk identification and mapping
- Community compliance
- Availability of flood insurance

Tsunami: (FEMA 480) A large wage caused by underwater earthquake or volcano which can raise water levels as much as 15 feet.

Unfunded Mandate: A requirement, usually from state or federal legislation or regulations that a community has to fulfill without supplying funding to support the work.

Urban Drainage: An urban drainage system includes ditches, storm sewers, retention ponds, and other facilities designed to store runoff or transport it to a receiving waterway.

V Zones: The SFHA subject to coastal high hazard flooding. There are three types of V Zones: V, V#, and VE, and they correspond to A Zone designations.

Variance: (FEMA 480) A variance is a grant of relief by a community from the terms of land use, zoning, or building code regulation (requirements of floodplain development ordinance) granted by the local governing body and permits construction in a manner that would otherwise be prohibited (or in violation of your local ordinance). Variances stay with the property if the property is sold. ***Note: a variance is not relief from flood insurance. A variance should NEVER be granted for ANY development in the regulatory floodway, it will increase flood heights in Zone-A's and the floodway fringe.*** Granting of a variance can:
- Result in increased risk to lives and property
- Result in significantly higher flood insurance premiums to property owner than if brought into code.

Violation: A violation is a failure to comply with the community's floodplain ordinance. Violations are also recorded on the deed or title to the property.

Watershed: (FEMA 480) Areas that drain into a lake, stream, or body of water. Watershed boundaries are formed by ridges or divides.

Wet Floodproofing: Involves using flood resistant materials below the BFE and elevating the items subject to flood damage above the BFE. Items that should be installed above BFE are electric boxes, switches, and outlets.

Write Your Own (WYO): (FEMA 480) An insurance company that has agreed to sell flood insurance policies on behalf of the NFIP.

X Zones: Newer FIRMs show Zones B and C as Zone X. The shaded Zone X corresponds to a Zone B, and the unshaded Zone X corresponds to a Zone C.

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9th TAB

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Mapping Exercise

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Mapping Exercise – Participant Instructions

Supplies:

You will be provided with one of each:

- Cook County, IL: FIRM with Properties A, B, & C marked on the map
- Cook County, IL: FIS Summary of Still Water Elevations Table 15
- Cook County, IL: FIS Floodway Data Table 19
- Cook County, IL: FIS Flood Profile for Properties A, B, & C Panel

Instructions:
In this activity, you will need to determine the Base Flood Elevation (BFE) to within a tenth (0.10) of a foot for Properties A, B, and C on the map.

Use the Flood Insurance Rate Map (**FIRM)** *and* the Flood Insurance Study (**FIS)** provided to accurately determine the property's BFE.

All BFEs shown on the FIRM are rounded. For example, a BFE of 100.6' or 101.4' are both displayed on the FIRM as BFE 101'. ***Do not use the FIRM alone to determine BFE.***

1. First locate Property A on the FIRM.
   - ✓ Determine the name of the stream or watercourse affecting the property.
   - ✓ Notice the BFE elevations and the nearest Cross Sections to the site.
   - ✓ Using the map and the Flood Insurance Study, locate the stream profile for the site. You should be able to locate your site on the profile in relation to the Cross Sections and BFE data provided on the FIRM.

   Find Property A's most upstream limit.
   - ✓ To determine which direction is "upstream", refer to the stream profile. You should be able to see the slope of the channel bottom which will help you indicate the direction of flow. Generally, the higher the channel bottom elevations are upstream, and elevations decrease as you move downstream.
   - ✓ Similarly, you can determine the direction of flow by looking at the BFEs on the FIRM. The higher BFEs will usually indicate the upstream reaches of the stream or river.
   - ✓ The BFE is represented on the FIRM as a squiggly line that crosses the stream with a corresponding number. Remember these numbers have been rounded to the nearest whole foot.

   Now locate a Cross Section on the FIRM. ***Cross Sections are indicated perpendicular to the stream center line and are located at various places along the stream.*** The location of Cross Section(s) is made by the engineer who conducts the flood study and will help define the flood zones and factors that affect mapping the SFHA. A Cross Section label will have one or two capital letters. Note: Knowing that the most downstream Cross Section is labeled with the beginning of the alphabet can help you determine the direction of flow and whether a site is upstream or downstream. As Cross Sections are identified on the map heading upstream, the Cross Section labels will progress through the alphabet.

2. Locate Cross Section **AI** on the FIRM.

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3. Using the FIRM and FIS Floodway Data Table, look at the "Regulatory" column. ***The Regulatory column provides the BFE*** at each Cross Section. (Unlike the FIRM, the BFEs in the Table are not rounded and are accurate within a tenth of a foot.) Find Cross Section AI and determine the Regulatory BFE. You should find that the BFE for Cross Section AI is 744.3'. Note that the BFE on the FIRM near Cross Section AI reads 744' because it has been rounded to the nearest whole foot. (You may want to write "BFE" next to the "Regulatory" column label as a reminder.)

4. Use a property's most upstream boundary when determining the BFE. If a property boundary is ***on or touching*** the nearest Cross Section line, use the FIS Floodway Data Table to determine the most accurate BFE to the nearest tenth of a foot.

5. For properties located ***between*** Cross Sections on the FIRM, you need to determine the property's upstream and downstream limits relative to the stream profile.
   - ✓ Draw a perpendicular line from the most upstream point of the property to the stream center line. Do the same for the downstream property limit.
   - ✓ ***The stream center line is the line drawn down the middle of the stream in the cross hatched section of the FIRM.***
   - ✓ ***Note: Remember that Cross Sections and BFEs are depicted on the FIRM with symbols that are perpendicular to the stream centerline.***
   - ✓ Draw a dot where your drawn line and the stream center lines intersect.

6. Using the FIRM scale, measure (in feet) the distance from your dot (on the stream centerline) to the nearest Cross Section. Write this distance down in feet on your scratch paper. Remember to measure distance along the stream center line (which is probably curved), not as a straight line between the dot and the nearest Cross Section.

7. The FIRM Scale and the Flood Profile increments for distance (shown on the horizontal axis of the profile) may differ. For example, the flood profile may measure distance in miles, while the FIRM uses a scale of 1" equals 1000'. Be sure you are accurately assessing measurements to get the correct BFE for a property.

8. Using the Flood Profile, locate the property relative to the nearest Cross Sections. Make sure that you have many any conversions for scale and have located your property correctly upstream or downstream from the nearest Cross Section.

9. Find the Legend on the Flood Profile. To determine the BFE you will need to find the elevation for the 100-year (1% annual chance) flood. In a typical Flood Insurance Study (FIS) there may also be profile data for the 10-year, 50-year, and 500-year floods.

   You should now be able to locate Property A in relation to the nearest Cross Section(s) and determine the BFE using the stream profile. Locate the nearest Cross Section on the profile and using your measurement from no. 6 above, place a dot on the 100-year flood profile line. You have now referenced the property to the Flood Profile. The vertical axis of the Profile contains the elevation information expressed in feet.

10. To determine the BFE to the nearest tenth of a foot, draw a horizontal line from the dot intersecting the 100-year flood profile line to the left vertical axis of the Profile. Be careful to check the increments of the grid behind the profile. Each square may represent 1' or some other increment.

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11. Write your BFE measurement for the Property on the FIRM next to the property.

12. NOTE: Properties located in stillwater (ponds, lakes, storage basins) have a different method for determining BFE. You will need to read / use the FIS to determine BFEs in stillwater locations.

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Mapping Exercise

Determine BFE to the nearest 10th of a foot for Property A, B, and C.

BFE's

Property A = _____

Property B = _____

Property C = _____

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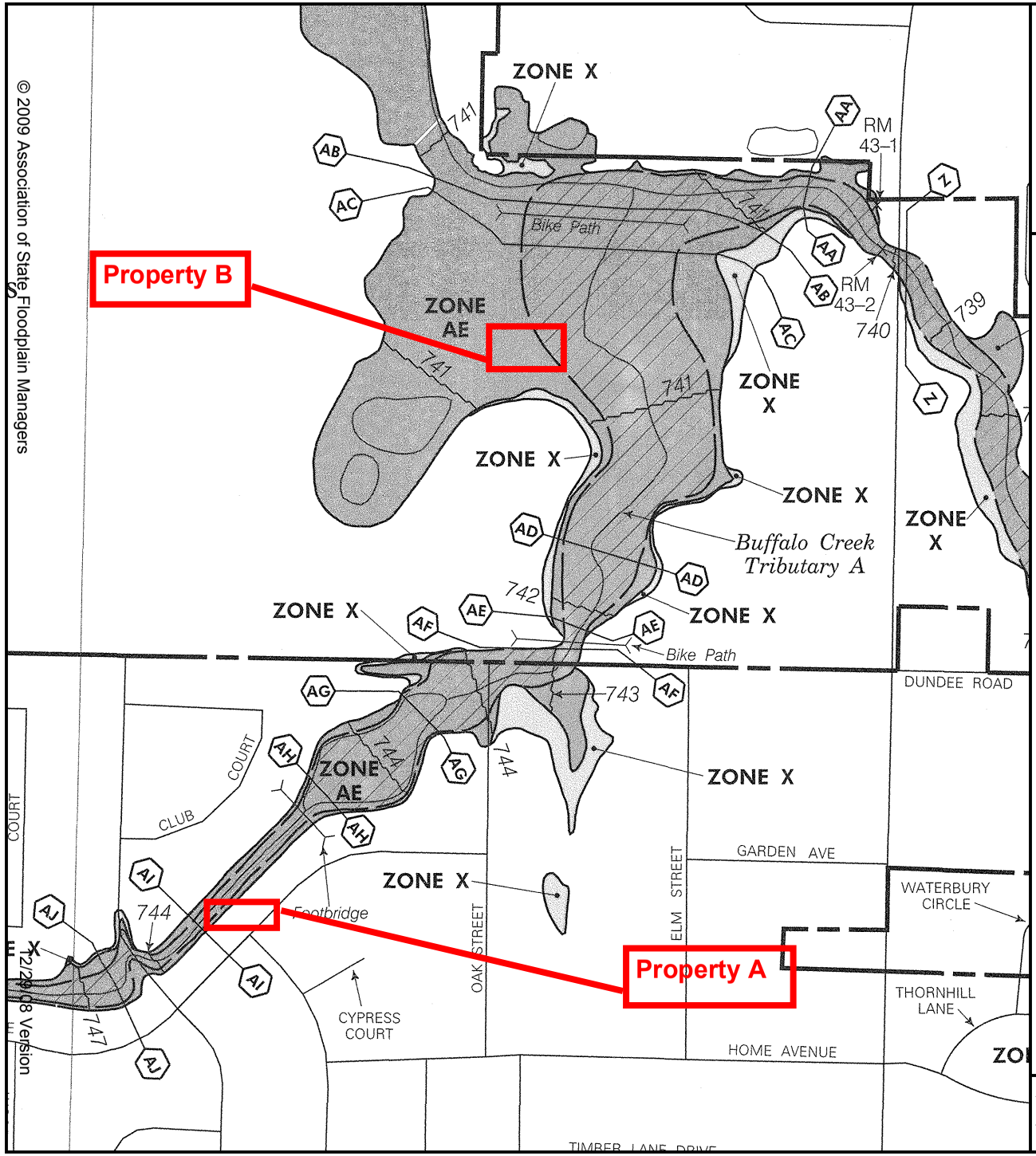

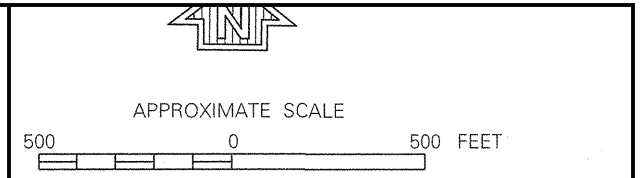

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

COOK COUNTY,
ILLINOIS
AND INCORPORATED AREAS

PANEL 43 OF 832

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COOK COUNTY	170054	0043	F
PALATINE, VILLAGE OF	175170	0043	F

Notice to User: The MAP NUMBER shown below should be used when placing map orders; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER
17031C0043 F

EFFECTIVE DATE:
NOVEMBER 6, 2000

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

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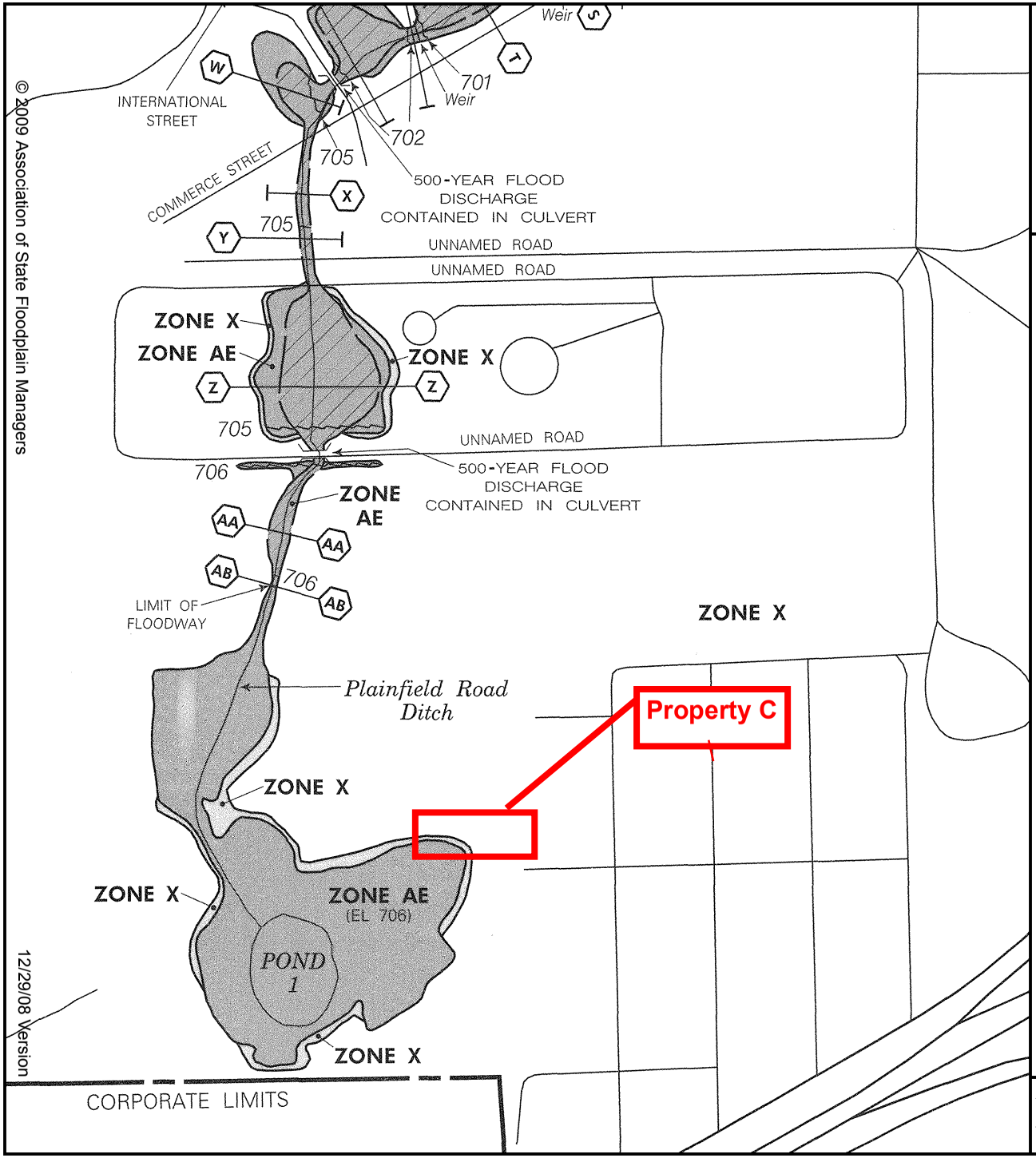

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12/29/08 Version

APPROXIMATE SCALE

500 0 500 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

COOK COUNTY, ILLINOIS AND INCORPORATED AREAS

PANEL 468 OF 832

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BURR RIDGE, VILLAGE OF	170071	0468	F
COOK COUNTY	170054	0468	F
INDIAN HEAD PARK, VILLAGE OF	170110	0468	F

Notice to User: The MAP NUMBER shown below should be used when placing map orders; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER 17031C0468 F

EFFECTIVE DATE: NOVEMBER 6, 2000

Federal Emergency Management Agency

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FLOOD INSURANCE STUDY

COOK COUNTY, ILLINOIS
AND INCORPORATED AREAS

Volume 1 of 5

COMMUNITY NAME	COMMUNITY NUMBER
ALSIP, VILLAGE OF	170055
ARLINGTON HEIGHTS, VILLAGE OF	170056
BARRINGTON, VILLAGE OF	170057
BARRINGTON HILLS, VILLAGE OF	170058
BARTLETT, VILLAGE OF	170059
BEDFORD PARK, VILLAGE OF	171007
BELLWOOD, VILLAGE OF	170061
BENSENVILLE, VILLAGE OF	170200
* BERKELEY, VILLAGE OF	171039
* BERWYN, CITY OF	171036
BLUE ISLAND, CITY OF	170064
BRIDGEVIEW, VILLAGE OF	170065
BROADVIEW, VILLAGE OF	170067
BROOKFIELD, VILLAGE OF	170066
BUFFALO GROVE, VILLAGE OF	170068
* BURBANK, CITY OF	170069
BURNHAM, VILLAGE OF	170070
BURR RIDGE, VILLAGE OF	170071
CALUMET CITY, CITY OF	170072
CALUMET PARK, VILLAGE OF	170073
CHICAGO CITY OF	170074
CHICAGO HEIGHTS, VILLAGE OF	170075
CHICAGO RIDGE, VILLAGE OF	170076
* CICERO, TOWN OF	170077
COOK COUNTY (UNINCORPORATED AREAS)	170054
COUNTRY CLUB HILLS, CITY OF	170078
COUNTRYSIDE, CITY OF	170079
CRESTWOOD, VILLAGE OF	170080
* DEER PARK, VILLAGE OF	171028
DEERFIELD, VILLAGE OF	170361
DES PLAINES, CITY OF	170081
DIXMOOR, VILLAGE OF	170082
DOLTON, VILLAGE OF	170083
* EAST DUNDEE, VILLAGE OF	170323
EAST HAZEL CREST, VILLAGE OF	170085
ELGIN, CITY OF	170087
ELK GROVE VILLAGE, VILLAGE OF	170088
* ELMHURST, CITY OF	170205
ELMWOOD PARK, VILLAGE OF	170089
EVANSTON, CITY OF	170090
* EVERGREEN PARK, VILLAGE OF	170733
FLOSSMOOR, VILLAGE OF	170091
FORD HEIGHTS, VILLAGE OF	170084
FOREST PARK, VILLAGE OF	170092
FOREST VIEW, VILLAGE OF	170093
* FRANKFORT, VILLAGE OF	170701
FRANKLIN PARK, VILLAGE OF	170094
GLENCOE, VILLAGE OF	170095
GLENVIEW, VILLAGE OF	170096
GLENWOOD, VILLAGE OF	170097
GOLF, VILLAGE OF	170098
HANOVER PARK, VILLAGE OF	170099
HARVEY, CITY OF	170100
* HARWOOD HEIGHTS, VILLAGE OF	170101
HAZEL CREST, VILLAGE OF	170102
HICKORY HILLS, CITY OF	170103
HILLSIDE, VILLAGE OF	170104
HINSDALE, VILLAGE OF	170105
HODGKINS, VILLAGE OF	170106
HOFFMAN ESTATES, VILLAGE OF	170107
* HOMETOWN, CITY OF	171040
HOMEWOOD, VILLAGE OF	170109
INDIAN HEAD PARK, VILLAGE OF	170110
INVERNESS, VILLAGE OF	170111
JUSTICE, VILLAGE OF	170112
KENILWORTH, VILLAGE OF	170113
LA GRANGE, VILLAGE OF	170114
LA GRANGE PARK, VILLAGE OF	170115
LANSING, VILLAGE OF	170116
LEMONT, VILLAGE OF	170117
LINCOLNWOOD, VILLAGE OF	171001
LYNWOOD, VILLAGE OF	170119
LYONS, VILLAGE OF	170120
MARKHAM, CITY OF	175169
MATTESON, VILLAGE OF	170123
MAYWOOD, VILLAGE OF	170124
MCCOOK, VILLAGE OF	170121
MELROSE PARK, VILLAGE OF	170125
MERRIONETTE PARK, VILLAGE OF	170126
MIDLOTHIAN, VILLAGE OF	170127
MORTON GROVE, VILLAGE OF	170128
MOUNT PROSPECT, VILLAGE OF	170129
NILES, VILLAGE OF	170130
* NORRIDGE, VILLAGE OF	170131
NORTH RIVERSIDE, VILLAGE OF	170135
NORTHBROOK, VILLAG EOF	170132
NORTHFIELD, VILLAGE OF	170133
NORTHLAKE, CITY OF	170134
* OAKBROOK, VILLAGE OF	170214
OAK FOREST, CITY OF	170136
OAK LAWN, VILLAGE OF	170137
* OAK PARK, VILLAGE OF	171037
OLYMPIA FIELDS, VILLAGE OF	170139
ORLAND HILLS, VILLAGE OF	170172
ORLAND PARK, VILLAGE OF	170140
PALATINE, VILLAGE OF	175170
PALOS HEIGHTS, CITY OF	170142
PALOS HILLS, CITY OF	170143
PALOS PARK, VILLAGE OF	170144
PARK FOREST, VILLAGE OF	170145
PARK RIDGE, CITY OF	170146
* PHOENIX, CITY OF	170147
POSEN, VILLAGE OF	170148
PROSPECT HEIGHTS, CITY OF	170919
RICHTON PARK, VILLAGE OF	170149
RIVER FOREST, VILLAGE OF	170151
RIVER GROVE, VILLAGE OF	170152
RIVERDALE, VILLAGE OF	170150
RIVERSIDE VILLAGE OF	170153
ROBBINS, VILLAGE OF	170154
ROLLING MEADOWS, CITY OF	170155
* ROSELLE, VILLAGE OF	170216
ROSEMONT, VILLAGE OF	170156
SAUK VILLAGE, VILLAGE OF	170157
SCHAUMBURG, VILLAGE OF	170158
SCHILLER PARK, VILLAGE OF	170159
SKOKIE, VILLAGE OF	171000
SOUTH BARRINGTON, VILLAGE OF	170161
SOUTH CHICAGO HEIGHTS, VILLAGE OF	170162
SOUTH HOLLAND, VILLAGE OF	170163
STEGER, VILLAGE OF	170713
STICKNEY, VILLAGE OF	170164
STONE PARK, VILLAGE OF	170165
STREAMWOOD, VILLAGE OF	170166
SUMMIT, VILLAGE OF	170167
THORNTON, VILLAGE OF	170168
TINLEY PARK, VILLAGE OF	170169
UNIVERSITY PARK, VILLAGE OF	170708
WESTCHESTER, VILLAGE OF	170170
WESTERN SPRINGS, VILLAGE OF	170171
WHEELING, VILLAGE OF	170173
WILLOW SPRINGS, VILLAGE OF	170174
WILMETTE, VILLAGE OF	170175
WINNETKA, VILLAGE OF	170176
WORTH, VILLAGE OF	170177

* NO SPECIAL FLOOD HAZARD AREAS IDENTIFIED WITHIN COOK COUNTY

REVISED: AUGUST 19, 2008

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
17031CV001G

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12/29/08 Version

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
Buffalo CreekTributary A (Cont'd)								
O	12,370[4]	161	137	2.9	720.1	720.1	720.2	0.1
P	12,420[4]	200	540	0.7	720.2	720.2	720.2	0.0
Q	12,760[4]	290	332	1.2	720.8	720.8	720.8	0.0
R	12,850[4]	279	450	0.9	721.3	721.3	721.4	0.1
S	13,770[4]	209	239	1.3	722.7	722.7	722.8	0.1
T	13,900[4]	200	307	1.0	722.9	722.9	722.9	0.0
U	14,400[4]	44	82	3.9	724.5	724.5	724.6	0.1
V	14,590[4]	30	53	6.0	725.6	725.6	725.6	0.0
W	14,700[4]	20	79	3.7	726.7	726.7	726.7	0.0
X	15,110[4]	38	82	3.6	729.8	729.8	729.9	0.1
Y	15,210[4]	90	283	1.0	731.3	731.3	731.3	0.0
Z	18,050[4]	270	195	1.4	739.7	739.7	739.7	0.0
AA	18,552[4]	103	168	2.8	740.5	740.5	740.5	0.0
AB	19,195[4]	750	1,035	0.4	740.7	740.7	740.7	0.0
AC	19,350[4]	508	1,181	0.2	740.7	740.7	740.7	0.0
AD	20,559[4]	266	634	0.4	741.1	741.1	741.1	0.0
AE	20,854[4]	80	120	2.0	741.9	741.9	742.0	0.1
AF	20,931[4]	106	180	1.6	742.2	742.2	742.2	0.0
AG	21,544[4]	165	1,044	0.1	743.8	743.8	743.9	0.1
AH	21,949[4]	135	945	0.2	743.8	743.8	743.9	0.1
AI	22,548[4]	41	201	1.1	744.0	744.0	744.0	0.0

[4] Feet above mouth

TABLE 19

FEDERAL EMERGENCY MANAGEMENT AGENCY

COOK COUNTY, IL
AND INCORPORATED AREAS

FLOODWAY DATA

BUFFALO CREEK TRIBUTARY A

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The stillwater elevations have been determined for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods for the flooding sources studied by detailed methods and are summarized in Table 15, "Summary of Stillwater Elevations."

Table 15 – Summary of Stillwater Elevations

Flooding Source and Location	*Elevation (feet NAVD 88)*			
	10-Percent-Annual-Chance	*2-Percent-Annual-Chance*	*1-Percent-Annual-Chance*	*0.2-Percent-Annual-Chance*
Lake Michigan[1]	**	**	584.7	**
City of Chicago				
Willow Higgins Flood Control Reservoir	**	**	641.9	**
City of Des Plaines				
Lake Mary Ann	**	**	634.4	**
Dude Ranch Pond	**	**	631.6	**
Bay Colony Pond	**	**	632.7	**
City of Hickory Hills				
Hickory Hills Reservoir	**	**	623.4	**
Area bounded by 95th Street to the South, 93rd Street to the North, and Kean Avenue to the west, along Belly Deep Slough	**	**	697.8	**
Cook County				
Unincorporated Areas				
Detention Basin, located along an Unnamed tributary to Long Run, just Upstream of Will-Cook Road	**	**	686.0	**
Touhy Avenue Reservoir (East Reservoir)	**	**	649.8	**
MWRD Reservoir (West Touhy Avenue FCR)	**	**	653.0	**
Village of Bensenville				
Ponding Area No. 1	653.2	654.4	655.0	**
Village of Burr Ridge				
Pond 1	705.2	705.4	705.5	705.7

** Data not available

[1] Stillwater elevation does not include tide or wave runnup.

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FLOOD INSURANCE STUDY

COOK COUNTY, ILLINOIS
AND INCORPORATED AREAS

Volume 2 of 5

COMMUNITY NAME	COMMUNITY NUMBER
ALSIP, VILLAGE OF	170055
ARLINGTON HEIGHTS, VILLAGE OF	170056
BARRINGTON, VILLAGE OF	170057
BARRINGTON HILLS, VILLAGE OF	170058
BARTLETT, VILLAGE OF	170059
BEDFORD PARK, VILLAGE OF	171007
BELLWOOD, VILLAGE OF	170061
BENSENVILLE, VILLAGE OF	170200
* BERKELEY, VILLAGE OF	171039
* BERWYN, CITY OF	171036
BLUE ISLAND, CITY OF	170064
BRIDGEVIEW, VILLAGE OF	170065
BROADVIEW, VILLAGE OF	170067
BROOKFIELD, VILLAGE OF	170066
BUFFALO GROVE, VILLAGE OF	170068
* BURBANK, CITY OF	170069
BURNHAM, VILLAGE OF	170070
BURR RIDGE, VILLAGE OF	170071
CALUMET CITY, CITY OF	170072
CALUMET PARK, VILLAGE OF	170073
CHICAGO CITY OF	170074
CHICAGO HEIGHTS, VILLAGE OF	170075
CHICAGO RIDGE, VILLAGE OF	170076
* CICERO, TOWN OF	170077
COOK COUNTY (UNINCORPORATED AREAS)	170054
COUNTRY CLUB HILLS, CITY OF	170078
COUNTRYSIDE, CITY OF	170079
CRESTWOOD, VILLAGE OF	170080
* DEER PARK, VILLAGE OF	171028
DEERFIELD, VILLAGE OF	170361
DES PLAINES, CITY OF	170081
DIXMOOR, VILLAGE OF	170082
DOLTON, VILLAGE OF	170083
* EAST DUNDEE, VILLAGE OF	170323
EAST HAZEL CREST, VILLAGE OF	170085
ELGIN, CITY OF	170087
ELK GROVE VILLAGE, VILLAGE OF	170088
* ELMHURST, CITY OF	170205
ELMWOOD PARK, VILLAGE OF	170089
EVANSTON, CITY OF	170090
* EVERGREEN PARK, VILLAGE OF	170733
FLOSSMOOR, VILLAGE OF	170091
FORD HEIGHTS, VILLAGE OF	170084
FOREST PARK, VILLAGE OF	170092
FOREST VIEW, VILLAGE OF	170093
* FRANKFORT, VILLAGE OF	170701
FRANKLIN PARK, VILLAGE OF	170094
GLENCOE, VILLAGE OF	170095
GLENVIEW, VILLAGE OF	170096
GLENWOOD, VILLAGE OF	170097
GOLF, VILLAGE OF	170098
HANOVER PARK, VILLAGE OF	170099
HARVEY, CITY OF	170100
* HARWOOD HEIGHTS, VILLAGE OF	170101
HAZEL CREST, VILLAGE OF	170102
HICKORY HILLS, CITY OF	170103
HILLSIDE, VILLAGE OF	170104
HINSDALE, VILLAGE OF	170105
HODGKINS, VILLAGE OF	170106
HOFFMAN ESTATES, VILLAGE OF	170107
* HOMETOWN, CITY OF	171040
HOMEWOOD, VILLAGE OF	170109
INDIAN HEAD PARK, VILLAGE OF	170110
INVERNESS, VILLAGE OF	170111
JUSTICE, VILLAGE OF	170112
KENILWORTH, VILLAGE OF	170113
LA GRANGE, VILLAGE OF	170114
LA GRANGE PARK, VILLAGE OF	170115
LANSING, VILLAGE OF	170116
LEMONT, VILLAGE OF	170117
LINCOLNWOOD, VILLAGE OF	171001
LYNWOOD, VILLAGE OF	170119
LYONS, VILLAGE OF	170120
MARKHAM, CITY OF	175169
MATTESON, VILLAGE OF	170123
MAYWOOD, VILLAGE OF	170124
MCCOOK, VILLAGE OF	170121
MELROSE PARK, VILLAGE OF	170125
MERRIONETTE PARK, VILLAGE OF	170126
MIDLOTHIAN, VILLAGE OF	170127
MORTON GROVE, VILLAGE OF	170128
MOUNT PROSPECT, VILLAGE OF	170129
NILES, VILLAGE OF	170130
* NORRIDGE, VILLAGE OF	170131
NORTH RIVERSIDE, VILLAGE OF	170135
NORTHBROOK, VILLAG EOF	170132
NORTHFIELD, VILLAGE OF	170133
NORTHLAKE, CITY OF	170134
* OAKBROOK, VILLAGE OF	170214
OAK FOREST, CITY OF	170136
OAK LAWN, VILLAGE OF	170137
* OAK PARK, VILLAGE OF	171037
OLYMPIA FIELDS, VILLAGE OF	170139
ORLAND HILLS, VILLAGE OF	170172
ORLAND PARK, VILLAGE OF	170140
PALATINE, VILLAGE OF	175170
PALOS HEIGHTS, CITY OF	170142
PALOS HILLS, CITY OF	170143
PALOS PARK, VILLAGE OF	170144
PARK FOREST, VILLAGE OF	170145
PARK RIDGE, CITY OF	170146
* PHOENIX, CITY OF	170147
POSEN, VILLAGE OF	170148
PROSPECT HEIGHTS, CITY OF	170919
RICHTON PARK, VILLAGE OF	170149
RIVER FOREST, VILLAGE OF	170151
RIVER GROVE, VILLAGE OF	170152
RIVERDALE, VILLAGE OF	170150
RIVERSIDE VILLAGE OF	170153
ROBBINS, VILLAGE OF	170154
ROLLING MEADOWS, CITY OF	170155
* ROSELLE, VILLAGE OF	170216
ROSEMONT, VILLAGE OF	170156
SAUK VILLAGE, VILLAGE OF	170157
SCHAUMBURG, VILLAGE OF	170158
SCHILLER PARK, VILLAGE OF	170159
SKOKIE, VILLAGE OF	171000
SOUTH BARRINGTON, VILLAGE OF	170161
SOUTH CHICAGO HEIGHTS, VILLAGE OF	170162
SOUTH HOLLAND, VILLAGE OF	170163
STEGER, VILLAGE OF	170713
STICKNEY, VILLAGE OF	170164
STONE PARK, VILLAGE OF	170165
STREAMWOOD, VILLAGE OF	170166
SUMMIT, VILLAGE OF	170167
THORNTON, VILLAGE OF	170168
TINLEY PARK, VILLAGE OF	170169
UNIVERSITY PARK, VILLAGE OF	170708
WESTCHESTER, VILLAGE OF	170170
WESTERN SPRINGS, VILLAGE OF	170171
WHEELING, VILLAGE OF	170173
WILLOW SPRINGS, VILLAGE OF	170174
WILMETTE, VILLAGE OF	170175
WINNETKA, VILLAGE OF	170176
WORTH, VILLAGE OF	170177

* NO SPECIAL FLOOD HAZARD AREAS IDENTIFIED WITHIN COOK COUNTY

REVISED: AUGUST 19, 2008

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
17031CV002G

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12/29/08 Version

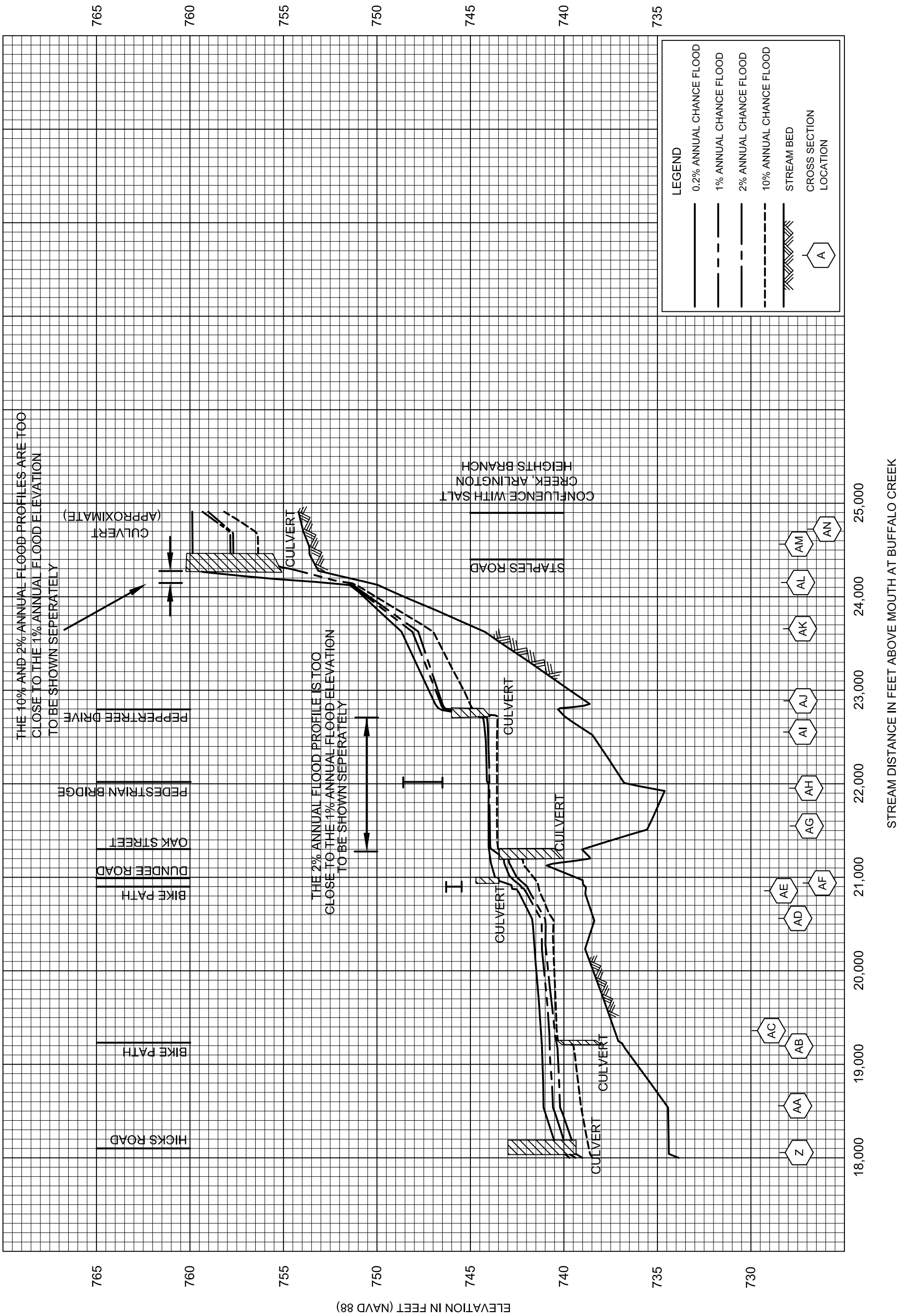
FEDERAL EMERGENCY MANAGEMENT AGENCY

COOK COUNTY, IL

AND INCORPORATED AREAS

FLOOD PROFILES

BUFFALO CREEK TRIBUTARY A



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Elevation Certificate Exercise

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Elevation Certificate Exercise

Directions:
Read the scenario provided below and answer the questions below using the FIRM snapshot, panel cover, and Elevation Certificate instructions, and Elevation Certificate Bulleting provided with this exercise.

Scenario: A new, slab-on grade, residential structure was built this year in the location shown on the attached FIRM.

1. Which building diagram number should be used for this structure in Section A of the Elevation Certificate?

2. What is the NFIP Community Name and CID (Community Identification Number) for listing in Section B of the Elevation Certificate?

3. What is the Map Panel Number you would list in Section B.4 of the Elevation Certificate?

4. Is it important for the datum used for the elevations obtained in Section C of the Elevation Certificate to be the same as the datum used for the Base Flood Elevation in Section B.9?

5. Will the homeowner be required to submit an Elevation Certificate in order to obtain a flood insurance policy?

6. In what section of the Elevation Certificate should the low floor elevation for this structure be entered?
    a. C2(a)
    b. C2(b)
    c. C2(c)
    d. C2(f)

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7. Once the Elevation Certificate has been completed, which of the following will be true:
    a. Flood insurance will no longer be required as long as the Elevation Certificate shows that the low floor is at or above the Base Flood Elevation (BFE).
    b. Flood insurance will no longer be required as long as the Elevation Certificate shows that the lowest adjacent grade (LAG) is at or above the Base Flood Elevation (BFE).
    c. The owner will need to submit the Elevation Certificate to his flood insurance provider for a proper rating.
    d. Two of the above.

8. To whom should the homeowner provide a copy of the Elevation Certificate after completion?
    a. The permit official to document the "as-built" lowest floor elevation.
    b. The insurance agent to rate a flood insurance policy.
    c. The NFIP state coordinator because they maintain copies for every property in the state.
    d. Two of the above.

9. If this structure were located in the AO Zone to the North of the property, would a survey be required in order to complete the Elevation Certificate?

10. It is mandatory for a community participating in the Community Rating System (CRS) to maintain Elevation Certificates for all new and substantially-improved structures after the date of their entry into the CRS Program.
    a. True
    b. False

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NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

FLOOD COUNTY,

USA

AND INCORPORATED AREAS

PANEL 38 OF 40

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FLOOD COUNTY	990099	0038	D
FLOODVILLE, TOWN OF	990098	0038	D

–NOTE–

THIS MAP INCORPORATES APPROXIMATE BOUNDARIES OF COASTAL BARRIER RESOURCES SYSTEM UNITS AND/OR OTHERWISE PROTECTED AREAS ESTABLISHED UNDER THE COASTAL BARRIER IMPROVEMENT ACT OF 1990 (PL 101-591).

Notice to User: The MAP NUMBER shown below should be used when placing map orders; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER
99009C0038 D

EFFECTIVE DATE:
AUGUST 19, 1998

Federal Emergency Management Agency

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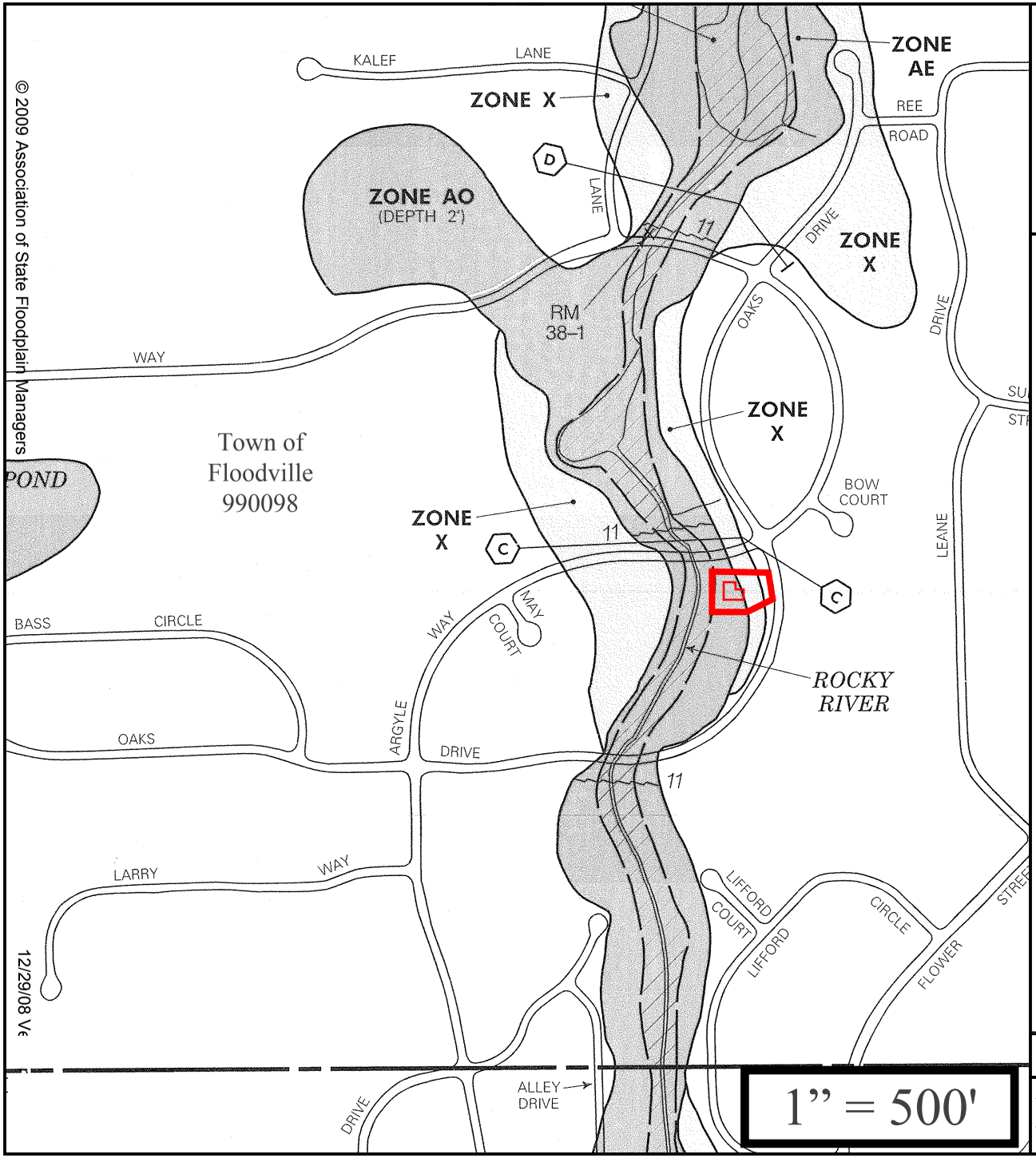

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12/29/08 Ve

APPROXIMATE SCALE

500 0 500

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

FLOOD COUNTY,
USA
AND INCORPORATED AREAS

PANEL 38 OF 40

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FLOOD COUNTY	990099	0038	D
FLOODVILLE, TOWN OF	990098	0038	D

–NOTE–

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99009C0038 D

EFFECTIVE DATE:
AUGUST 19, 1998

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

10th TAB

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Mapping Exercise –

Answer Key

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Mapping Exercise – Answers

Answers:

BFEs

Property A = 744.0 feet BFE (Floodway Data Table)
Property B = 740.9 feet BFE (Flood Profile)
Property C = 705.5 feet BFE (Summary of Stillwater Elevations Table)

Instructions:
In this activity, you will need to determine the Base Flood Elevation (BFE) to within a tenth (0.10) of a foot for Properties A, B, and C on the map.

Use the Flood Insurance Rate Map (**FIRM**) *and* the Flood Insurance Study (**FIS**) provided to accurately determine the property's BFE.

All BFEs shown on the FIRM are rounded. For example, a BFE of 100.6' or 101.4' are both displayed on the FIRM as BFE 101'. ***Do not use the FIRM alone to determine BFE.***

1. First locate **Property A** on the FIRM.
   - ✓ Determine the name of the stream or watercourse affecting the property.
   - ✓ Notice the BFE elevations and the nearest Cross Sections to the site.
   - ✓ Using the map and the Flood Insurance Study, locate the stream profile for the site. You should be able to locate your site on the profile in relation to the Cross Sections and BFE data provided on the FIRM.

   Find Property A's most upstream limit.
   - ✓ To determine which direction is "upstream", refer to the stream profile. You should be able to see the slope of the channel bottom which will help you indicate the direction of flow. Generally, the higher the channel bottom elevations are upstream, and elevations decrease as you move downstream.
   - ✓ Similarly, you can determine the direction of flow by looking at the BFEs on the FIRM. The higher BFEs will usually indicate the upstream reaches of the stream or river.
   - ✓ The BFE is represented on the FIRM as a squiggly line that crosses the stream with a corresponding number. Remember these numbers have been rounded to the nearest whole foot.

   Now locate a Cross Section on the FIRM. ***Cross Sections are indicated perpendicular to the stream center line and are located at various places along the stream.*** The location of Cross Section(s) is made by the engineer who conducts the flood study and will help define the flood zones and factors that affect mapping the SFHA. A Cross Section label will have one or two capital letters. Note: Knowing that the most downstream Cross Section is labeled with the beginning of the alphabet can help you determine the direction of flow and whether a site is upstream or downstream. As Cross Sections are identified on the map heading upstream, the Cross Section labels will progress through the alphabet.

2. **Locate Cross Section AI on the FIRM.**

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3. Using the FIRM and FIS Floodway Data Table, look at the "Regulatory" column. ***The Regulatory column provides the BFE*** at each Cross Section. (Unlike the FIRM, the BFEs in the Table are not rounded and are accurate within a tenth of a foot.) Find Cross Section AI and determine the Regulatory BFE. You should find that the BFE for Cross Section AI is 744.3'. Note that the BFE on the FIRM near Cross Section AI reads 744' because it has been rounded to the nearest whole foot. (You may want to write "BFE" next to the "Regulatory" column label as a reminder.)

4. Use a property's most upstream boundary when determining the BFE. If a property boundary is ***on or touching*** the nearest Cross Section line, use the FIS Floodway Data Table to determine the most accurate BFE to the nearest tenth of a foot. **This is Property A's BFE since the building's most upstream boundary is touching Cross Section AI = 744.0 feet BFE.**

5. For properties **(Property B)** located ***between*** Cross Sections on the FIRM, you need to determine the property's upstream and downstream limits relative to the stream profile.
   - ✓ Draw a perpendicular line from the most upstream point of the property to the stream center line. Do the same for the downstream property limit.
   - ✓ ***The stream center line is the line drawn down the middle of the stream in the cross hatched section of the FIRM.***
   - ✓ ***Note: Remember that Cross Sections and BFEs are depicted on the FIRM with symbols that are perpendicular to the stream centerline.***
   - ✓ Draw a dot where your drawn line and the stream center lines intersect.

6. Using the FIRM scale, measure (in feet) the distance from your dot (on the stream centerline) to the nearest Cross Section. Write this distance down in feet on your scratch paper. Remember to measure distance along the stream center line (which is probably curved), not as a straight line between the dot and the nearest Cross Section.

7. The FIRM Scale and the Flood Profile increments for distance (shown on the horizontal axis of the profile) may differ. For example, the flood profile may measure distance in miles, while the FIRM uses a scale of 1" equals 1000'. Be sure you are accurately assessing measurements to get the correct BFE for a property.

8. Using the Flood Profile, locate the property relative to the nearest Cross Sections. Make sure that you have many any conversions for scale and have located your property correctly upstream or downstream from the nearest Cross Section.

9. Find the Legend on the Flood Profile. To determine the BFE you will need to find the elevation for the 100-year (1% annual chance) flood. In a typical Flood Insurance Study (FIS) there may also be profile data for the 10-year, 50-year, and 500-year floods.

   You should now be able to locate Property A in relation to the nearest Cross Section(s) and determine the BFE using the stream profile. Locate the nearest Cross Section on the profile and using your measurement from no. 6 above, place a dot on the 100-year flood profile line. You have now referenced the property to the Flood Profile. The vertical axis of the Profile contains the elevation information expressed in feet.

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10. **To determine the BFE to the nearest tenth of a foot, draw a horizontal line from the dot intersecting the 100-year flood profile line to the left vertical axis of the Profile. Use the dot to determine the BFE within a 10th of a foot. This is the BFE for Property B = 740.9 feet BFE.** Be careful to check the increments of the grid behind the profile. Each square may represent 1' or some other increment.

11. Write your BFE measurement for the Property on the FIRM next to the property.

12. NOTE: Properties **(Property C)** located in stillwater (ponds, lakes, storage basins) have a different method for determining BFE. You will need to read / use the FIS to determine BFEs in stillwater locations. **Look at the 1% Annual Flood column on the Summary of Stillwater Elevations Table for Pond 1 in the Village of Burr Ridge. This is the BFE for Property C = 705.5 feet BFE.**

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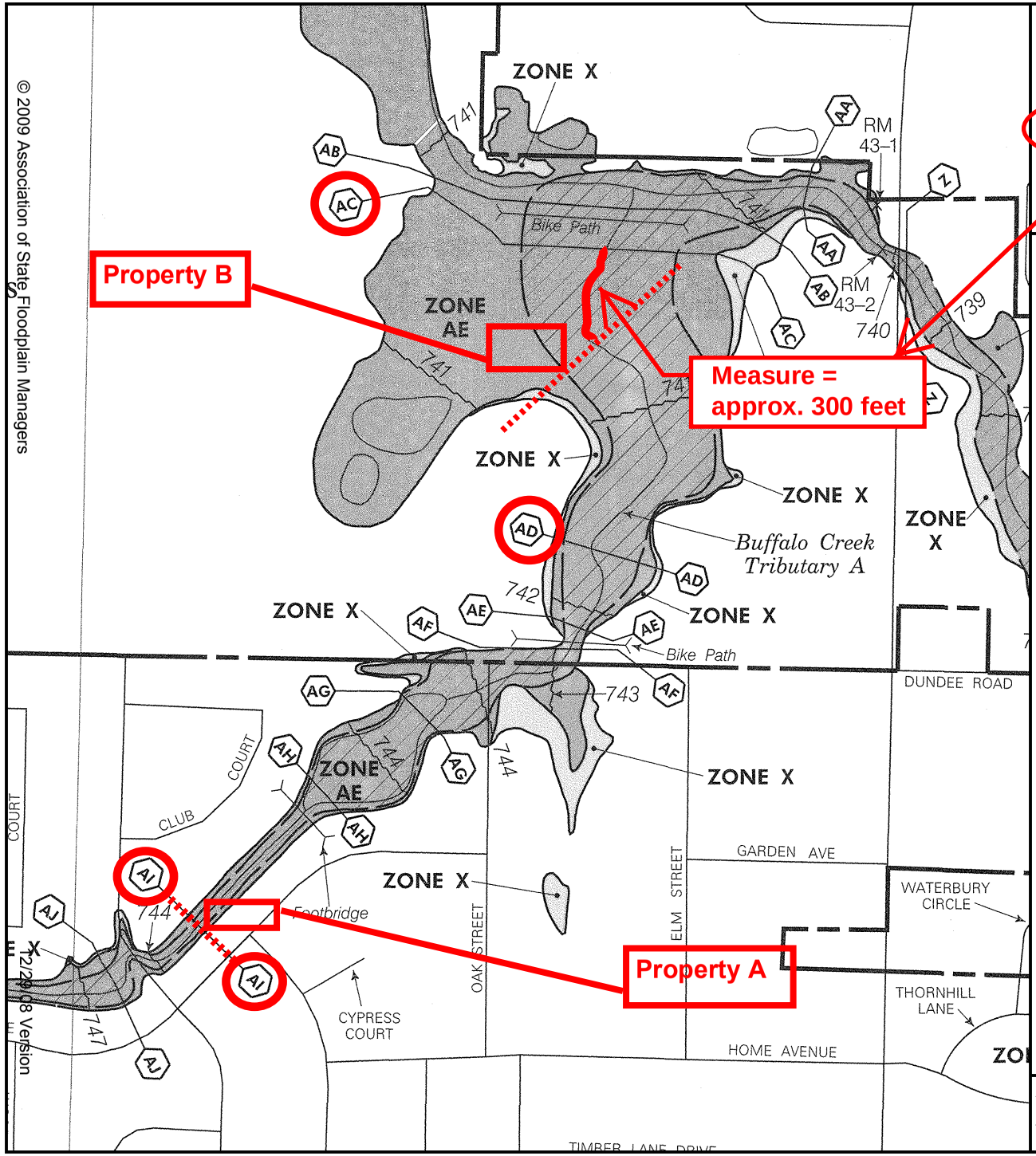

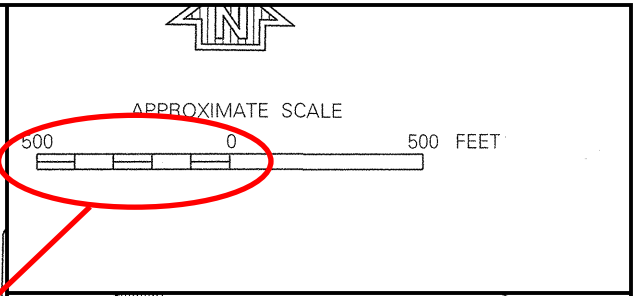

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

COOK COUNTY,
ILLINOIS
AND INCORPORATED AREAS

PANEL 43 OF 832

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COOK COUNTY	170054	0043	F
PALATINE, VILLAGE OF	175170	0043	F

Notice to User: The MAP NUMBER shown below should be used when placing map orders; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER
17031C0043 F

EFFECTIVE DATE:
NOVEMBER 6, 2000

Federal Emergency Management Agency

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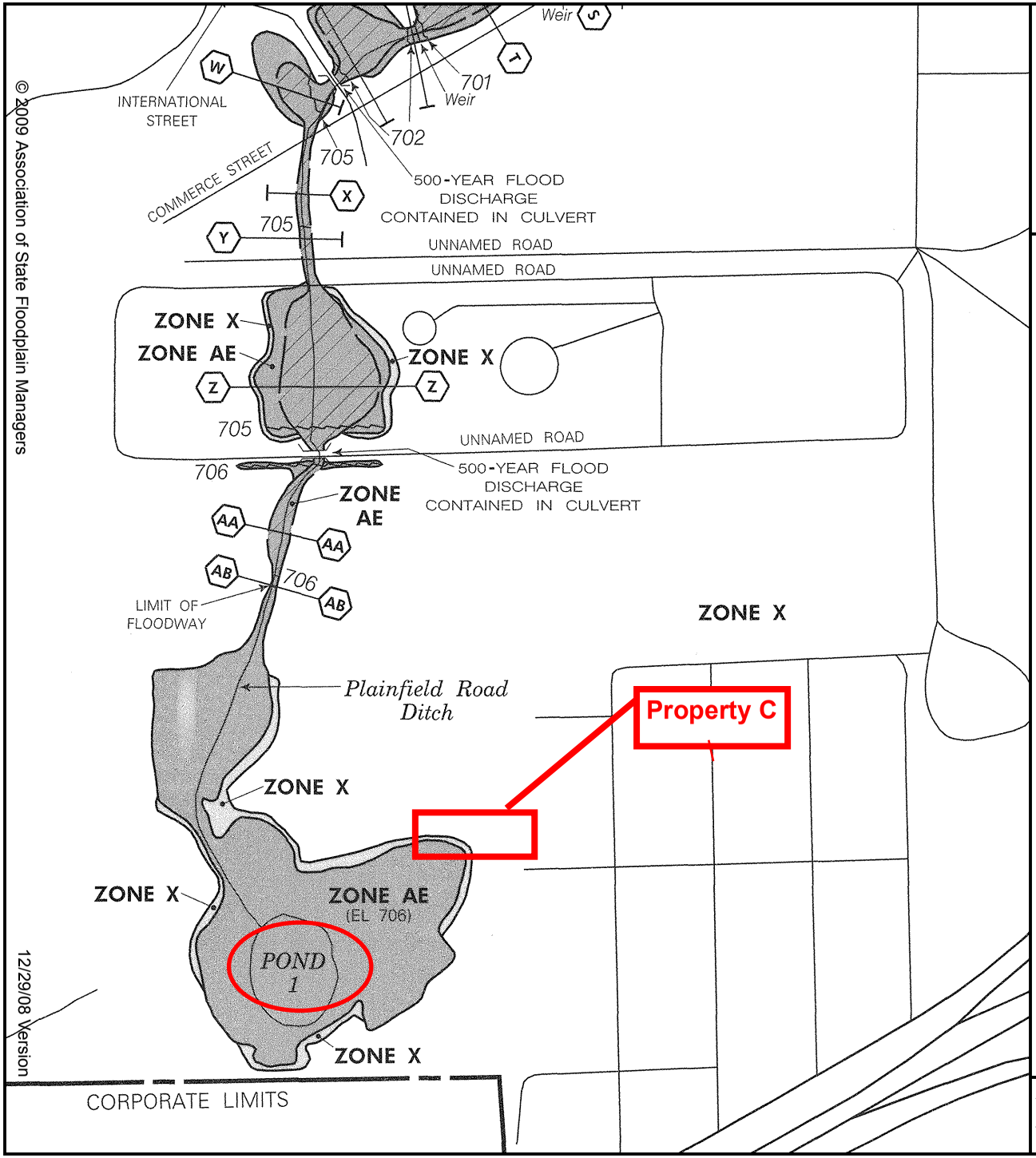

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APPROXIMATE SCALE

500 0 500 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

COOK COUNTY, ILLINOIS AND INCORPORATED AREAS

PANEL 468 OF 832

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BURR RIDGE, VILLAGE OF	170071	0468	F
COOK COUNTY	170054	0468	F
INDIAN HEAD PARK, VILLAGE OF	170110	0468	F

Notice to User: The MAP NUMBER shown below should be used when placing map orders; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER
17031C0468 F

EFFECTIVE DATE:
NOVEMBER 6, 2000

Federal Emergency Management Agency

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FLOOD INSURANCE STUDY

COOK COUNTY, ILLINOIS
AND INCORPORATED AREAS

Volume 1 of 5

COMMUNITY NAME	COMMUNITY NUMBER
ALSIP, VILLAGE OF	170055
ARLINGTON HEIGHTS, VILLAGE OF	170056
BARRINGTON, VILLAGE OF	170057
BARRINGTON HILLS, VILLAGE OF	170058
BARTLETT, VILLAGE OF	170059
BEDFORD PARK, VILLAGE OF	171007
BELLWOOD, VILLAGE OF	170061
BENSENVILLE, VILLAGE OF	170200
* BERKELEY, VILLAGE OF	171039
* BERWYN, CITY OF	171036
BLUE ISLAND, CITY OF	170064
BRIDGEVIEW, VILLAGE OF	170065
BROADVIEW, VILLAGE OF	170067
BROOKFIELD, VILLAGE OF	170066
BUFFALO GROVE, VILLAGE OF	170068
* BURBANK, CITY OF	170069
BURNHAM, VILLAGE OF	170070
BURR RIDGE, VILLAGE OF	170071
CALUMET CITY, CITY OF	170072
CALUMET PARK, VILLAGE OF	170073
CHICAGO CITY OF	170074
CHICAGO HEIGHTS, VILLAGE OF	170075
CHICAGO RIDGE, VILLAGE OF	170076
* CICERO, TOWN OF	170077
COOK COUNTY (UNINCORPORATED AREAS)	170054
COUNTRY CLUB HILLS, CITY OF	170078
COUNTRYSIDE, CITY OF	170079
CRESTWOOD, VILLAGE OF	170080
* DEER PARK, VILLAGE OF	171028
DEERFIELD, VILLAGE OF	170361
DES PLAINES, CITY OF	170081
DIXMOOR, VILLAGE OF	170082
DOLTON, VILLAGE OF	170083
* EAST DUNDEE, VILLAGE OF	170323
EAST HAZEL CREST, VILLAGE OF	170085
ELGIN, CITY OF	170087
ELK GROVE VILLAGE, VILLAGE OF	170088
* ELMHURST, CITY OF	170205
ELMWOOD PARK, VILLAGE OF	170089
EVANSTON, CITY OF	170090
* EVERGREEN PARK, VILLAGE OF	170733
FLOSSMOOR, VILLAGE OF	170091
FORD HEIGHTS, VILLAGE OF	170084
FOREST PARK, VILLAGE OF	170092
FOREST VIEW, VILLAGE OF	170093
* FRANKFORT, VILLAGE OF	170701
FRANKLIN PARK, VILLAGE OF	170094
GLENCOE, VILLAGE OF	170095
GLENVIEW, VILLAGE OF	170096
GLENWOOD, VILLAGE OF	170097
GOLF, VILLAGE OF	170098
HANOVER PARK, VILLAGE OF	170099
HARVEY, CITY OF	170100
* HARWOOD HEIGHTS, VILLAGE OF	170101
HAZEL CREST, VILLAGE OF	170102
HICKORY HILLS, CITY OF	170103
HILLSIDE, VILLAGE OF	170104
HINSDALE, VILLAGE OF	170105
HODGKINS, VILLAGE OF	170106
HOFFMAN ESTATES, VILLAGE OF	170107
* HOMETOWN, CITY OF	171040
HOMEWOOD, VILLAGE OF	170109
INDIAN HEAD PARK, VILLAGE OF	170110
INVERNESS, VILLAGE OF	170111
JUSTICE, VILLAGE OF	170112
KENILWORTH, VILLAGE OF	170113
LA GRANGE, VILLAGE OF	170114
LA GRANGE PARK, VILLAGE OF	170115
LANSING, VILLAGE OF	170116
LEMONT, VILLAGE OF	170117
LINCOLNWOOD, VILLAGE OF	171001
LYNWOOD, VILLAGE OF	170119
LYONS, VILLAGE OF	170120
MARKHAM, CITY OF	175169
MATTESON, VILLAGE OF	170123
MAYWOOD, VILLAGE OF	170124
MCCOOK, VILLAGE OF	170121
MELROSE PARK, VILLAGE OF	170125
MERRIONETTE PARK, VILLAGE OF	170126
MIDLOTHIAN, VILLAGE OF	170127
MORTON GROVE, VILLAGE OF	170128
MOUNT PROSPECT, VILLAGE OF	170129
NILES, VILLAGE OF	170130
* NORRIDGE, VILLAGE OF	170131
NORTH RIVERSIDE, VILLAGE OF	170135
NORTHBROOK, VILLAG EOF	170132
NORTHFIELD, VILLAGE OF	170133
NORTHLAKE, CITY OF	170134
* OAKBROOK, VILLAGE OF	170214
OAK FOREST, CITY OF	170136
OAK LAWN, VILLAGE OF	170137
* OAK PARK, VILLAGE OF	171037
OLYMPIA FIELDS, VILLAGE OF	170139
ORLAND HILLS, VILLAGE OF	170172
ORLAND PARK, VILLAGE OF	170140
PALATINE, VILLAGE OF	175170
PALOS HEIGHTS, CITY OF	170142
PALOS HILLS, CITY OF	170143
PALOS PARK, VILLAGE OF	170144
PARK FOREST, VILLAGE OF	170145
PARK RIDGE, CITY OF	170146
* PHOENIX, CITY OF	170147
POSEN, VILLAGE OF	170148
PROSPECT HEIGHTS, CITY OF	170919
RICHTON PARK, VILLAGE OF	170149
RIVER FOREST, VILLAGE OF	170151
RIVER GROVE, VILLAGE OF	170152
RIVERDALE, VILLAGE OF	170150
RIVERSIDE VILLAGE OF	170153
ROBBINS, VILLAGE OF	170154
ROLLING MEADOWS, CITY OF	170155
* ROSELLE, VILLAGE OF	170216
ROSEMONT, VILLAGE OF	170156
SAUK VILLAGE, VILLAGE OF	170157
SCHAUMBURG, VILLAGE OF	170158
SCHILLER PARK, VILLAGE OF	170159
SKOKIE, VILLAGE OF	171000
SOUTH BARRINGTON, VILLAGE OF	170161
SOUTH CHICAGO HEIGHTS, VILLAGE OF	170162
SOUTH HOLLAND, VILLAGE OF	170163
STEGER, VILLAGE OF	170713
STICKNEY, VILLAGE OF	170164
STONE PARK, VILLAGE OF	170165
STREAMWOOD, VILLAGE OF	170166
SUMMIT, VILLAGE OF	170167
THORNTON, VILLAGE OF	170168
TINLEY PARK, VILLAGE OF	170169
UNIVERSITY PARK, VILLAGE OF	170708
WESTCHESTER, VILLAGE OF	170170
WESTERN SPRINGS, VILLAGE OF	170171
WHEELING, VILLAGE OF	170173
WILLOW SPRINGS, VILLAGE OF	170174
WILMETTE, VILLAGE OF	170175
WINNETKA, VILLAGE OF	170176
WORTH, VILLAGE OF	170177

* NO SPECIAL FLOOD HAZARD AREAS IDENTIFIED WITHIN COOK COUNTY

REVISED: AUGUST 19, 2008

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
17031CV001G

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12/29/08 Version

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE-FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
Buffalo CreekTributary A (Cont'd)								
O	12,370[4]	161	137	2.9	720.1	720.1	720.2	0.1
P	12,420[4]	200	540	0.7	720.2	720.2	720.2	0.0
Q	12,760[4]	290	332	1.2	720.8	720.8	720.8	0.0
R	12,850[4]	279	450	0.9	721.3	721.3	721.4	0.1
S	13,770[4]	209	239	1.3	722.7	722.7	722.8	0.1
T	13,900[4]	200	307	1.0	722.9	722.9	722.9	0.0
U	14,400[4]	44	82	3.9	724.5	724.5	724.6	0.1
V	14,590[4]	30	53	6.0	725.6	725.6	725.6	0.0
W	14,700[4]	20	79	3.7	726.7	726.7	726.7	0.0
X	15,110[4]	38	82	3.6	729.8	729.8	729.9	0.1
Y	15,210[4]	90	283	1.0	731.3	731.3	731.3	0.0
Z	18,050[4]	270	195	1.4	739.7	739.7	739.7	0.0
AA	18,552[4]	103	168	2.8	740.5	740.5	740.5	0.0
AB	19,195[4]	750	1,035	0.4	740.7	740.7	740.7	0.0
AC	19,350[4]	508	1,181	0.2	740.7	740.7	740.7	0.0
AD	20,559[4]	266	634	0.4	741.1	741.1	741.1	0.0
AE	20,854[4]	80	120	2.0	741.9	741.9	742.0	0.1
AF	20,931[4]	106	180	1.6	742.2	742.2	742.2	0.0
AG	21,544[4]	165	1,044	0.1	743.8	743.8	743.9	0.1
AH	21,949[4]	135	945	0.2	743.8	743.8	743.9	0.1
AI	22,548[4]	41	201	1.1	744.0	744.0	744.0	0.0

[4] Feet above mouth

Property A

TABLE 19

FEDERAL EMERGENCY MANAGEMENT AGENCY

COOK COUNTY, IL
AND INCORPORATED AREAS

FLOODWAY DATA

BUFFALO CREEK TRIBUTARY A

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The stillwater elevations have been determined for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods for the flooding sources studied by detailed methods and are summarized in Table 15, "Summary of Stillwater Elevations."

Table 15 – Summary of Stillwater Elevations

Flooding Source and Location	*Elevation (feet NAVD 88)*			
	10-Percent-Annual-Chance	*2-Percent-Annual-Chance*	*1-Percent-Annual-Chance*	*0.2-Percent-Annual-Chance*
Lake Michigan[1]	**	**	584.7	**
City of Chicago				
Willow Higgins Flood Control Reservoir	**	**	641.9	**
City of Des Plaines				
Lake Mary Ann	**	**	634.4	**
Dude Ranch Pond	**	**	631.6	**
Bay Colony Pond	**	**	632.7	**
City of Hickory Hills				
Hickory Hills Reservoir	**	**	623.4	**
Area bounded by 95th Street to the South, 93rd Street to the North, and Kean Avenue to the west, along Belly Deep Slough	**	**	697.8	**
Cook County				
Unincorporated Areas				
Detention Basin, located along an Unnamed tributary to Long Run, just Upstream of Will-Cook Road	**	**	686.0	**
Touhy Avenue Reservoir (East Reservoir)	**	**	649.8	**
MWRD Reservoir (West Touhy Avenue FCR)	**	**	653.0	**
Village of Bensenville				
Ponding Area No. 1	653.2	654.4	655.0	**
Village of Burr Ridge				
Pond 1	705.2	705.4	705.5	705.7

** Data not available

[1] Stillwater elevation does not include tide or wave runnup.

Property C

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FLOOD INSURANCE STUDY

COOK COUNTY, ILLINOIS
AND INCORPORATED AREAS

Volume 2 of 5

COMMUNITY NAME	COMMUNITY NUMBER
ALSIP, VILLAGE OF	170055
ARLINGTON HEIGHTS, VILLAGE OF	170056
BARRINGTON, VILLAGE OF	170057
BARRINGTON HILLS, VILLAGE OF	170058
BARTLETT, VILLAGE OF	170059
BEDFORD PARK, VILLAGE OF	171007
BELLWOOD, VILLAGE OF	170061
BENSENVILLE, VILLAGE OF	170200
* BERKELEY, VILLAGE OF	171039
* BERWYN, CITY OF	171036
BLUE ISLAND, CITY OF	170064
BRIDGEVIEW, VILLAGE OF	170065
BROADVIEW, VILLAGE OF	170067
BROOKFIELD, VILLAGE OF	170066
BUFFALO GROVE, VILLAGE OF	170068
* BURBANK, CITY OF	170069
BURNHAM, VILLAGE OF	170070
BURR RIDGE, VILLAGE OF	170071
CALUMET CITY, CITY OF	170072
CALUMET PARK, VILLAGE OF	170073
CHICAGO CITY OF	170074
CHICAGO HEIGHTS, VILLAGE OF	170075
CHICAGO RIDGE, VILLAGE OF	170076
* CICERO, TOWN OF	170077
COOK COUNTY (UNINCORPORATED AREAS)	170054
COUNTRY CLUB HILLS, CITY OF	170078
COUNTRYSIDE, CITY OF	170079
CRESTWOOD, VILLAGE OF	170080
* DEER PARK, VILLAGE OF	171028
DEERFIELD, VILLAGE OF	170361
DES PLAINES, CITY OF	170081
DIXMOOR, VILLAGE OF	170082
DOLTON, VILLAGE OF	170083
* EAST DUNDEE, VILLAGE OF	170323
EAST HAZEL CREST, VILLAGE OF	170085
ELGIN, CITY OF	170087
ELK GROVE VILLAGE, VILLAGE OF	170088
* ELMHURST, CITY OF	170205
ELMWOOD PARK, VILLAGE OF	170089
EVANSTON, CITY OF	170090
* EVERGREEN PARK, VILLAGE OF	170733
FLOSSMOOR, VILLAGE OF	170091
FORD HEIGHTS, VILLAGE OF	170084
FOREST PARK, VILLAGE OF	170092
FOREST VIEW, VILLAGE OF	170093
* FRANKFORT, VILLAGE OF	170701
FRANKLIN PARK, VILLAGE OF	170094
GLENCOE, VILLAGE OF	170095
GLENVIEW, VILLAGE OF	170096
GLENWOOD, VILLAGE OF	170097
GOLF, VILLAGE OF	170098
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HINSDALE, VILLAGE OF	170105
HODGKINS, VILLAGE OF	170106
HOFFMAN ESTATES, VILLAGE OF	170107
* HOMETOWN, CITY OF	171040
HOMEWOOD, VILLAGE OF	170109
INDIAN HEAD PARK, VILLAGE OF	170110
INVERNESS, VILLAGE OF	170111
JUSTICE, VILLAGE OF	170112
KENILWORTH, VILLAGE OF	170113
LA GRANGE, VILLAGE OF	170114
LA GRANGE PARK, VILLAGE OF	170115
LANSING, VILLAGE OF	170116
LEMONT, VILLAGE OF	170117
LINCOLNWOOD, VILLAGE OF	171001
LYNWOOD, VILLAGE OF	170119
LYONS, VILLAGE OF	170120
MARKHAM, CITY OF	175169
MATTESON, VILLAGE OF	170123
MAYWOOD, VILLAGE OF	170124
MCCOOK, VILLAGE OF	170121
MELROSE PARK, VILLAGE OF	170125
MERRIONETTE PARK, VILLAGE OF	170126
MIDLOTHIAN, VILLAGE OF	170127
MORTON GROVE, VILLAGE OF	170128
MOUNT PROSPECT, VILLAGE OF	170129
NILES, VILLAGE OF	170130
* NORRIDGE, VILLAGE OF	170131
NORTH RIVERSIDE, VILLAGE OF	170135
NORTHBROOK, VILLAG EOF	170132
NORTHFIELD, VILLAGE OF	170133
NORTHLAKE, CITY OF	170134
* OAKBROOK, VILLAGE OF	170214
OAK FOREST, CITY OF	170136
OAK LAWN, VILLAGE OF	170137
* OAK PARK, VILLAGE OF	171037
OLYMPIA FIELDS, VILLAGE OF	170139
ORLAND HILLS, VILLAGE OF	170172
ORLAND PARK, VILLAGE OF	170140
PALATINE, VILLAGE OF	175170
PALOS HEIGHTS, CITY OF	170142
PALOS HILLS, CITY OF	170143
PALOS PARK, VILLAGE OF	170144
PARK FOREST, VILLAGE OF	170145
PARK RIDGE, CITY OF	170146
* PHOENIX, CITY OF	170147
POSEN, VILLAGE OF	170148
PROSPECT HEIGHTS, CITY OF	170919
RICHTON PARK, VILLAGE OF	170149
RIVER FOREST, VILLAGE OF	170151
RIVER GROVE, VILLAGE OF	170152
RIVERDALE, VILLAGE OF	170150
RIVERSIDE VILLAGE OF	170153
ROBBINS, VILLAGE OF	170154
ROLLING MEADOWS, CITY OF	170155
* ROSELLE, VILLAGE OF	170216
ROSEMONT, VILLAGE OF	170156
SAUK VILLAGE, VILLAGE OF	170157
SCHAUMBURG, VILLAGE OF	170158
SCHILLER PARK, VILLAGE OF	170159
SKOKIE, VILLAGE OF	171000
SOUTH BARRINGTON, VILLAGE OF	170161
SOUTH CHICAGO HEIGHTS, VILLAGE OF	170162
SOUTH HOLLAND, VILLAGE OF	170163
STEGER, VILLAGE OF	170713
STICKNEY, VILLAGE OF	170164
STONE PARK, VILLAGE OF	170165
STREAMWOOD, VILLAGE OF	170166
SUMMIT, VILLAGE OF	170167
THORNTON, VILLAGE OF	170168
TINLEY PARK, VILLAGE OF	170169
UNIVERSITY PARK, VILLAGE OF	170708
WESTCHESTER, VILLAGE OF	170170
WESTERN SPRINGS, VILLAGE OF	170171
WHEELING, VILLAGE OF	170173
WILLOW SPRINGS, VILLAGE OF	170174
WILMETTE, VILLAGE OF	170175
WINNETKA, VILLAGE OF	170176
WORTH, VILLAGE OF	170177

* NO SPECIAL FLOOD HAZARD AREAS IDENTIFIED WITHIN COOK COUNTY

REVISED: AUGUST 19, 2008

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
17031CV002G

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12/29/08 Version

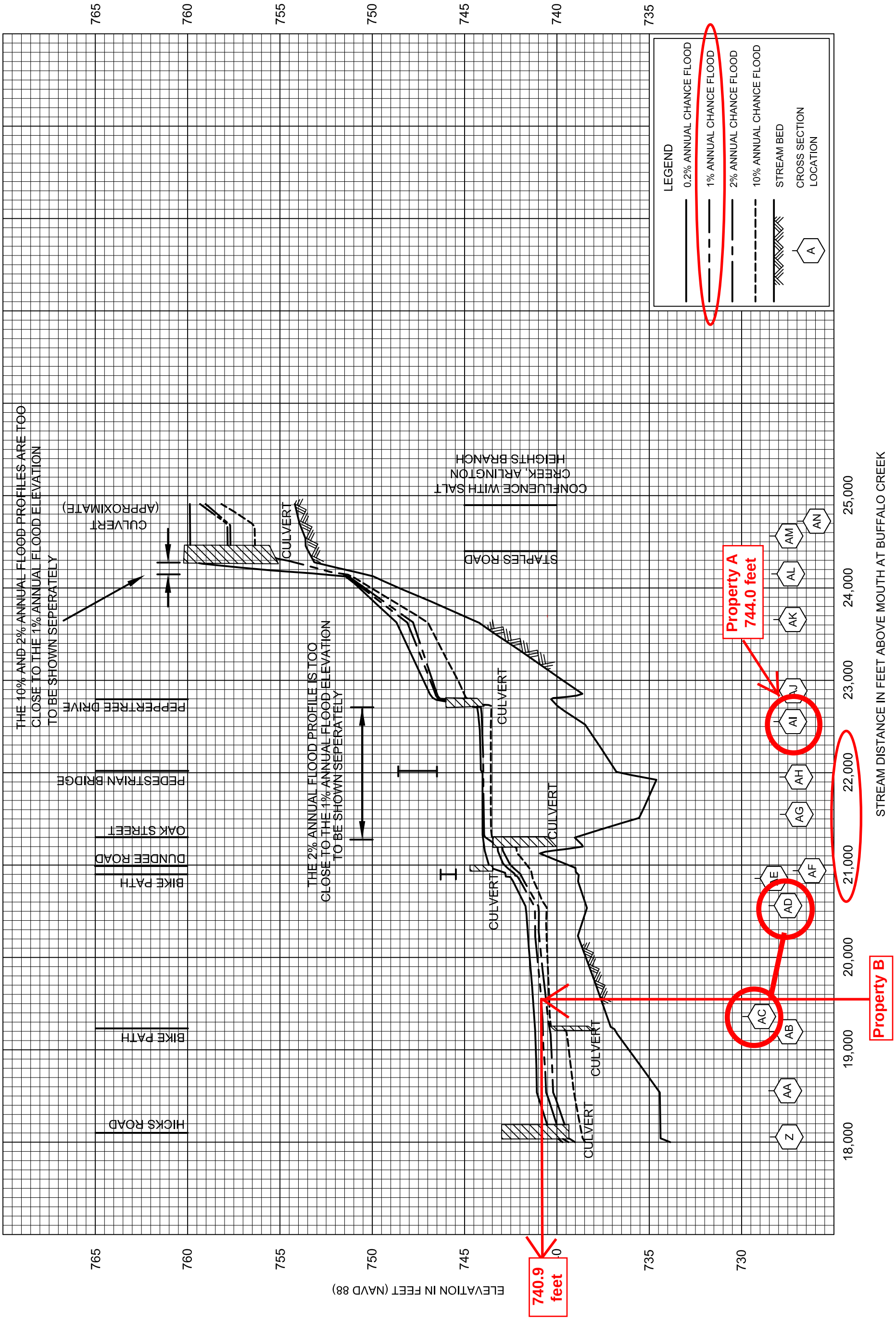
FEDERAL EMERGENCY MANAGEMENT AGENCY

COOK COUNTY, IL

AND INCORPORATED AREAS

FLOOD PROFILES

BUFFALO CREEK TRIBUTARY A



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Elevation Certificate Exercise –

Answer Key

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Elevation Certificate Exercise - Answer Key

A new, slab-on grade, residential structure was built this year in the location shown on the attached FIRM. Answer the questions below using the FIRM snapshot, panel cover, and Elevation Certificate instructions included with this exercise.

1. Which building diagram number should be used for this structure in Section A of the Elevation Certificate?

   Diagram 1

2. What is the NFIP Community Name and CID (Community Identification Number) for listing in Section B of the Elevation Certificate?

   Town of Floodville, 990098

3. What is the Map Panel Number you would list in Section B.4 of the Elevation Certificate?

   99009C0038

4. Is it important for the datum used for the elevations obtained in Section C of the Elevation Certificate to be the same as the datum used for the Base Flood Elevation in Section B.9?

   Yes

   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 Section C or in the Comments area of Section D. (EC instructions, Section C)

5. Will the homeowner be required to submit an Elevation Certificate in order to obtain a flood insurance policy?

   Yes

   Because it is a post-FIRM structure, it must have an EC to properly rate the structure for insurance—it's also located in an A Zone.

6. In what section of the Elevation Certificate should the low floor elevation for this structure be entered?
   a. **C2(a) because it is a slab-on-grade building. See Diagram 1.**
   b. C2(b)
   c. C2(c)
   d. C2(f)

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7. Once the Elevation Certificate has been completed, which of the following will be true:
    a. Flood insurance will no longer be required as long as the Elevation Certificate shows that the low floor is at or above the Base Flood Elevation (BFE).
    b. Flood insurance will no longer be required as long as the Elevation Certificate shows that the lowest adjacent grade (LAG) is at or above the Base Flood Elevation (BFE).
    c. The owner will need to submit the Elevation Certificate to his flood insurance provider for a proper rating.
    d. Two of the above.

8. To whom should the homeowner provide a copy of the Elevation Certificate after completion?
    a. The permit official to document the "as-built" lowest floor elevation.
    b. The insurance agent to rate a flood insurance policy.
    c. The NFIP state coordinator because they maintain copies for every property in the state.
    d. Two of the above.

9. If this structure were located in the AO Zone to the North of the property, would a survey be required in order to complete the Elevation Certificate?

No

Homeowner can complete Section E of the EC. This is stated in the heading for Section E on the EC, and in the EC instructions under Section C – Building Elevation Information (Survey Required).

It doesn't prohibit them from using Section C, it just allows the option to use Section E instead. Section C is not restrictive; Section E is strictly for "unnumbered" A Zones and AO Zones).

10. It is mandatory for a community participating in the Community Rating System (CRS) to maintain Elevation Certificates for all new and substantially-improved structures after the date of their entry into the CRS Program.
    a. True – See #1 under FAQ in the EC Bulletin FEMA 467-1
    b. False

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NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

FLOOD COUNTY,

USA

AND INCORPORATED AREAS

PANEL 38 OF 40

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FLOOD COUNTY	[illegible]	0038	D
FLOODVILLE, TOWN OF	990098	0038	D

–NOTE–

THIS MAP INCORPORATES APPROXIMATE BOUNDARIES OF COASTAL BARRIER RESOURCES SYSTEM UNITS AND/OR OTHERWISE PROTECTED AREAS ESTABLISHED UNDER THE COASTAL BARRIER IMPROVEMENT ACT OF 1990 (PL 101-591).

Notice to User: The MAP NUMBER shown below should be used when placing map orders; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER

99009C0038 D

EFFECTIVE DATE:

AUGUST 19, 1998

Federal Emergency Management Agency

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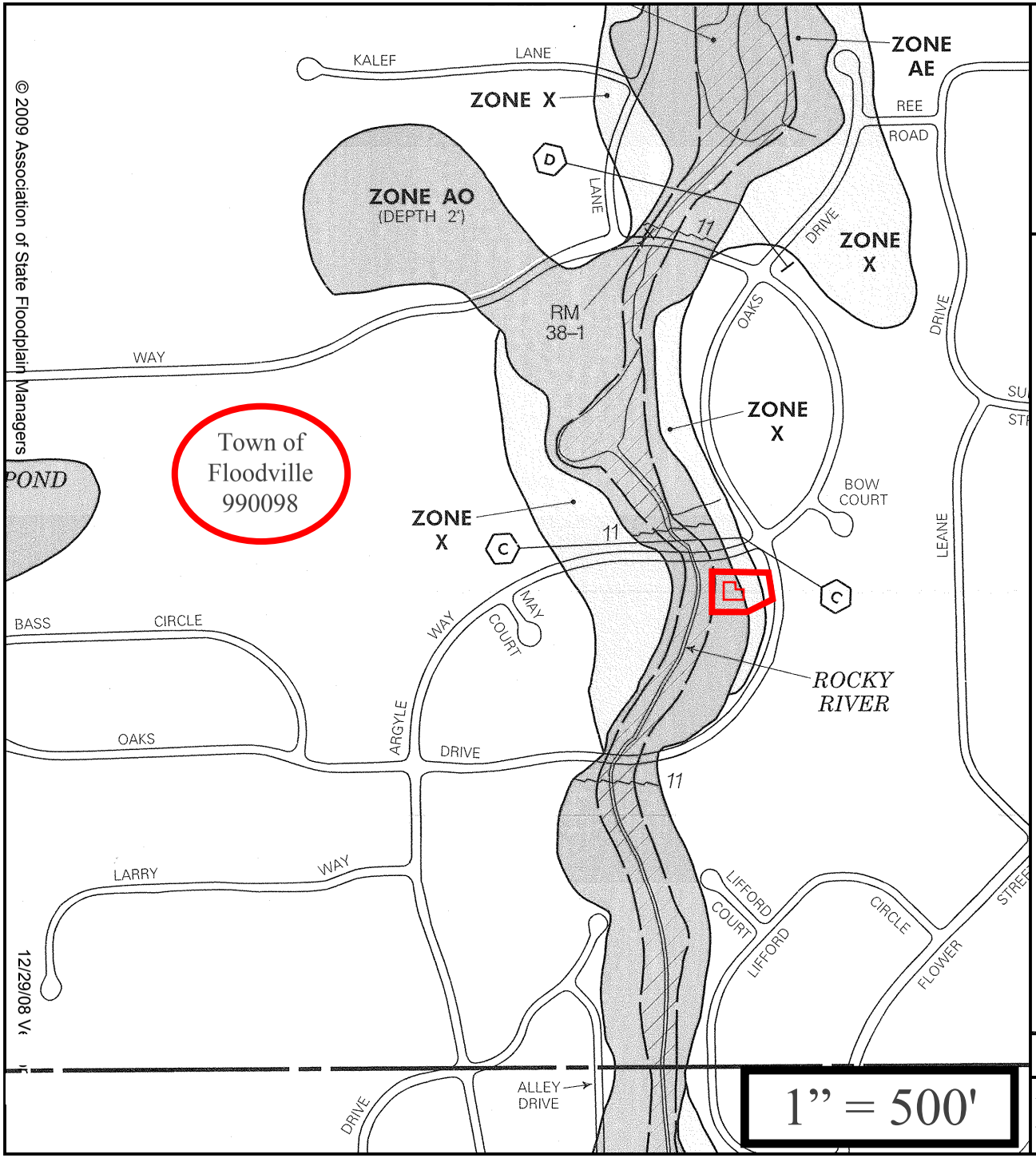

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12/29/08 V

APPROXIMATE SCALE

500 0 500

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

FLOOD COUNTY,
USA
AND INCORPORATED AREAS

PANEL 38 OF 40

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FLOOD COUNTY	990099	0038	D
FLOODVILLE, TOWN OF	990098	0038	D

–NOTE–

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MAP NUMBER
99009C0038 D

EFFECTIVE DATE:
AUGUST 19, 1998

Federal Emergency Management Agency

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