NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Introduction to the National Flood Insurance Program – 1 –Hr Training

Division of Water

Bureau of Flood Protection and Dam Safety

Floodplain Management Section

DEC Floodplain Coordinators

Central Office

Main Number: 518-402-8185

floodplain@dec.ny.gov

Kelli Higgins-Roche, CFM	(518) 408-0340
Brad Wenskoski, CFM	(518) 402-8280
David Sherman	(518) 402-8215

Western New York Flood Hub: Assists in Regions 6-9

Mary Binder, CFM (585) 226-5447

mary.binder@dec.ny.gov

DEC NFIP Regional Coordinators

REGIONAL OFFICES

Region 1: Long Island
Eric Star, Ryan Porciello
631-444-0423, 631-444-0425

Region 2: New York City
Jean Occidental
718-482-4935

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DEC NFIP Regional Coordinators

REGIONAL OFFICES

Region 3: White Plains
Berhanu Gonfa
914-428-2505 ext372

Region 4: Schenectady
Tom Blanchard, CFM
518-357-2379

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DEC NFIP Regional Coordinators

REGIONAL OFFICES

Region 5: Warrensburg

Rob Streeter
518-623-1221

Vincent Spadaro
518-623-1227

Region 6: Utica

Albert Ash
315-793-2358

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DEC NFIP Regional Coordinators

REGIONAL OFFICES

Region 7: Syracuse
Kevin Delaney
315-426-7501

Region 7: Kirkwood
Dan Fuller, Ben Girtain Plowe
607-775-2545

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DEC NFIP Regional Coordinators

REGIONAL OFFICES

Region 8: Horseheads
Brad Chaffee
607-739-0809

Region 8: Avon
Karis Manning
585-226-5445

Region 9: Buffalo
Jim Vogel
716-851-7070

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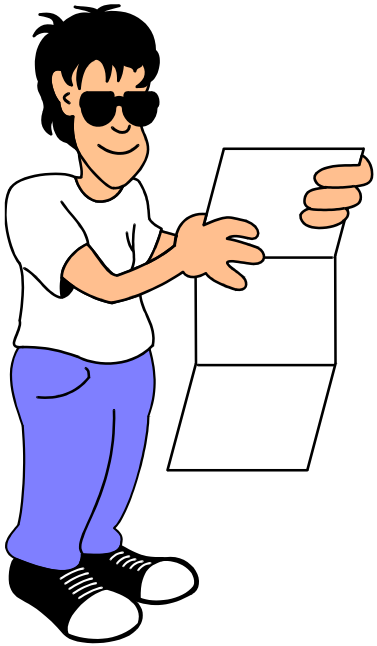
Definitions You Must Know
Topics We'll Cover:



- Special Flood Hazard Area
- Base Flood
- Floodway
- Lowest Floor
- Basement
- Development
- Substantial Improvement
- Substantial Damage

Definition of Special Flood Hazard Area

"Darkly shaded area on a Flood Hazard Boundary Map or a Flood Insurance Rate Map which identifies that area that has a 1 percent chance of being flooded in any given year. The FIRM identifies these shaded areas as flood zones A, AO, AH, A1-30, AE, A99, V, V1-30, and VE."

Definition of Base Flood

A flood that has a one-percent chance of being equaled or exceeded in any given year. It often is referred to as the "100-year" flood.

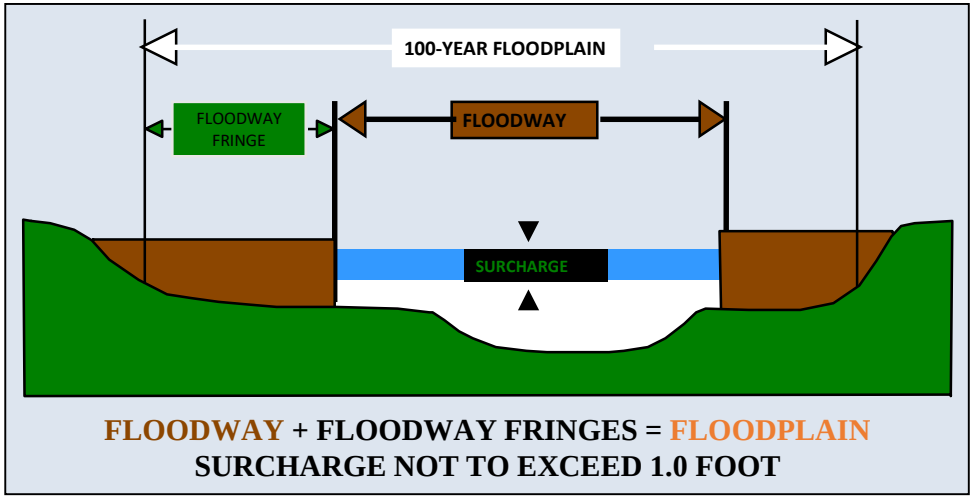
- 26% chance of occurring in a 30-yr period
- 39% chance of occurring in a 50-yr period
- 63% chance of occurring in a 100-yr period

Definition of Floodway

"...means 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 one foot."

Also referred to as the "Regulatory Floodway."

Floodway Schematic



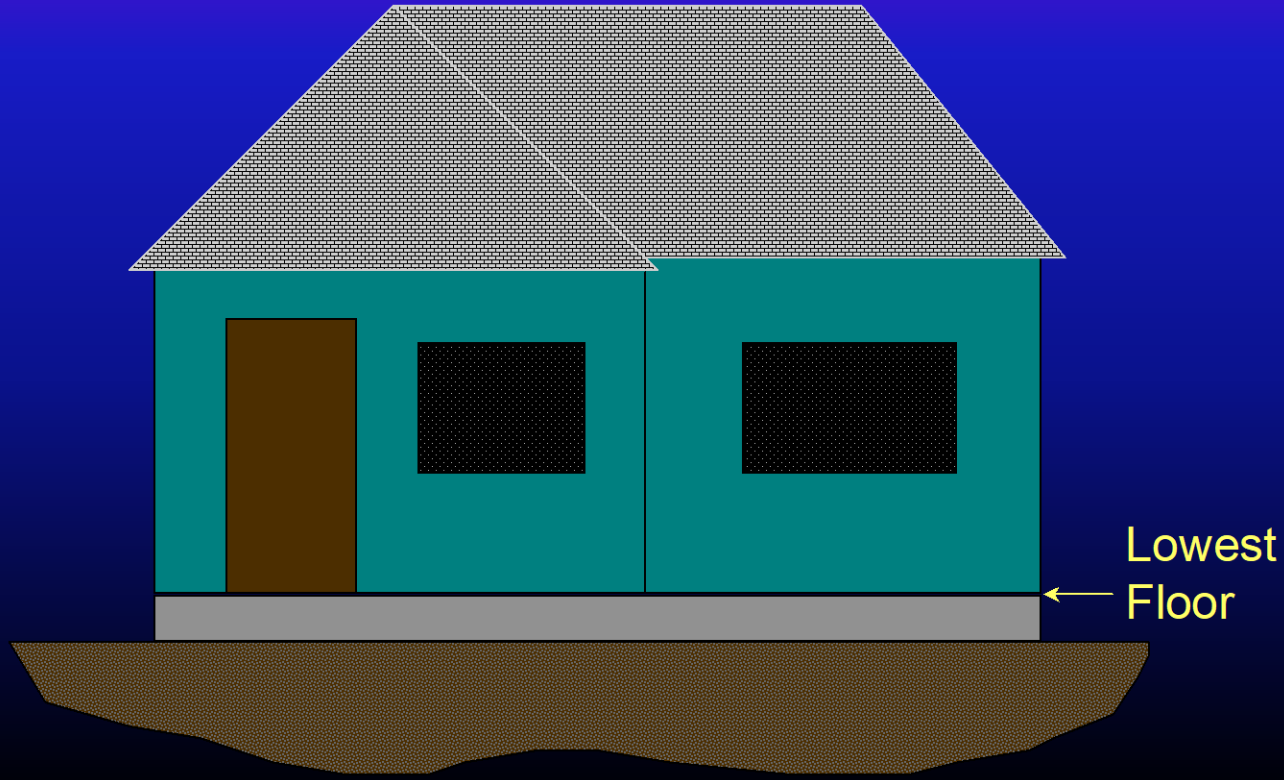
Requirements in the Floodway

- No new development, including fill, in designated floodways that would increase flood heights.
- Developer must submit a hydraulic analysis which determines no rise in flood heights.
- If there is any rise, project must be reconfigured or maps revised.
- No variances for development in floodway.

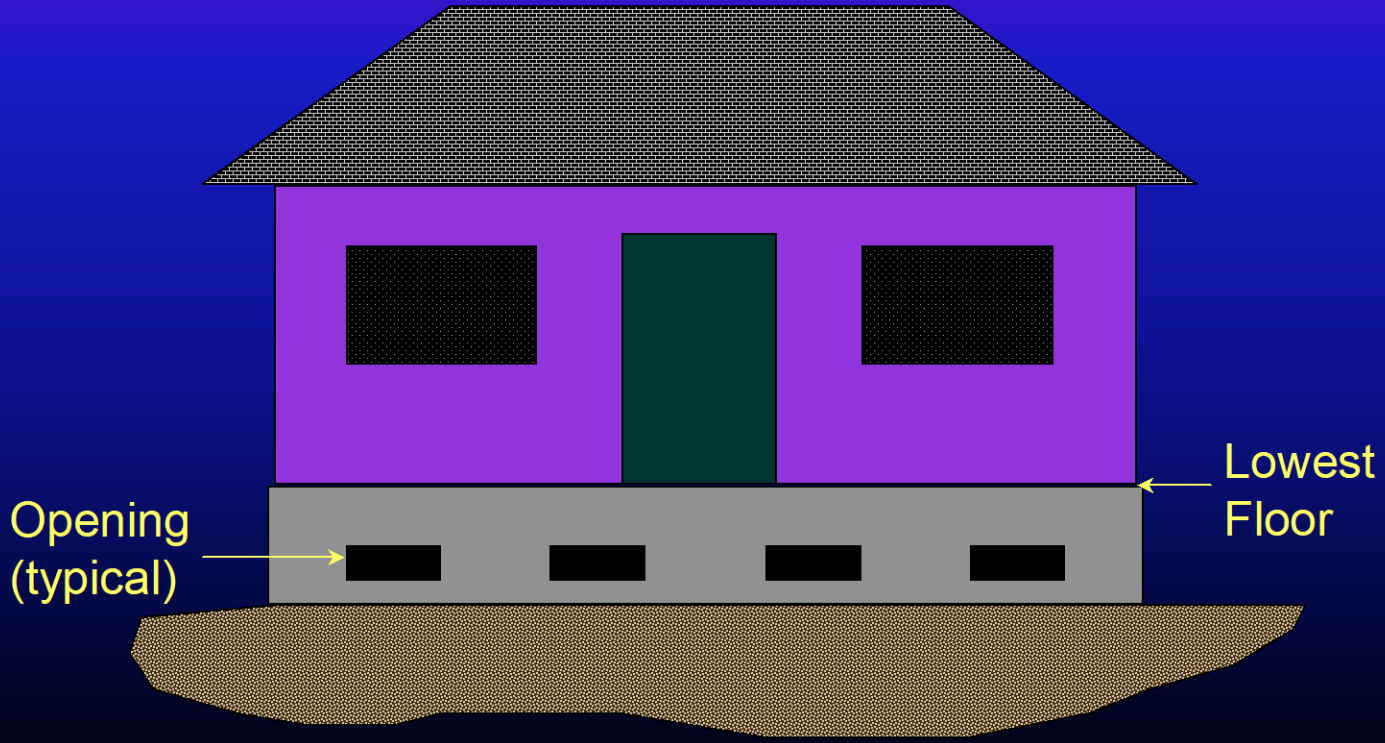
Definition of Lowest Floor

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

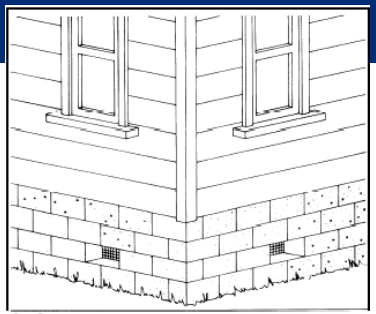
Lowest Floor Elevations
Slab Foundation



Lowest Floor Elevations
Crawl-Space Foundation



Openings in Crawl Spaces
IRC 322.2.2; ASCE 24: 2.7.2



- Min 1 inch^2 per foot^2 of Enclosed Floor Space
- Enclosed Area measured along Exterior Walls
- Openings not less than 3” in any direction
- No fewer than two openings
- Openings on at least 2 sides of each enclosed area
- If more than one enclosed area, each area must have vents
- Lowest point no higher than one foot above higher of final interior grade or floor and the finished exterior grade immediately under each opening
- Louvers, valves or screens allowed, provided the permit automatic entry and exit of floodwaters

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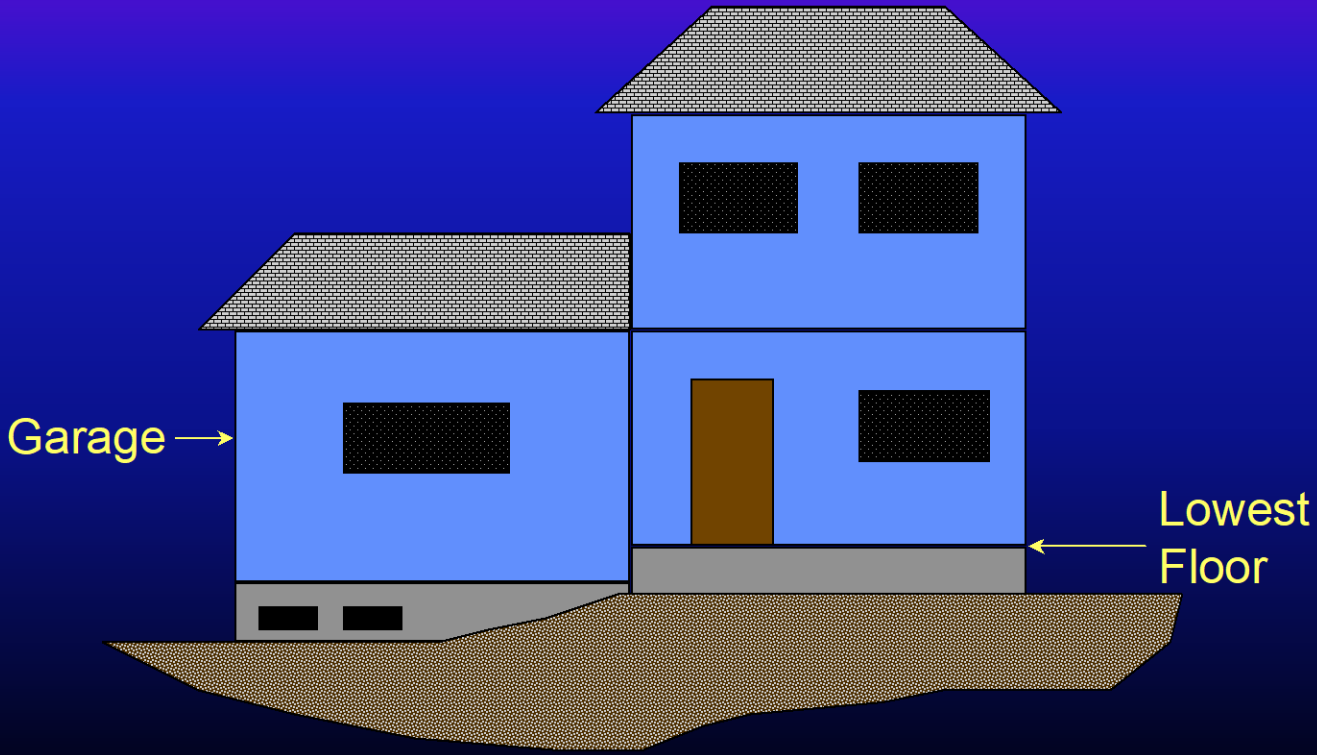
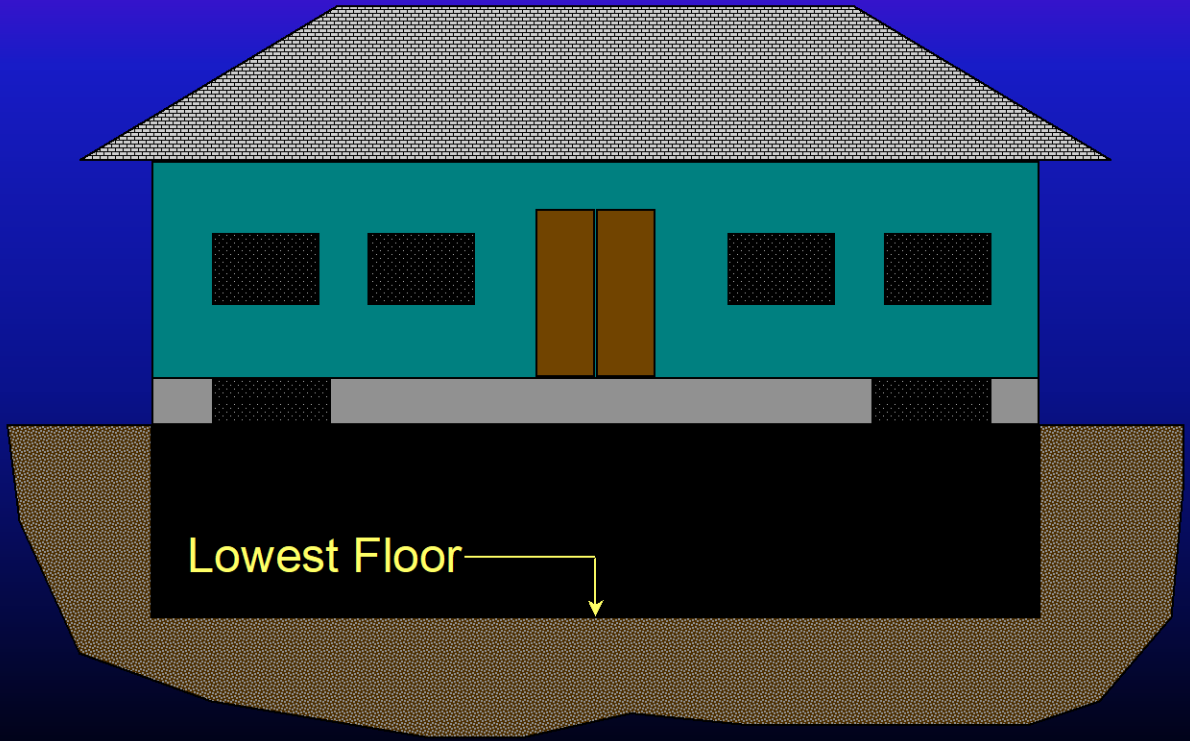
Engineered Openings

Require a statement by a registered design professional that the design will provide for equalization of hydrostatic flood forces on exterior walls as per Section 2.7.2.2 of ASCE 24

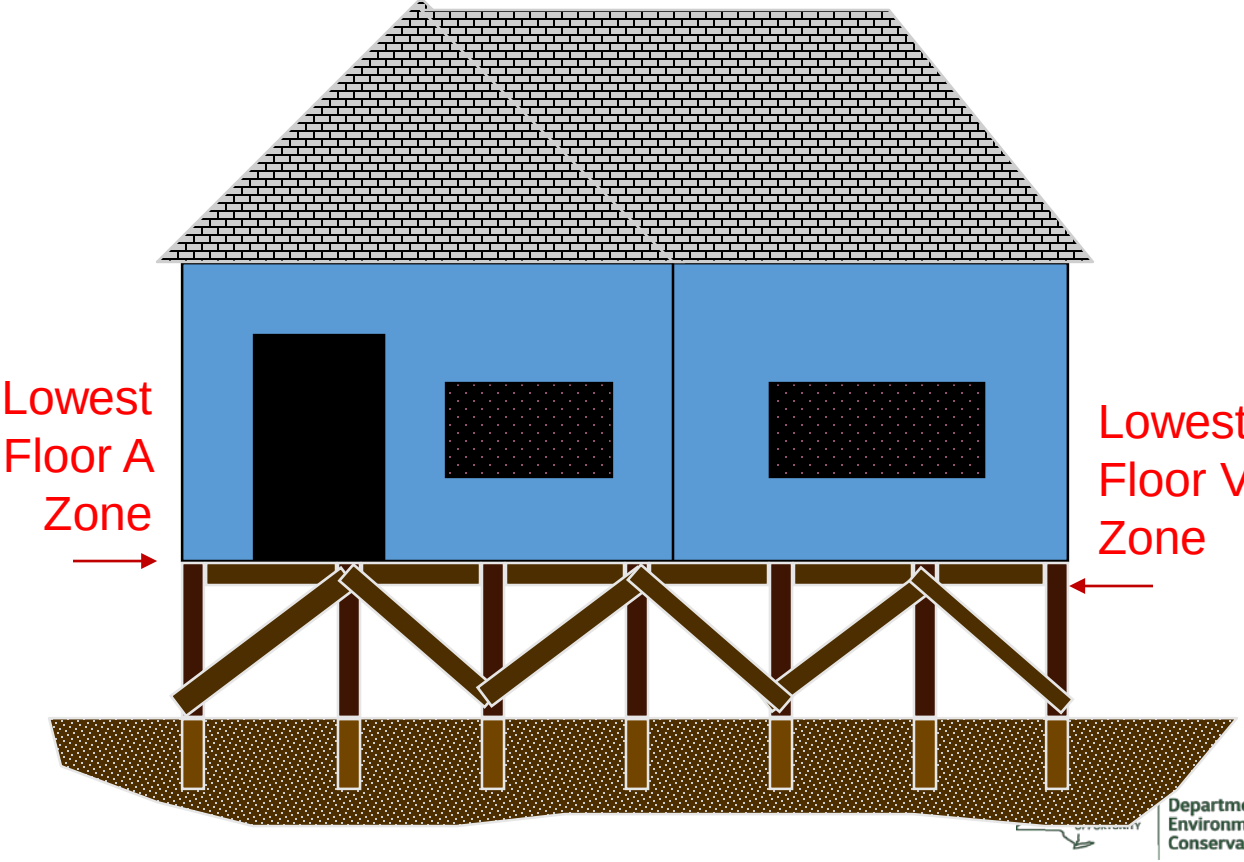
Lowest Floor Elevations
Split Level



Lowest Floor Elevations
Basement Foundation

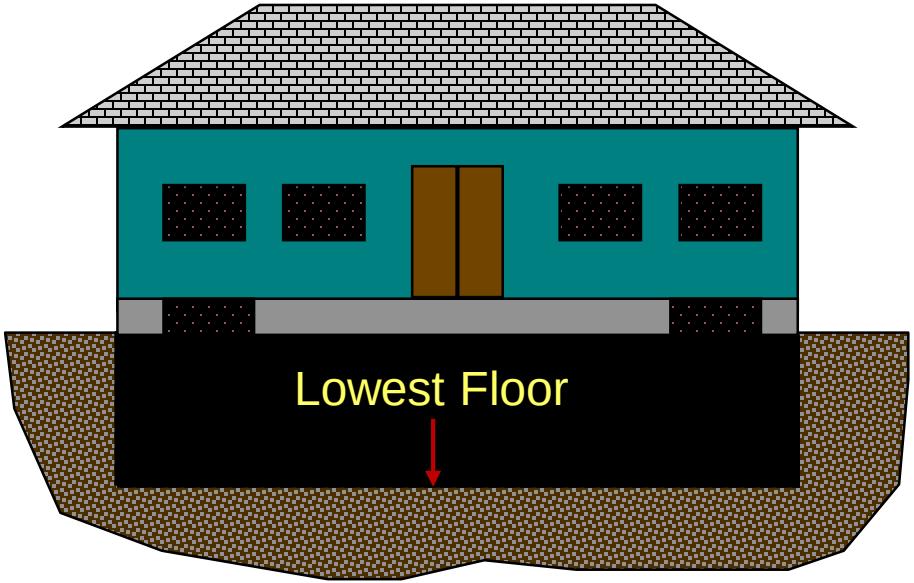


Pile Foundation



Definition of Basement

Basement or Cellar is that portion of a building having its floor subgrade (below ground level) on all sides.



Definition of Development

"...means 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 or materials."

Not Just Buildings!

Definition of Substantial Improvement

Any reconstruction, rehabilitation, addition, or other improvements of a structure, the cost of which equals or exceeds 50% of the market value of the structure before the “start of construction” of the improvement.

Definition of Substantial Improvement...

This term includes structures which have incurred “substantial damage”, regardless of the actual repair work performed.

Definition of Substantial Damage

Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50% of the market value of the structure before the damage occurred.

FEMA Substantial Damage Estimator:
http://www.fema.gov/media-library/assets/documents/18692

Substantial Improvement or Damage Does Not Include...

Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety codes which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions or...

Substantial Improvement or Damage Does Not Include...

Any alteration of an "historic structure", provided that the alteration will not preclude the structure's continued designation as an "historic structure."

Requirements For Substantial Improvement

Substantially improved structures are considered NEW CONSTRUCTION and must meet all of the minimum building standards of the NFIP.

What is the basis for determining a substantially damaged structure?

Percent Damaged =

Cost of Repair / Market Value

Even if the repairs are not made!

Who Must Get Local Floodplain Development Permits

Private Developers

Counties

Cities, Towns or Villages

School Districts

Public Improvement Districts

Established by Section 36-0107 of Environmental Conservation Law

Elevation Requirements

Requirements in A and V Zones

Elevated Foundations

Elevation Requirements for Zones AE, AH, and A1-30

All new construction and substantial improvement shall have the Lowest Floor, including basement, elevated to or above the BFE plus 2' Freeboard

The reference level for the lowest floor is measured at the top of the sub-floor

NYS Building Standards and Codes, 2016 Uniform Code Supplement:

R322.1.4.2 for residential construction;

1612.4.1 for all other construction

Elevation Requirements: Zone A- NO Base Flood Elevation Data

All new construction or substantial improvement, shall have the lowest floor, including basement, elevated at least three feet above the highest adjacent grade.

For subdivisions or other developments over 50 lots or 5 acres, applicant must provide flood elevation data and build accordingly.

FEMA, 44 CFR 60.3b,

NYS DEC Model Local Law for 5 Acres/50 Lot Requirement;

NYS Building Standards and Codes, 2016 Uniform Code Supplement:

R322.1.4.1 for residential construction;

1612.4.1 for all other construction

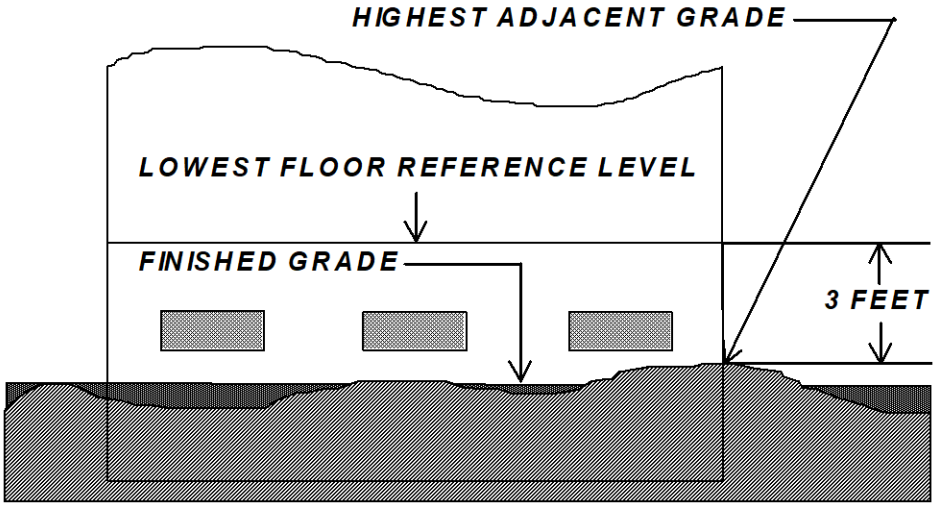
Elevation Requirements: Zone A- NO Base Flood Elevation Data

If there is a Base Flood Elevation from a reputable source, then use it.

- NYS DEC
- Corps of Engineers
- NRCS
- Historic Flood Data
- Other engineering study, including for development of over 5 acres or over 50 lots

Unnumbered A ZONE REFERENCE LEVELS

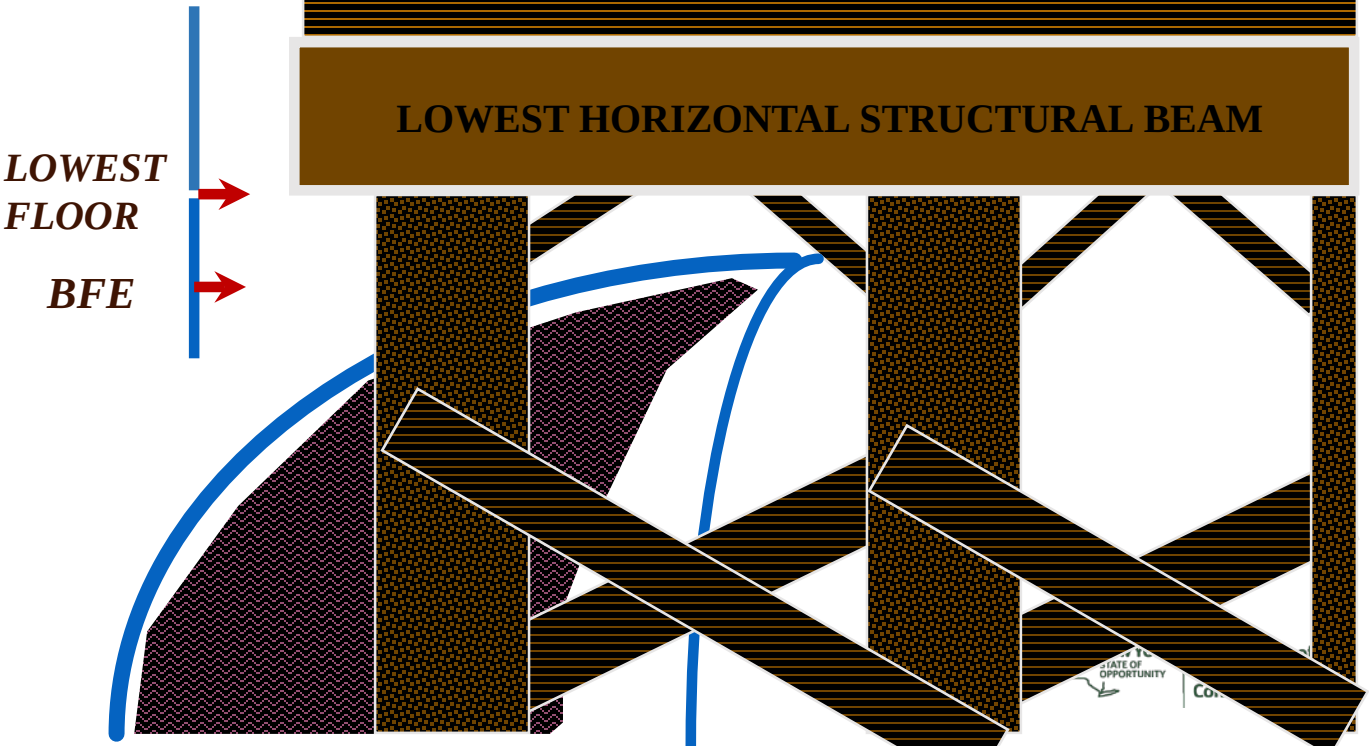
(DEPTH 3 FEET)

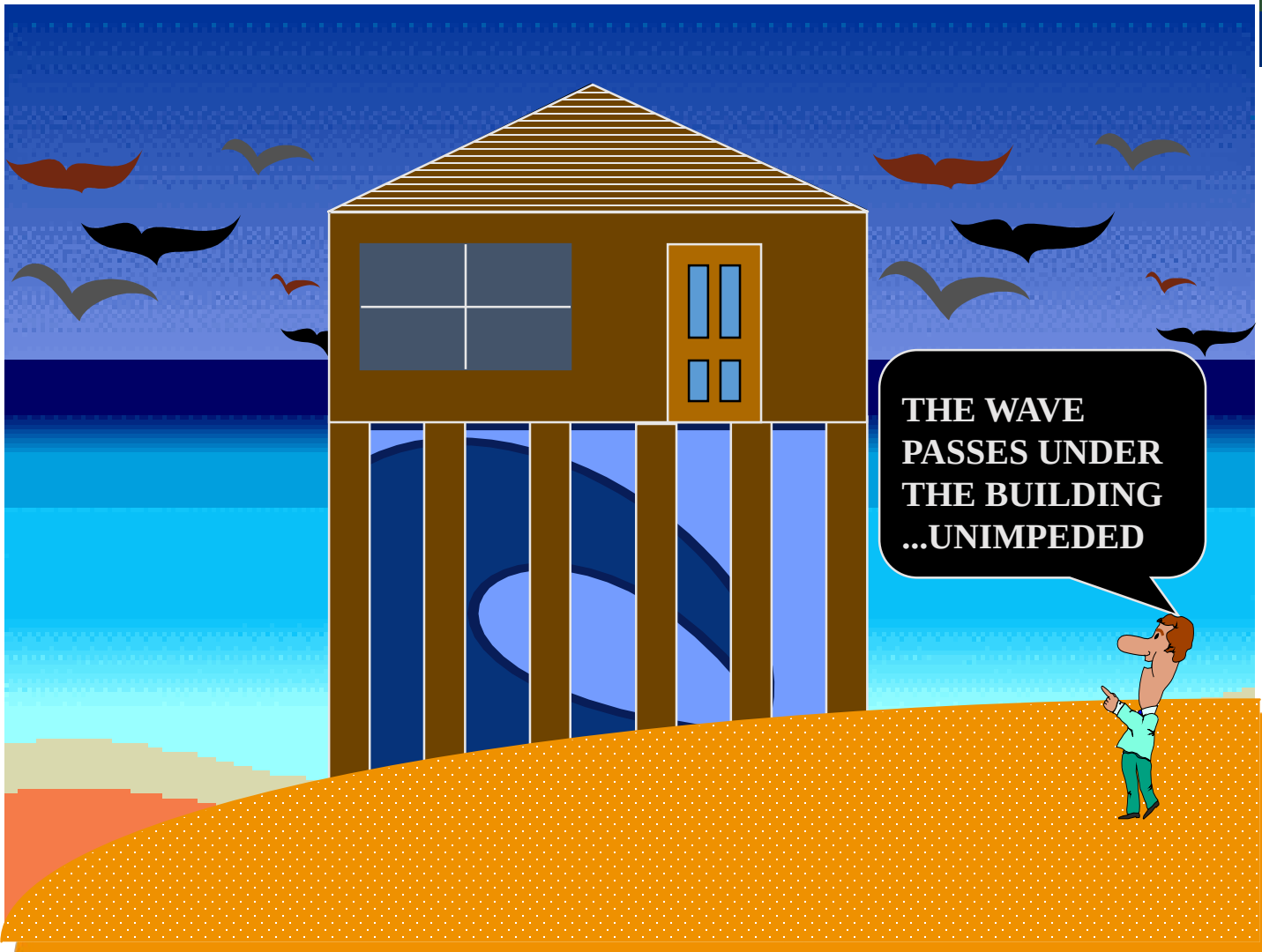


HIGHEST ADJACENT GRADE - HIGHEST NATURAL GRADE ADJACENT TO THE FOOTPRINT OF THE BUILDING PRIOR TO CONSTRUCTION.

Elevation Requirements for Zones VE and V1-30

All new construction and substantial improvement shall be elevated on adequately anchored pilings or columns and securely anchored to such pilings or columns so that the lowest horizontal portion of the structural members of the lowest floor is elevated to or above the BFE Plus 2' Freeboard.


LOWEST HORIZONTAL STRUCTURAL BEAM
LOWEST FLOOR
BFE


THE WAVE
PASSES UNDER
THE BUILDING
...UNIMPEDED

VE Zones or Coastal A: Areas Below Elevated Floor

Free of Obstruction or

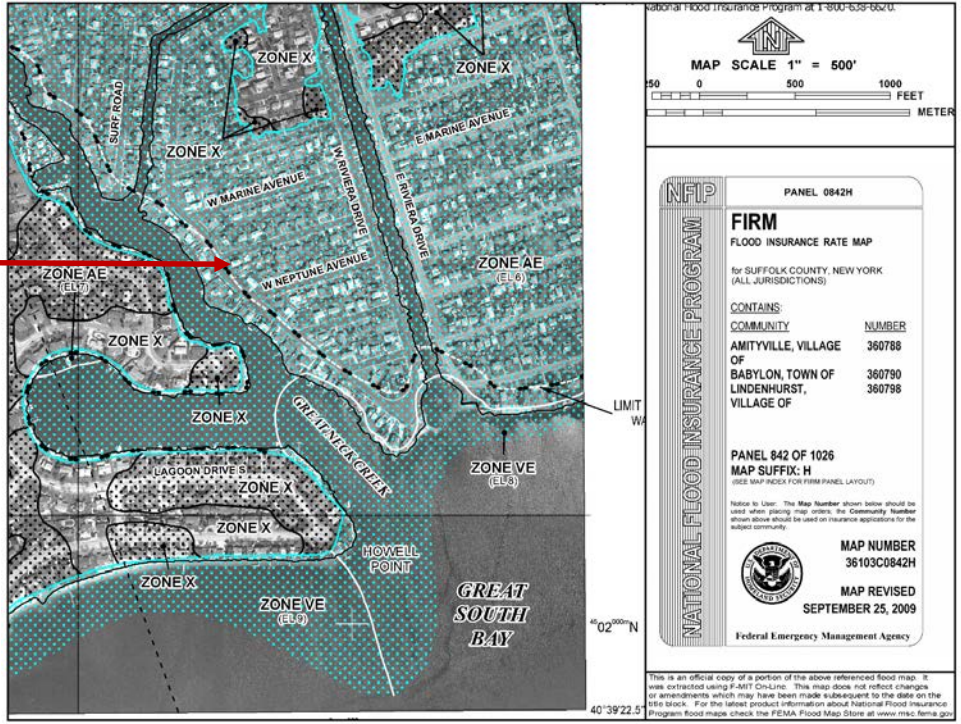
Breakaway as per IRC R322.3.4 or ASCE 24 Section 4.6.1

- Must fail under base flood or lesser conditions
- IRC: Must break away above pressures of 20 lbs/sq/foot
  - (about 2.5 feet of standing water)
- Design under Section 5.3.3 of ASCE 7

NEW: Breakaway Walls must have Flood Vents

Limit to Moderate Wave Action (Coastal A Zone)

Limit to Moderate Wave Action (LiMWA)



Limit of Moderate Wave Action (LiMWA)

- Defined as Coastal Area Landward of V Zone that has a 1.5’ to 3’ wave.
- FEMA Calls it LiMWA
- ASCE and IBC Call it Coastal A Zone
  - They’re the Same Thing
- New Building Code Requires V Zone Construction
  - One Exception

IBC, R322.3 Includes Coastal A Zones where designated as part of V-Zone Construction Requirement;

ASCE 24-14, Chapter 4 Includes Coastal High Hazard Areas and Coastal A Zones

Alternative Design in Coastal A zone

R322.3.3 allows Stem Wall Foundations

- Floor System is Above
- Backfilled with Soil or Gravel to Underside of Floor System
- Must account for Wave Action, Debris Impact, Erosion, Scour
- Where area prone to Erosion or Scour, deep footings required

Utilities

Elevate Above DFE plus Freeboard

Or

Designed and Installed to Prevent Water from Entering or Accumulating within the components and Resist Hydrostatic and Hydrodynamic Loads including effects of Buoyancy

Electrical Wiring below DFE plus Freeboard must conform to provisions for electrical code for wet locations

Elevate or Waterproof Electric Meters (ASCE 24, 7.2.3)

Standards apply to Replacement Components only when New Construction or Substantial Improvement

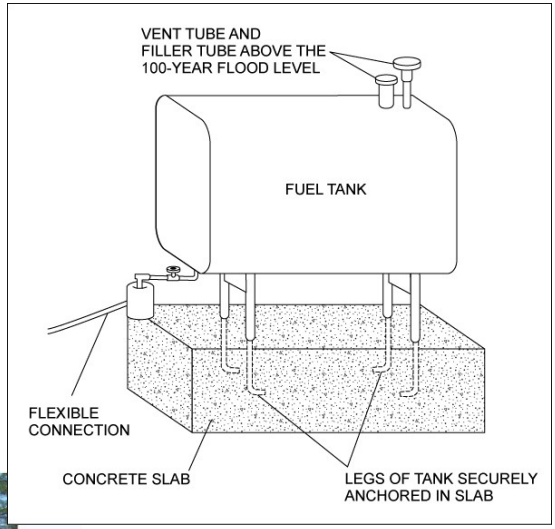
Storage Tanks (New, IRC R322.2.4)

Underground Tanks:

- Anchor against Flotation, Collapse and Lateral Movement

Above-Ground Tanks

- Install at or above DFE plus Freeboard
- Anchor



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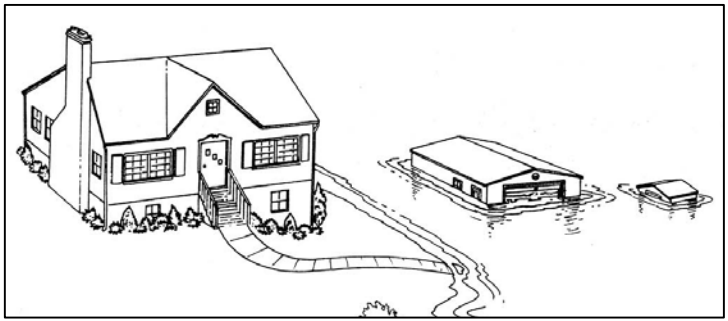
Accessory Structures

FEMA Guidance, Referenced in ASCE 24, C1.2

Used for Storage or Parking of Vehicles (detatched garages)

Community should Define Size or Maximum Cost

- Suggest: 2-Car Garage or Smaller;
- or Limited Storage representing not more than 10% of Value of Primary Structure
- No Human Habitation



Accessory Structures

Elevation of Structure Not Required

DEC Guidance:

- Meet building anchoring standards
- Use Flood Resistant Materials for Areas Below BFE + 2’
- Flood Vents
- Utilities must meet Utility Standards for Elevation or Flood Protection

Local Law Should Include Language

Manufactured Homes

- Bottom of the Frame Elevated above DFE + freeboard
- Anchor and Tie Down Requirements
- Flood Vents if Solid Foundation Below Unit
- Floodway Encroachment Analysis Required if in Floodway

Recreational Vehicles

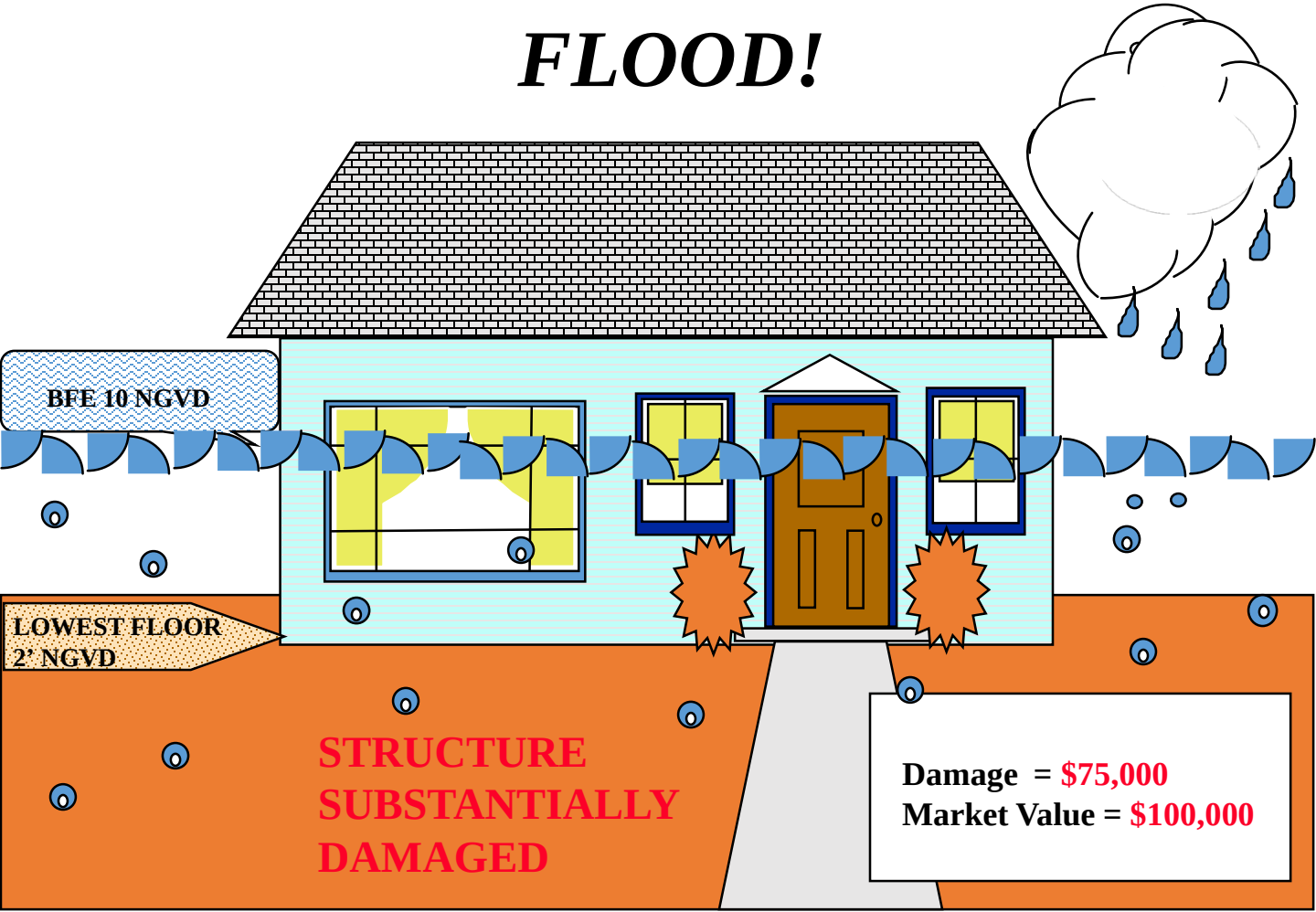
If in Zones AE, A1-30, or AH Requirements:

- On site for fewer than 180 days, or
- Be fully licensed and ready for highway use, or
- Be elevated and anchored as a manufactured home

If a Structure is substantially damaged and is not brought into compliance with the regulations and L.L., how will this impact flood insurance?

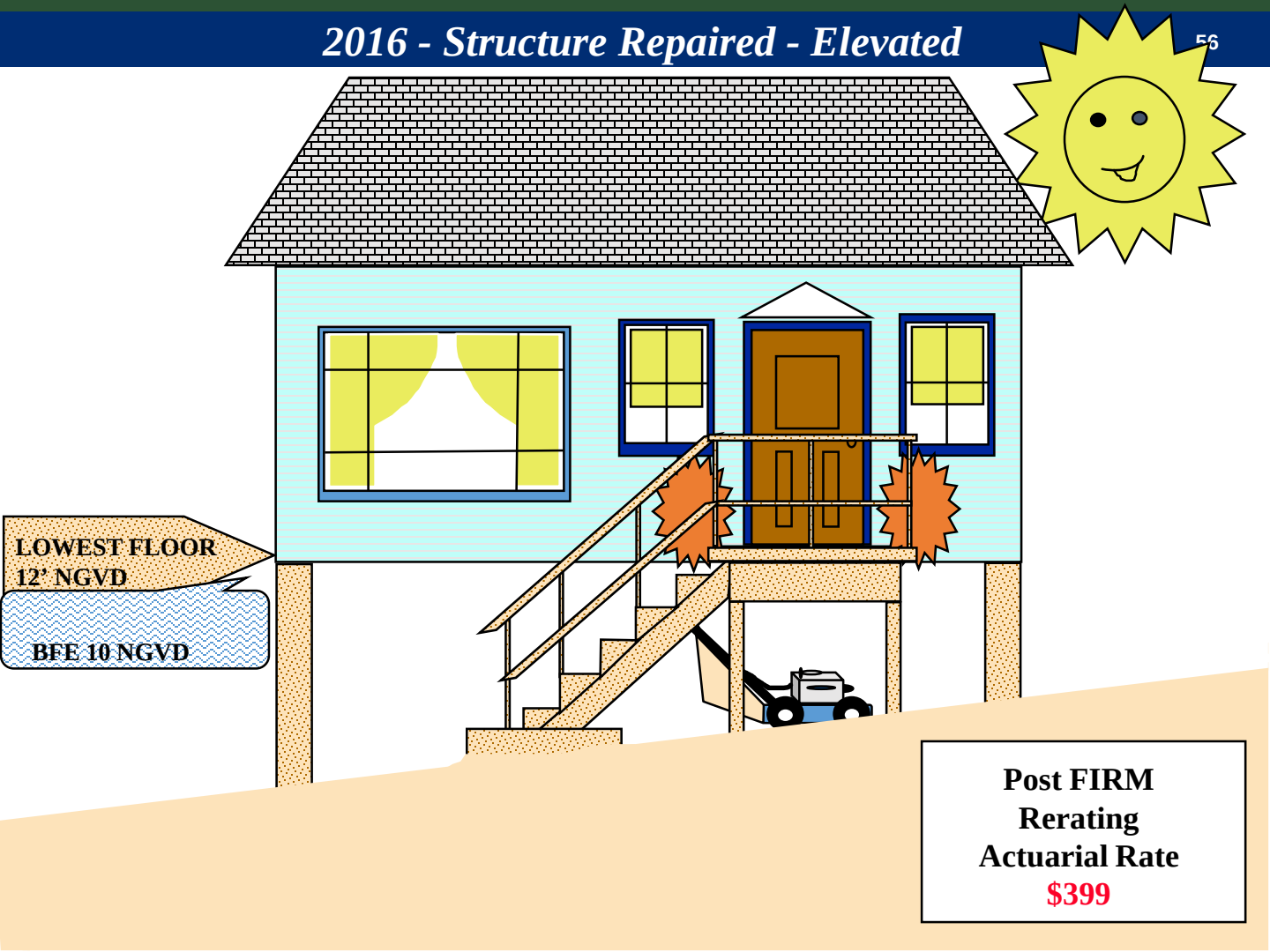
2016 - Existing Pre FIRM Structure, With Basement $100,000 coverage

FLOOD!


BFE 10 NGVD
LOWEST FLOOR
2' NGVD
STRUCTURE
SUBSTANTIALLY
DAMAGED
Damage = $75,000
Market Value = $100,000

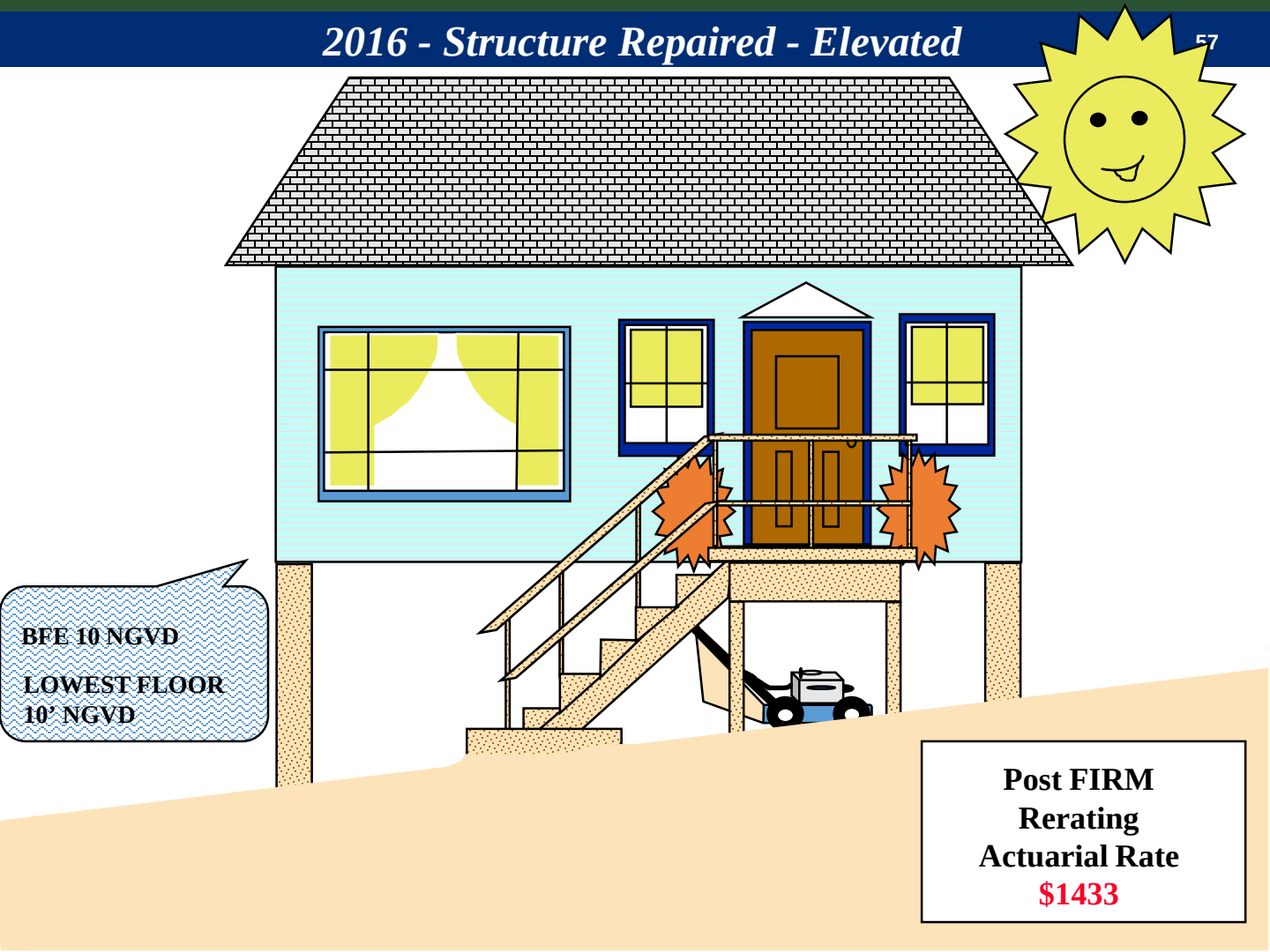
Structure Repaired - Not Elevated Below BFE; Basement

2016 - Structure Repaired - Elevated



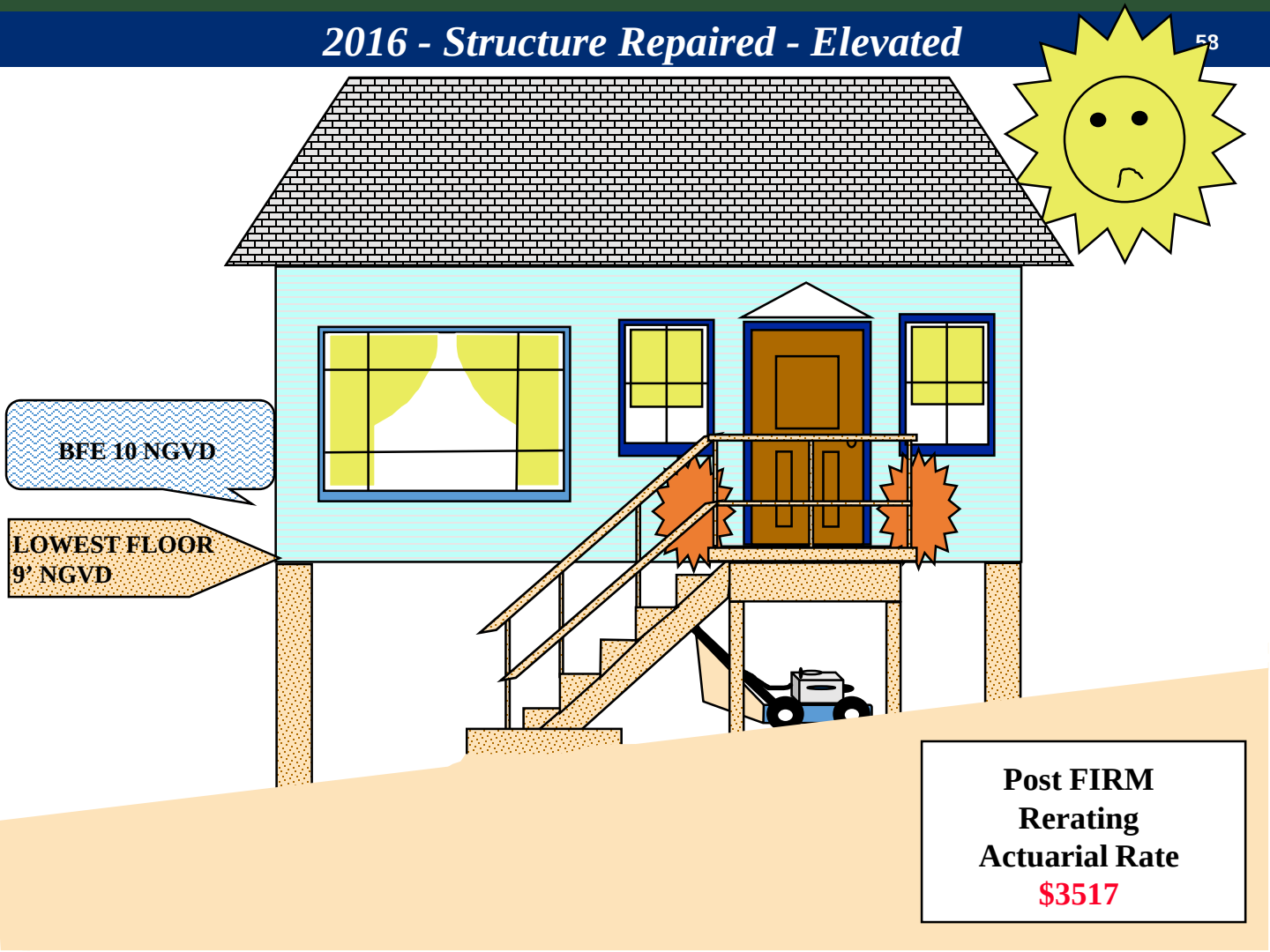
Post FIRM
Rerating
Actuarial Rate
$399

2016 - Structure Repaired - Elevated



Post FIRM
Rerating
Actuarial Rate
$1433

2016 - Structure Repaired - Elevated



Post FIRM
Rerating
Actuarial Rate
$3517

Technical Bulletins

Guide-01 User's Guide to Technical Bulletins

1-08 Openings in Foundation Walls:

2-08 Flood-Resistant Materials Requirements

3-93 Non-Residential Floodproofing

4-10 Elevator Installation

5-08 Free-of-Obstruction Requirements

6-93 Below-Grade Parking Requirements

7-93 Wet Floodproofing Requirements

8-96 Corrosion Protection for Metal Connectors in Coastal Areas

9-99 Design and Construction Guidance for Breakaway Walls Below Elevated Coastal Buildings

10-01 Ensuring that Structures Built on Fill In or Near Special Flood Hazard Areas are Reasonably Safe From Flooding

11-01 Crawlspace Construction for Buildings Located in Special Flood Hazard Areas (Not Valid in NYS)

https://www.fema.gov/media-library/resources-documents/collections/4

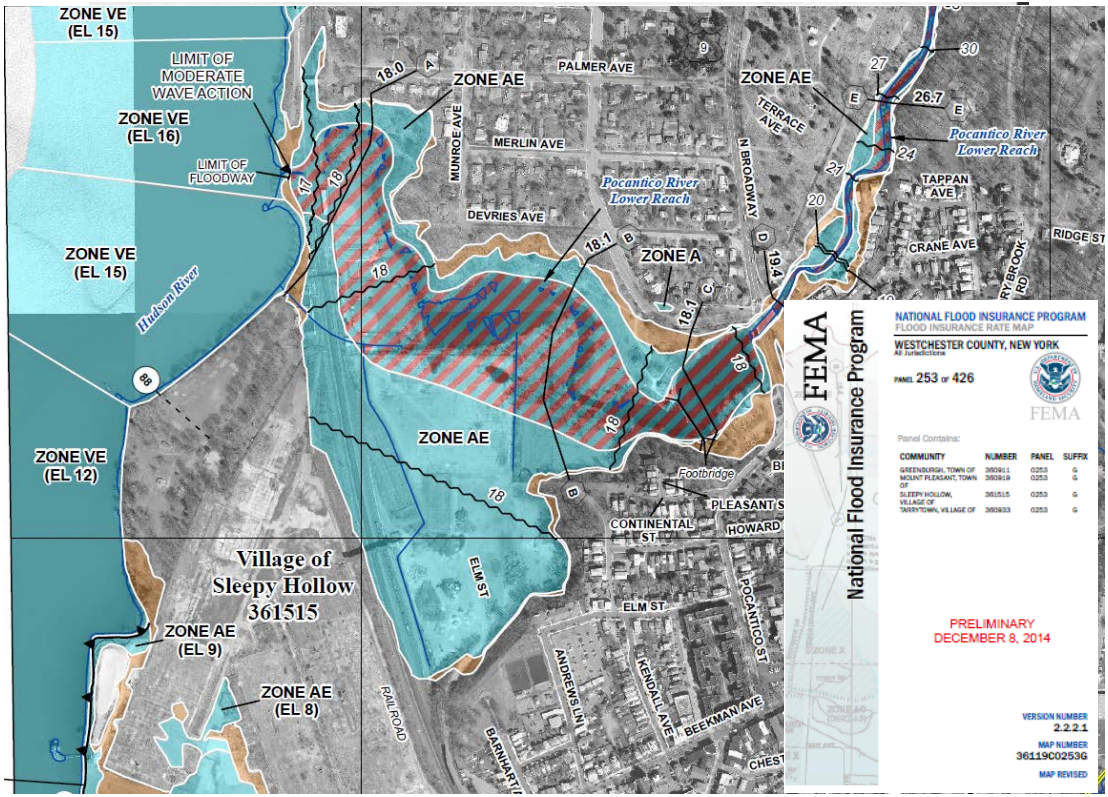
Flood Insurance Studies and Maps

Use the FIRM to

- Identify Special Flood Hazard Areas
- Identify the location of specific property
- Estimate BFE at a specific site
- Determine flood insurance zone at a specific site
- Determine the location of the regulatory floodway

Types of Maps

- Flood Hazard Boundary Maps (FHBM)
- Flood Insurance Rate Map (FIRM)
- Flood Boundary Floodway Map (FBFM)
- Digital Flood Insurance Rate Map (DFIRM)


ZONE VE
(EL 15)
LIMIT OF
MODERATE
WAVE ACTION
ZONE VE
(EL 16)
LIMIT OF
FLOODWAY
ZONE VE
(EL 15)
Hudson River
ZONE VE
(EL 12)
ZONE AE
(EL 9)
ZONE AE
(EL 8)
Village of
Sleepy Hollow
361515
ZONE AE
PALMER AVE
MERLIN AVE
DEVRIES AVE
MUNROE AVE
Pocantico River
Lower Reach
ZONE A
ZONE AE
TERRACE AVE
N BROADWAY
TAPPAN AVE
CRANE AVE
RIDGE ST
ZONE AE
Footbridge
CONTINENTAL ST
HOWARD
ELM ST
ELM ST
POCANTICO ST
ANDREWS LN
KENDALL AVE
BEEKMAN AVE
RAILROAD
FEMA
National Flood Insurance Program
NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP
WESTCHESTER COUNTY, NEW YORK
All Jurisdictions
PANEL 253 OF 426
FEMA
Panel Contains:
COMMUNITY
NUMBER
PANEL
SUFFIX
GREENBURGH, TOWN OF
360911
0253
G
MOUNT PLEASANT, TOWN OF
360919
0253
G
SLEEPY HOLLOW, VILLAGE OF
361515
0253
G
TARRYTOWN, VILLAGE OF
360933
0253
G
PRELIMINARY
DECEMBER 8, 2014
VERSION NUMBER
2.2.2.1
MAP NUMBER
36119C0253G
MAP REVISED

Level of Detail

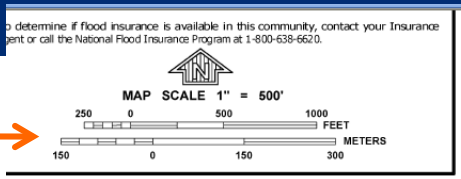
- **A Zone, No BFE--**delineates "100-year" floodplain boundaries; does not determine base flood elevations or depths
- **Detailed study**--determines base flood elevations (BFEs) or depths to be displayed on FIRM

Where No BFE's

- Little or no field work conducted
- Use of existing data such as FHBM, USGS Flood Prone Quadrangle Maps
- Where no existing data is available, appropriate methods for approximating floodplain boundaries must be selected and applied

Map Panel Information

Scale and North Arrow

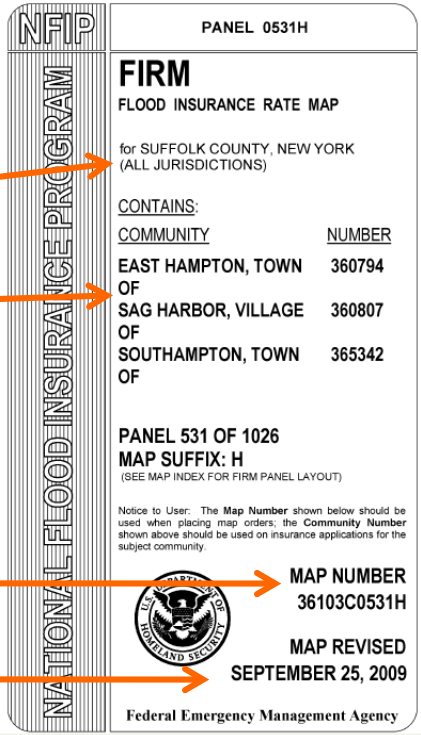


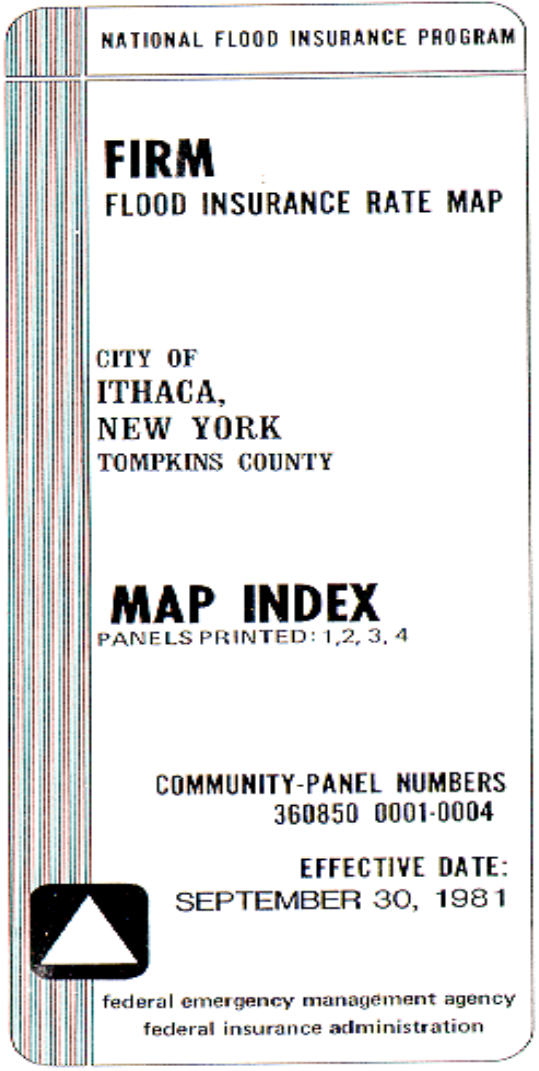
Area Mapped

Communities and Community Numbers

Community Panel Number

Map Date





NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

CITY OF
ITHACA,
NEW YORK
TOMPKINS COUNTY

MAP INDEX

PANELS PRINTED: 1,2, 3, 4

COMMUNITY-PANEL NUMBERS
360850 0001-0004

EFFECTIVE DATE:
SEPTEMBER 30, 1981

federal emergency management agency
federal insurance administration

Historic Map Dates

INITIAL IDENTIFICATION:
AUGUST 2, 1974

FLOOD HAZARD BOUNDARY MAP REVISIONS:
JULY 2, 1976
MARCH 18, 1977

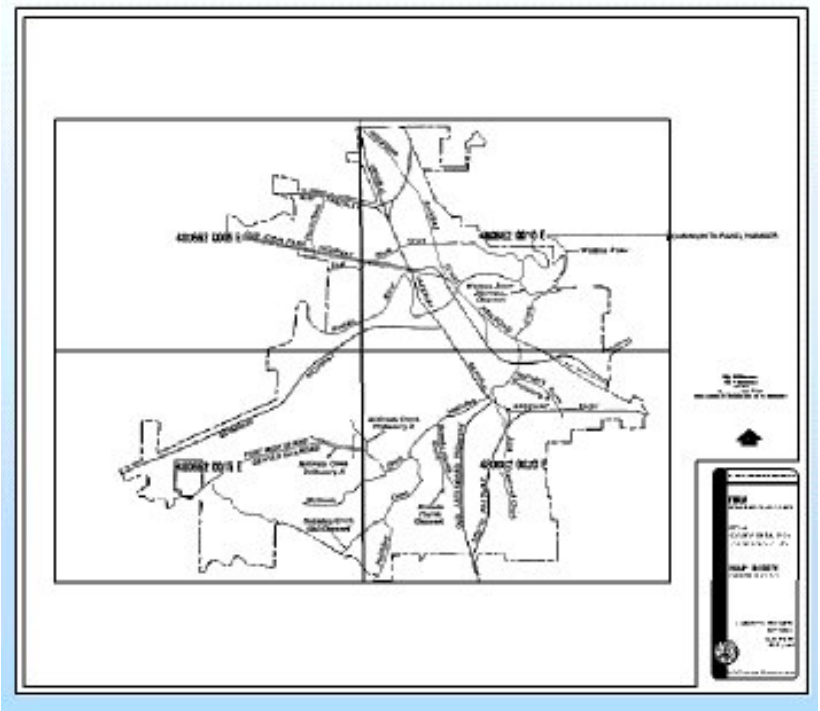
FLOOD INSURANCE RATE MAP EFFECTIVE:
SEPTEMBER 3, 1980

FLOOD INSURANCE RATE MAP REVISIONS

3/26/82: MAP REVISED TO CHANGE FORMAT AND REFLECT FEMA LOGO

Reading a FIRM

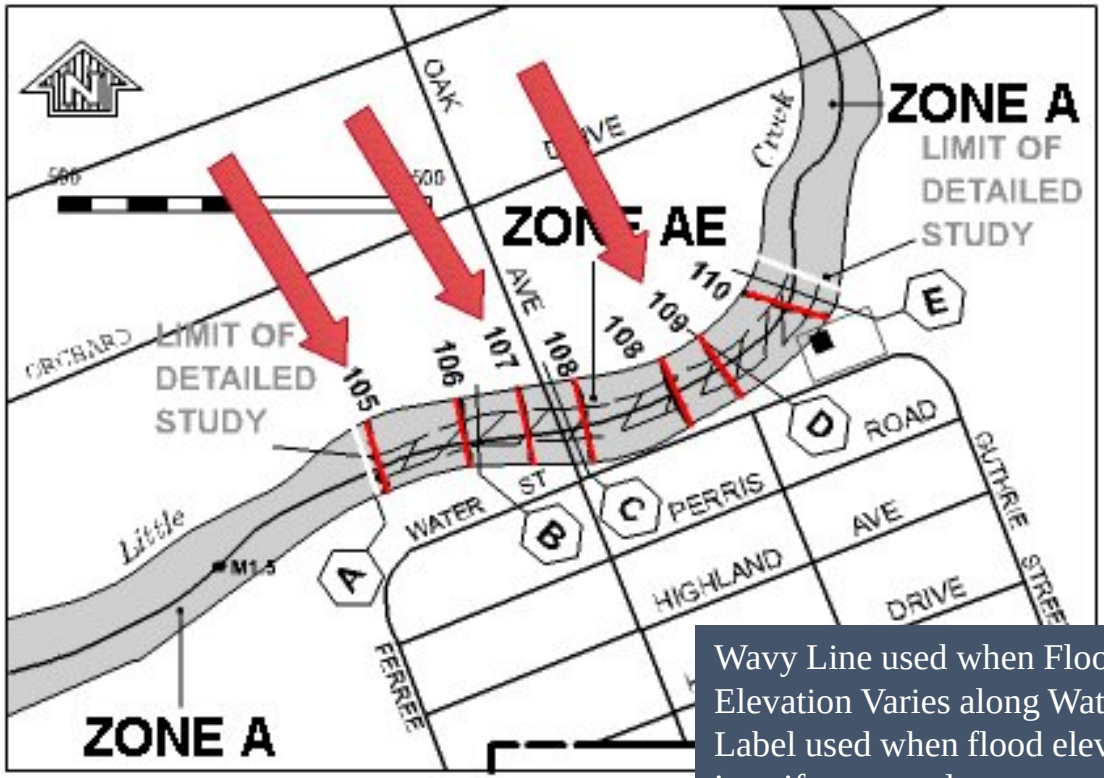
Open Map Index and Find Panel



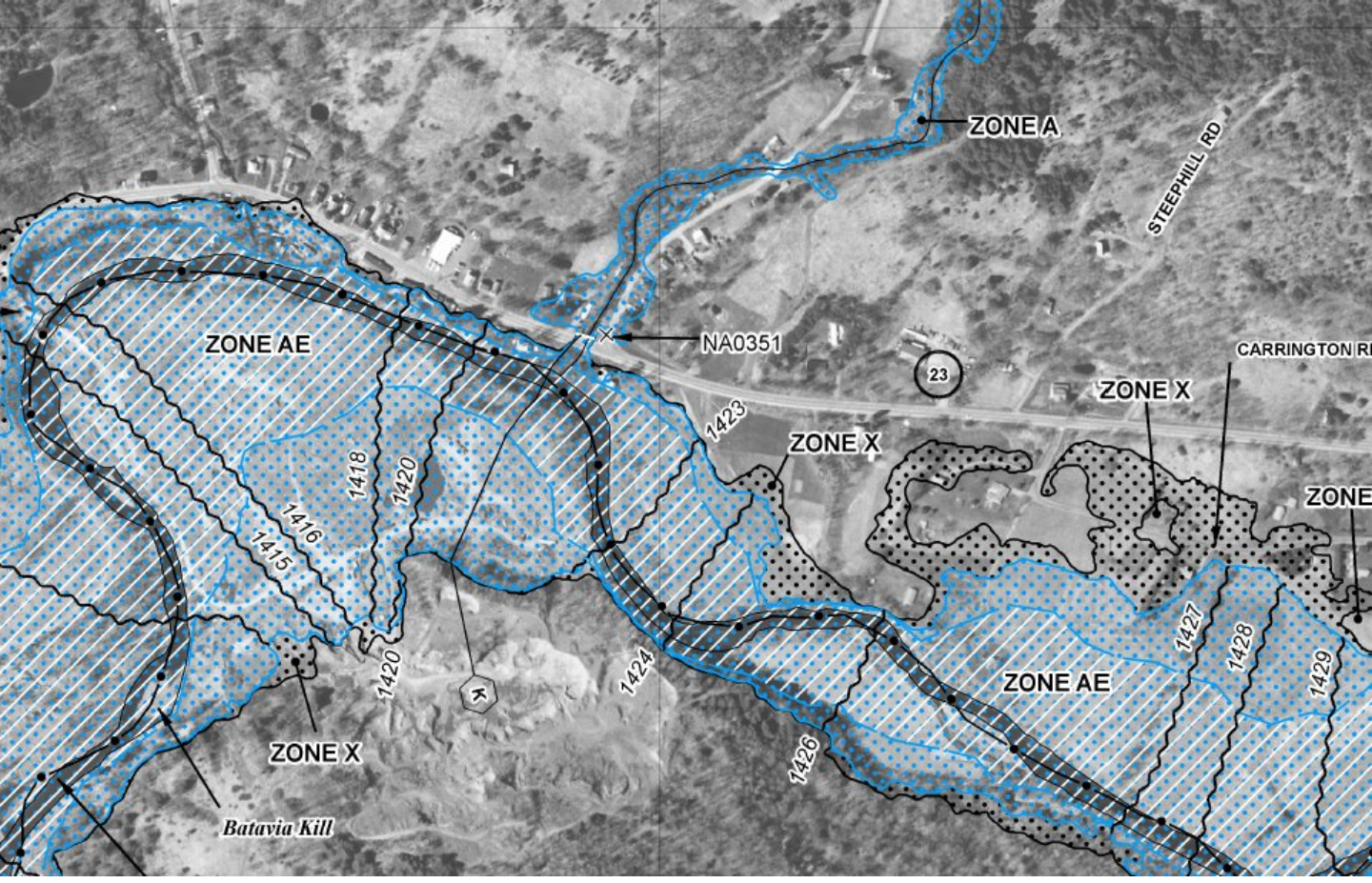
Note: Older maps are by Community. Newer maps are by county.

Moving towards County-wide or watershed mapping statewide.

Some Map Features



Wavy Line used when Flood Elevation Varies along Watercourse; Label used when flood elevation is uniform over large area.



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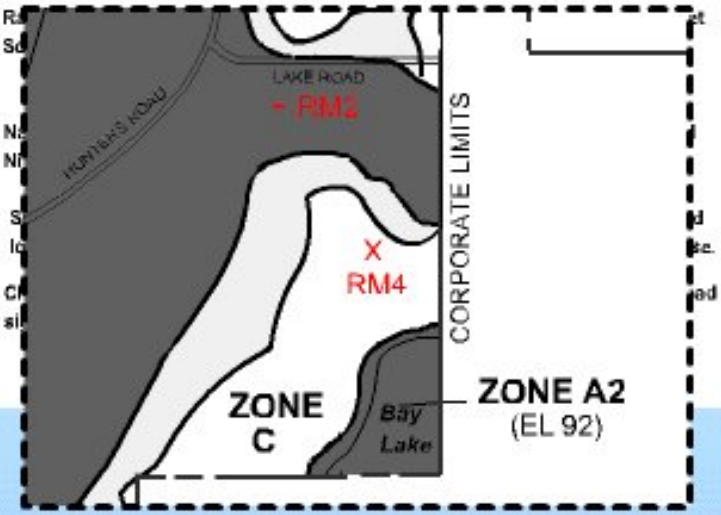
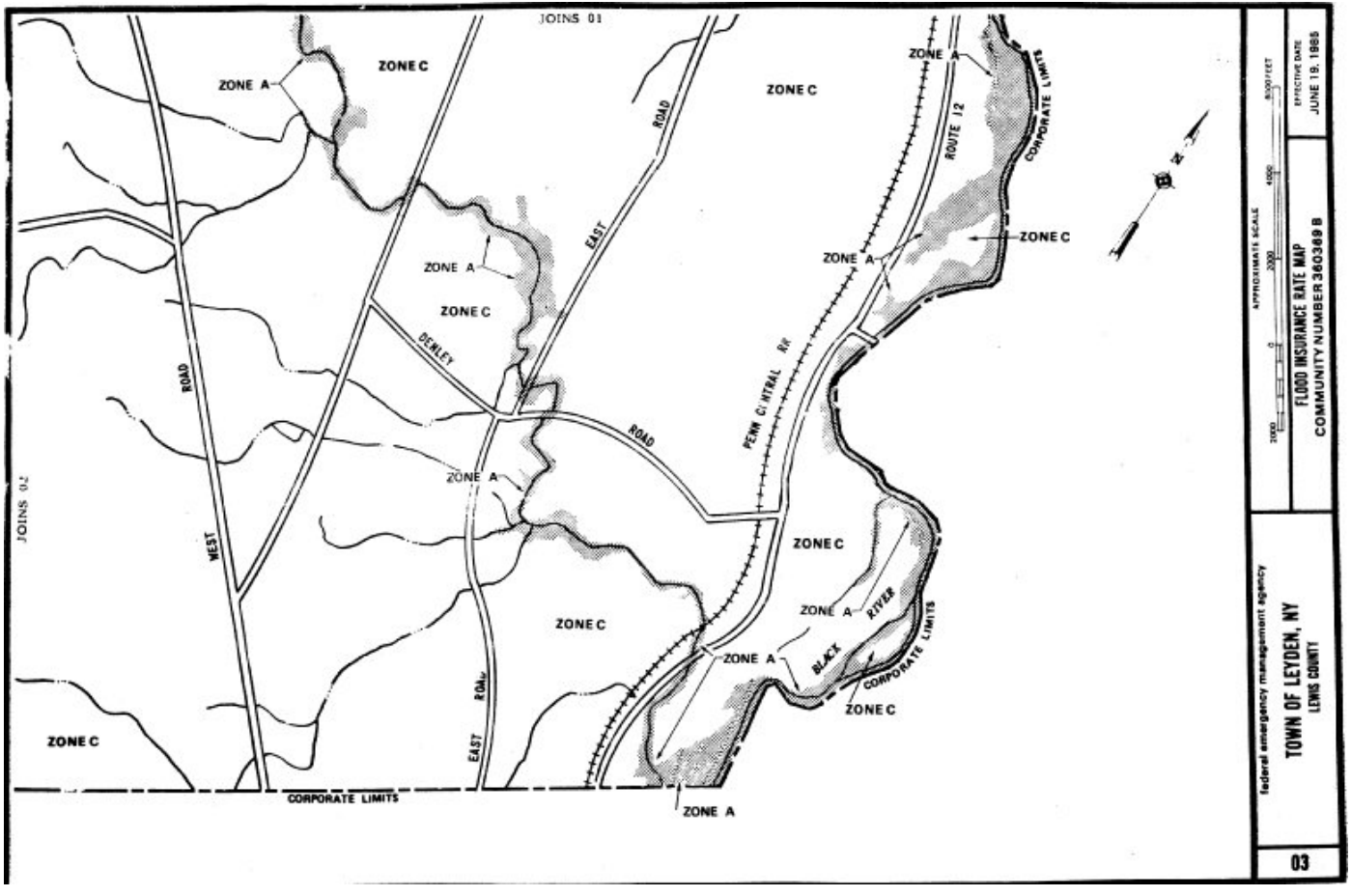
Elevation Reference Marks

ELEVATION REFERENCE MARKS

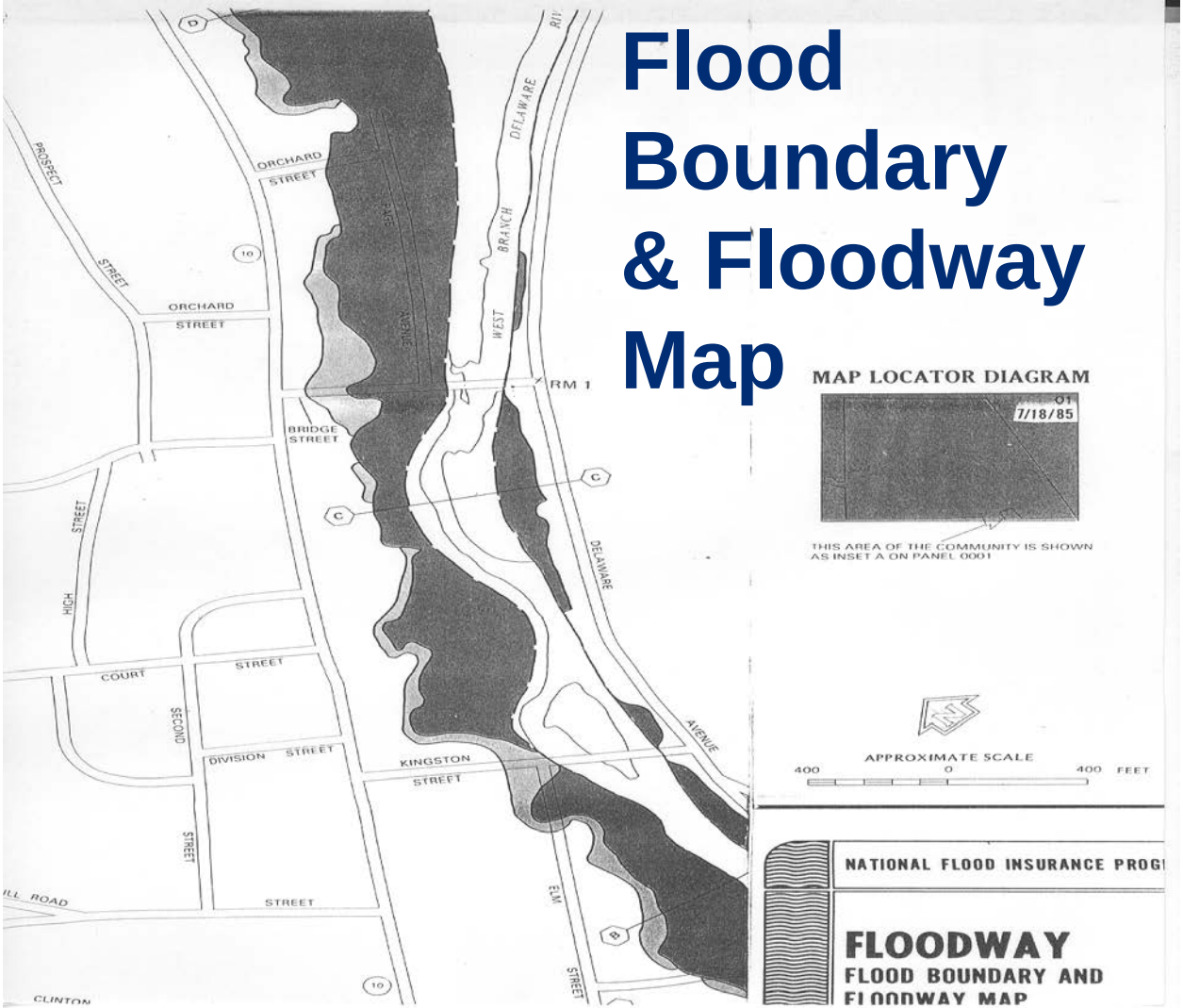
REFERENCE MARK	ELEVATION (FT.NVGD)	DESCRIPTION OF LOCATION
RM 1	598.46	Standard USGS bronze disk set on top of concrete horizon web midway between concrete piles of main bent at rightlow water bank o f old U.S. Hwy bridge over Clear Creek
RM 2	642.84	
RM 4	636.44	
RM 5	624.32	
RM 6	593.85	



Older “Flat” Maps



Flood Boundary & Floodway Map



FLOOD INSURANCE STUDY

TOWN OF HANOVER, NEW YORK
CHAUTAUQUA COUNTY

JUNE 18, 1984

Federal Emergency Management Agency

COMMUNITY NUMBER [illegible]

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Pinnacle Creek								
A	136	28	83	7.1	550.3	546.0[2]	547.0	1.0
B	476	28	66	8.9	552.4	552.4	552.8	0.4
C	704	19	63	9.4	559.1	559.1	559.7	0.6
D	879	26	246	2.4	569.5	569.5	570.1	0.6
E	1,419	26	168	3.5	569.5	569.5	570.5	1.0
F	1,647	50	179	3.3	571.3	571.3	572.3	1.0
G	2,207	33	81	7.3	576.2	576.2	576.2	0.0

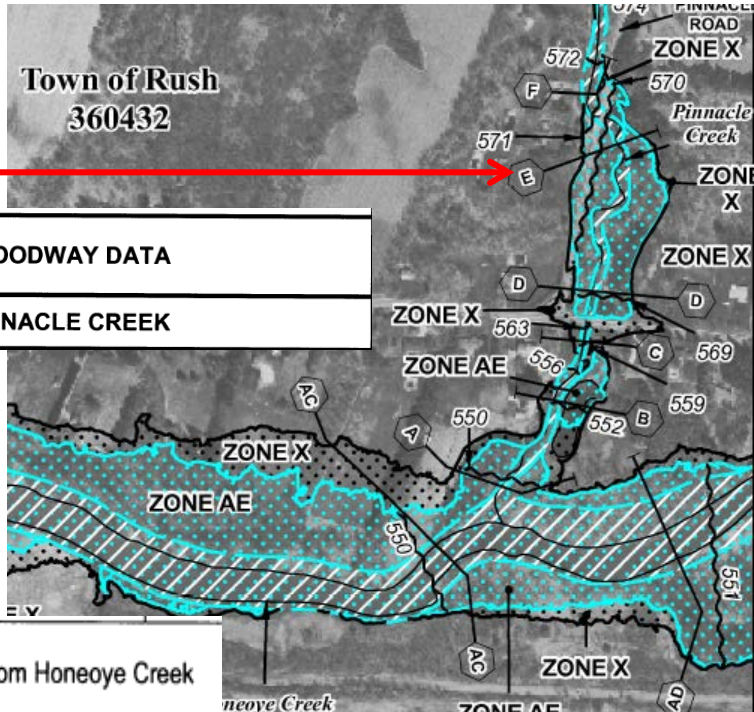


TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

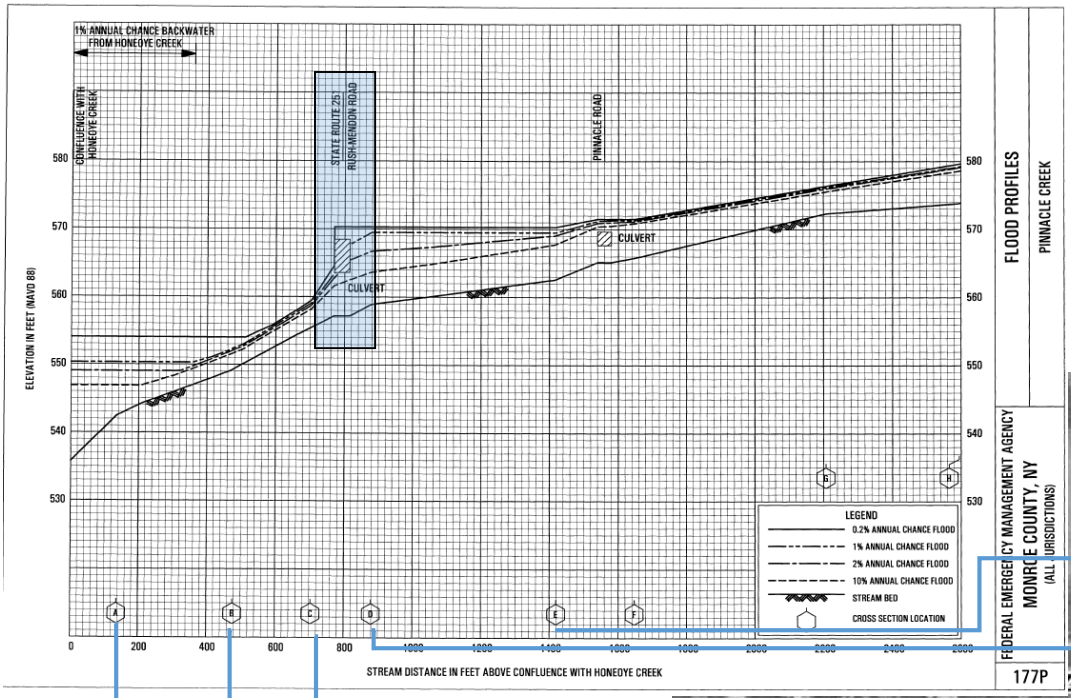
MONROE COUNTY, NY (ALL JURISDICTIONS)

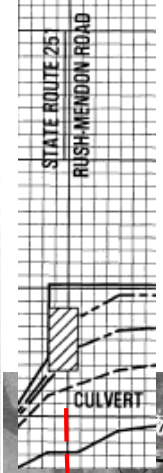
FLOODWAY DATA

PINNACLE CREEK

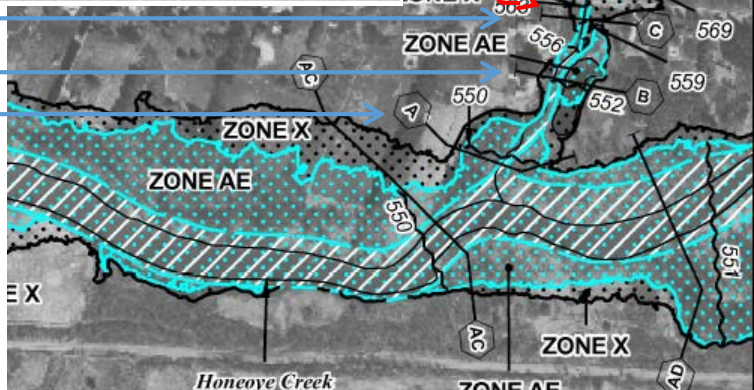
[1]Feet above confluence with Honeoye Creek

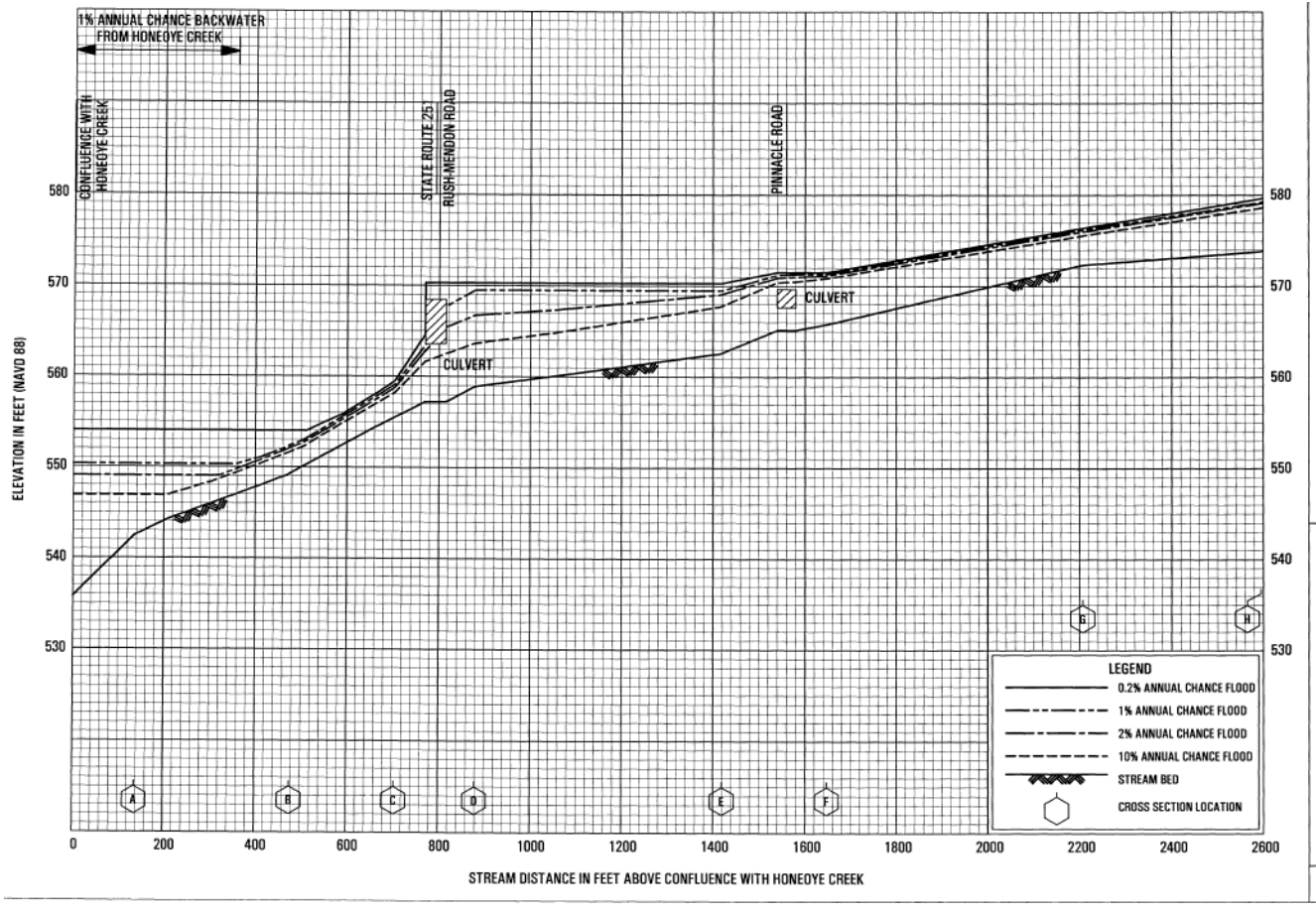
[2]Elevation computed without consideration of backwater effects from Honeoye Creek


1% ANNUAL CHANCE BACKWATER FROM HONEOYE CREEK
CONFLUENCE WITH HONEOYE CREEK
STATE ROUTE 25 RUSH-MENDON ROAD
PINNACLE ROAD
CULVERT
CULVERT
ELEVATION IN FEET (NAVD 88)
580
570
560
550
540
530
0
200
400
600
800
STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH HONEOYE CREEK
LEGEND
0.2% ANNUAL CHANCE FLOOD
1% ANNUAL CHANCE FLOOD
2% ANNUAL CHANCE FLOOD
10% ANNUAL CHANCE FLOOD
STREAM BED
CROSS SECTION LOCATION
FLOOD PROFILES
PINNACLE CREEK
FEDERAL EMERGENCY MANAGEMENT AGENCY
MONROE COUNTY, NY
(ALL JURISDICTIONS)
177P


STATE ROUTE 25
RUSH-MENDON ROAD
CULVERT


ROAD
ZONE X
570
Pinnacle Creek
571
E
ZONE X
ZONE X
D
D
ZONE X
C
569
ZONE AE
556
559
552
B
550
A
ZONE X


ZONE AE
550
551
ZONE X
AG
ZONE X
Honeoye Creek
ZONE AE



FLOOD PROFILES

PINNACLE CREEK

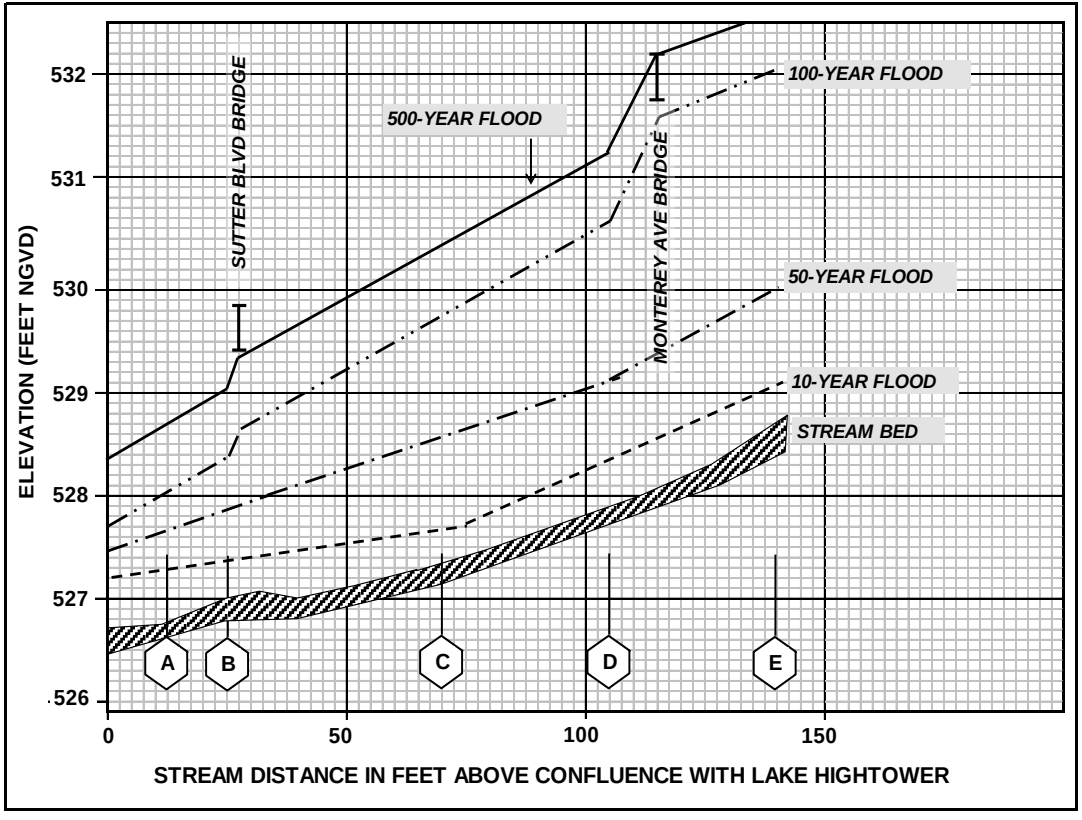
FEDERAL EMERGENCY MANAGEMENT AGENCY

MONROE COUNTY, NY

(ALL JURISDICTIONS)

177P

Flood Profile Example



Benefits of Proper Enforcement

Safer, More Resilient Community

Safer Public

Decreased Flood Damages

Lower Flood Insurance Rates

Maintain Property Values

Maintain NFIP Status and Access to Federal Funds

Thank You

- William Nechamen
- Chief, Floodplain Mgmnt
- NYS DEC
- 625 Broadway, 4th Fl
- Albany, NY 12233.3504
- william.Nechamen@dec.ny.gov
- 518-402-8185

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