

APPENDIX H: LEARNING CHECKS AND EXERCISES

UNIT 1 LEARNING CHECK #1

1. This unit describes a number of types of floods. Which types occur in your community?
2. What are the three most common types of flooding?
3. Which type of flooding has accounted for the most flood-related deaths in recent history?
4. What is a “meander?”
5. What’s the major cause of coastal flooding?
6. What causes a tsunami?
7. List the five types of special flood hazards covered in this course. Does your community have any of these?
8. List at least three benefits that floodplains, in a relatively undisturbed condition, actually contribute or could contribute to your community.

UNIT 1-LEARNING CHECK #2

1. What two problems result from floodplain development?
2. What does watershed development do to flooding?
3. What is one of the problems with constructing seawalls to protect buildings from flooding or erosion?
4. What are the five main causes of flood damage?
5. Standing water as little as feet deep can collapse the walls of a frame house.
6. What are some of the safety and health hazards that accompany floods?
7. Prior to the 1960's what was the primary way to reduce flood losses?
8. What is the Unified National Program for Floodplain Management's definition of "floodplain management?"
9. What are the two primary goals of floodplain management?

UNIT 1-LEARNING EXERCISE

1. What areas are conducive to flash flooding?
2. Is erosion only a threat in coastal areas?
3. What is “ponding?”
4. Are plants and animals the only beneficiaries of the “natural and beneficial functions” of floodplains?
5. What does filling in a floodplain do?
6. Does moving sand and sand dunes affect flooding?
7. Hydrodynamic forces are caused by _____ water and hydrostatic forces are caused by _____ water.
8. List three materials or household items that are particularly susceptible to flood damage by soaking.
9. What are examples of non-structural flood protection measures?
10. What are the Unified National Program for Floodplain Management’s four main floodplain management strategies?

UNIT 1-LEARNING CHECK #1 -ANSWERS

1. This unit describes a number of types of floods. Which types occur in your community?

Depends on the community.

2. What are the three most common types of flooding?

Riverine, coastal, shallow.

3. Which type of flooding has accounted for the most flood-related deaths in recent history?

Flash flooding.

4. What is a “meander?”

It's a curve or turn in a river channel.

5. What's the major cause of coastal flooding?

Storm surge.

6. What causes a tsunami?

Underwater earthquakes or volcanoes.

7. List the five types of special flood hazards covered in this course. Does your community have any of these?

- Closed basin lakes
- Uncertain flow paths
- Dam breaks
- Ice jams
- Mudflows

If your community has one or more of these hazards, you should become familiar with their natural processes and the appropriate regulatory measures discussed in Unit 6.

8. List at least three benefits that floodplains, in a relatively undisturbed condition, actually contribute or could contribute to your community.

Although this depends on the community, there are a large number of benefits they could potentially provide.

UNIT 1–LEARNING CHECK #2 -ANSWERS

1. What two problems result from floodplain development?

- *Development alters the floodplain and the dynamics of flooding.*
- *Buildings and infrastructure are damaged by periodic flooding.*

2. What does watershed development do to flooding?

The increase in impervious surface results in increased runoff and higher flood levels.

3. What is one of the problems with constructing seawalls to protect buildings from flooding or erosion?

It can accelerate erosion on properties at the end of the wall.

4. What are the five main causes of flood damage?

Hydrodynamic forces

Debris impact

Hydrostatic forces

Soaking

Sediment and contaminants

5. Standing water as little as ____ feet deep can collapse the walls of a frame house.

Three feet.

6. What are some of the safety and health hazards that accompany floods?

Disruption of public utilities

Electrocution

Contamination of water supplies

Fire

Animal carcasses, garbage and ponds that can become breeding grounds for germs and mosquitoes.

Mold, mildew and bacteria that grow in damp, flooded areas

Contaminated air from dirty heating ducts

Stress and mental health problems.

7. Prior to the 1960's what was the primary way to reduce flood losses?

Structural flood control projects

8. What is the Unified National Program for Floodplain Management's definition of "floodplain management?"

"A decision-making process that aims to achieve the wise use of the nation's floodplains."

9. What are the two primary goals of floodplain management?

To reduce the loss of life, disruption, and damage caused by floods

To preserve and restore the natural resources and functions of floodplains

UNIT 1–LEARNING EXERCISE -ANSWERS

1. What areas are conducive to flash flooding?

- Hilly areas with steep slopes and narrow valleys
- Urban areas with large amounts of impervious surfaces and storm sewers
- Areas downstream of dams or subject to ice jams

2. Is erosion only a threat in coastal areas?

No. Riverine erosion can move stream channels and undercut structures.

3. What is “ponding?”

Where stormwater runoff collects in depressions and cannot drain out.

4. Are plants and animals the only beneficiaries of the “natural and beneficial functions” of floodplains?

No. People benefit from floodplains through the food they provide, the recreational opportunities they afford and the scientific knowledge gained in studying them. Floodplains also recharge groundwater supplies and their filtering actions help improve water quality.

5. What does filling in a floodplain do?

Filling reduces the floodplain’s ability to store excess water, sending more water downstream and causing floods to rise to higher levels.

6. Does moving sand and sand dunes affect flooding?

Yes, it may remove a natural barrier that protects inland properties.

7. Hydrodynamic forces are caused by _____ water and hydrostatic forces are caused by _____ water.

Moving, standing

8. List three materials or household items that are particularly susceptible to flood damage by soaking.

- Wood
- Gypsum wallboard
- Furniture and upholstery
- Carpeting
- Mattresses
- Books
- Electrical appliances
- Gasoline engines

9. What are examples of non-structural flood protection measures?

- Regulations to prohibit development in high-hazard areas.
- Building codes requiring flood-resistant construction for new buildings in floodprone areas.
- Acquisition and relocation of buildings in high hazard areas.
- Modifying or retrofitting existing buildings.
- Installing flood warning systems.
- Controlling stormwater runoff.
- Providing self-help advice to property owners.

10. What are the Unified National Program for Floodplain Management's four main floodplain management strategies?

- Modify human susceptibility to flood damage
- Modify the impact of flooding
- Modify flooding itself
- Preserve and restore natural resources

UNIT 2 LEARNING CHECK #1

1. What are the objectives of the NFIP?
2. What are the three basic parts of the NFIP?
3. Who uses NFIP maps?
4. What should happen to buildings in NFIP communities over time?

UNIT 2-LEARNING CHECK #2

1. What types of governmental bodies are considered to be “communities” by the NFIP?
2. What office is the state coordinating agency for your community?
3. Which FEMA office works directly with communities?
4. What is the Write Your Own Program?
5. When a community applies to join the NFIP, what must it submit?
6. What are the sanctions if a community does not participate in the NFIP?

UNIT 2-LEARNING EXERCISE

1. Where does most of the money come from to pay the expenses of the NFIP?
2. How many communities currently participate in the NFIP?
3. What is a “pre-FIRM” building.
4. Is there any relation between how a community regulates new construction and flood insurance rates?
5. List two things your community committed itself to when it joined the NFIP.
6. Insurance companies set flood insurance rates and coverage rules. True or false?
7. What can FEMA do to encourage a community to adequately enforce its floodplain management regulations?
8. What are the sanctions if a community is suspended from the NFIP?

UNIT 2-LEARNING CHECK #1 -ANSWERS

1. What are the objectives of the NFIP?

- *The National Flood Insurance Act created the National Flood Insurance Program (NFIP) to:*
- *Transfer the costs of private property flood losses from the taxpayers to floodplain property owners through flood insurance premiums.*
- *Provide floodplain residents and property owners with financial aid after floods, especially smaller floods that do not warrant federal disaster aid.*
- *Guide development away from flood hazard areas.*
- *Require that new and substantially improved buildings be constructed in ways that would minimize or prevent damage in a flood.*

2. What are the three basic parts of the NFIP?

- *Mapping*
- *Insurance*
- *Regulations*

3. Who uses NFIP maps?

- *Communities, states and Federal agencies use them as the basis for regulating new floodprone construction,*
- *Insurance agents use them when rating flood insurance policies, and*
- *Lenders and Federal agencies use them to determine when flood insurance must be purchased as a condition of a loan or financial assistance.*

4. What should happen to buildings in NFIP communities over time?

Over time, exposure to flood damage should be reduced, as the older pre-FIRM buildings are replaced by post-FIRM buildings. Eventually a community should have only post-FIRM buildings subject to little or no flood damage.

UNIT 2—LEARNING CHECK #2 —ANSWERS

1. What types of governmental bodies are considered to be “communities” by the NFIP?

These governmental bodies vary from state to state, but can include cities, towns, villages, townships, counties, parishes, special districts, states and Indian nations with the statutory authority to enact and enforce regulations.

2. What office is the state coordinating agency for your community?

See Appendix B.

3. Which FEMA office works directly with communities?

The ten Regional Offices.

4. What is the Write Your Own Program?

An arrangement whereby private insurance companies write and service NFIP flood Insurance policies under their own name.

5. When a community applies to join the NFIP, what must it submit?

A resolution of intent to “maintain in force...adequate land use and control measures” and to cooperate with FEMA

Its adopted floodplain management ordinance.

6. What are the sanctions if a community does not participate in the NFIP?

- *Flood insurance will not be available. No resident will be able to purchase a flood insurance policy through the NFIP.*
- *If the community withdraws or is suspended, existing flood insurance policies will not be renewed.*
- *No Federal grants or loans for development may be made in identified flood hazard areas under programs administered by Federal agencies such as HUD, EPA, and SBA.*
- *No Federal disaster assistance may be provided to repair insurable buildings located in identified flood hazard areas for damage caused by a flood.*
- *No Federal mortgage insurance or loan guarantees may be provided in identified flood hazard areas. This includes policies written by FHA, VA, and others.*
- *Federally insured or regulated lending institutions, such as banks and credit unions, must notify applicants seeking loans for insurable buildings in flood hazard areas that:*
 - *There is a flood hazard and*
 - *The property is not eligible for Federal disaster relief.*

UNIT 2–LEARNING EXERCISE -ANSWERS

1. Where does most of the money come from to pay the expenses of the NFIP?

Premium income. The NFIP has been self-supporting since 1986.

2. How many communities currently participate in the NFIP?

More than 19,000

3. What is a “pre-FIRM” building?

A building built before the effective date of the community’s Flood Insurance Rate Map.

4. Is there any relation between how a community regulates new construction and flood insurance rates?

Yes. Buildings built in accordance with the community’s regulations have a lower risk of flooding and can be insured at lower rates.

5. List two things your community committed itself to when it joined the NFIP.

*-Issuing or denying floodplain development/building permits.
- Inspecting all development to assure compliance with the local ordinance.
- Maintaining records of floodplain development.
-Assisting in the preparation and revision of floodplain maps.
- Helping residents obtain information on flood hazards, floodplain map data, flood insurance and proper construction measures.*

6. Insurance companies set flood insurance rates and coverage rules. True or false?

False. Flood insurance rates and coverage rules are set by FEMA’s Federal Insurance Administration.

7. What can FEMA do to encourage a community to adequately enforce its floodplain management regulations?

*If the community is in the Community Rating System, it can reclassify it to a Class 10 (no insurance premium discount).
The community can be put on probation.
The community can be suspended.*

8. What are the sanctions if a community is suspended from the NFIP?

The same as for nonparticipation (see question 6, Learning Check 2). Suspension means the community is no longer a participant in the NFIP.

UNIT 3 LEARNING CHECK #1

1. As directed by the National Flood Insurance Act of 1968, FEMA conducts flood studies in order to determine _____ and _____ .
2. The base flood is a flood that has a _____ of occurring in any year.
3. The base flood is also called the _____ - year flood.
4. Determine whether the following statements are true or false. Circle T for True and F for False.

A 100-year flood will occur only once every 100 years. T F
A 100-year flood could occur two times in one year. T F
The 100-year flood might not occur in a 200-year period. T F
The base flood could occur in two consecutive years in a row. T F
5. On NFIP maps, the base floodplain is called the _____ .
_____. (4 words)
6. BFE is the acronym for _____ .
7. What are the components of a Flood Insurance Study?

UNIT 3-LEARNING CHECK #2

1. For purposes of a riverine flood study, _____ is the study of the distribution and circulation of water in the environment, and _____ is the study of fluids in motion and how water will flow through the channel.
2. The rate at which runoff (an amount of water) flows downstream is called the flood _____.
3. What probable effect does increase in urbanization within a community or upstream of it have on the stream discharges within that community?
4. What consequence on flood water level of a stream would usually occur when a bridge is constructed over a stream?
5. To locate the true elevations at a site, surveyors have established _____ marks also known as _____ marks.
6. Cross sections describe the _____ of the floodplain.
7. What is the datum used for your FIS, FIRM, and profiles?
8. Flood profiles are developed by plotting the flood elevations at the _____ and connecting the plotted points.
9. To make a floodplain map, the base flood elevations are plotted on a _____ map or a _____ map.
10. The _____ is defined as the stream channel and that portion of the adjacent floodplain that must remain open to permit passage of the base flood.
11. A floodway analysis conducted to the minimum NFIP standard allows the fringe to be obstructed until the base flood level is increased by how much?

UNIT 3-LEARNING CHECK #3

1. What causes storm surge?
2. What is wave runup?
3. Instead of cross sections, coastal flood engineers survey _____ .
4. The BFEs for coastal studies are the _____ plus the _____
_____ .
5. The most hazardous part of the coastal floodplain is the _____
_____ area, which is shown on the map as a _____ Zone.
6. What differentiates shallow flooding from riverine flooding?
7. Flood studies that do not identify BFEs are called _____ .

UNIT 3-LEARNING CHECK #4

1. Prior to 1986, the maps published with an FIS were the _____ and the _____ .
2. Since 1986, the map published with an FIS is the _____.
3. Is your community's FIRM a flat or Z-fold map?
4. How many panels does your FIRM have?
5. What is the map scale of your FIRM?
6. What does an elevation reference mark look like on a FIRM?
7. What is an AO Zone?
8. What is the FIRM effective date for your community?
9. How is a floodway shown on the Flood Boundary and Floodway Map?
10. How is a floodway shown on the new format FIRM?
11. A Zone C on an old format FIRM is shown as a Zone ____ on the new format FIRM.
12. CBRA stands for _____
13. What communities' floodplains are shown on a countywide FIRM?
14. Floodways are shown along the _____ toe of a levee on the FIRM.
15. Areas behind recognized levees are designated as _____.

UNIT 3-LEARNING EXERCISE

1. The base flood elevation is the elevation of the ____ - year flood or the ____ % annual chance flood.
2. The Special Flood Hazard Area or SFHA is what the _____ floodplain is called on FEMA maps.
3. The SFHA is shown on a FIRM as a Zone that begins with the letter ____ or ____ .
4. What are the components of a Flood Insurance Study?
5. List three things that a FIRM is used to determine.
6. _____ is the study of a watershed's behavior during and after a storm.
7. Surveyors reference elevation to a common _____ .
8. Most permanent FIS elevation reference marks are referenced to what datum?
9. A hydraulic study uses the hydrology, cross section information, and stream characteristics to determine the flood _____ .
10. Cross sections are shown on which map?
11. Flood profiles are used to determine what?
12. In riverine situations, the floodplain is divided into two separate parts for floodplain management purposes. These parts are the _____ and the _____.
13. Based on the minimum NFIP standard, if the flood fringe were completely filled, how high could the base flood elevation go up?
14. What FIRM zone has wave heights greater than three feet?
15. Instead of using a base flood elevation, some shallow flooding areas are defined using a base flood _____ .
16. An approximate study shows the base _____ but does not show the base flood _____ .
17. How many digits are there in the NFIP community identification number?
18. What is an AH Zone?
19. What was the problem with the way the floodway was shown on the old format Flood Boundary and Floodway Maps?

20. The new format FIRMs include:

21. Do Q3 Flood Data show base flood elevations if they are available?

UNIT 3-LEARNING CHECK #1 - ANSWERS

1. As directed by the National Flood Insurance Act of 1968, FEMA conducts flood studies in order to determine _____ and _____ .

floodprone areas and flood risk zones

2. The base flood is a flood that has a _____ of occurring in any year.

one percent chance

3. The base flood is also called the _____ - year flood.

100-year

4. Answer the following questions (circle T for True and F for False):

A 100-year flood will occur only once every 100 years. T___ F___

A 100-year flood could occur two times in one year. T___ F___

The 100-year flood might not occur in a 200-year period. T___ F___

The base flood could occur two consecutive years in a row. T___ F___

F T T T

5. On NFIP maps, the 100-year floodplain is called the _____ .

Special Flood Hazard Area

6. BFE is the acronym for _____ .

base flood elevation

7. What are the components of a Flood Insurance Study?

The FIS — Flood Insurance Study report

The FIRM — Flood Insurance Rate Map

The Flood Boundary and Floodway Map, which is included in studies prepared before 1986 (Since 1986, floodways are shown on the FIRM)

UNIT 3—LEARNING CHECK #2 -ANSWERS

1. For purposes of a riverine flood study, _____ is the study of the distribution and circulation of water in the environment, and _____ is the study of fluids in motion and how water will flow through the channel.

Hydrology, hydraulics

2. The rate at which runoff flows downstream is called the flood _____ .

discharge

3. What probable effect does increase in urbanization within a community or upstream of it have on the stream discharges within that community?

Stream discharges usually will increase as a consequence to the increase in urbanization within a community or upstream of it.

4. What consequence on flood water level of a stream would usually occur when a bridge is constructed over a stream?

A hydraulic analysis is always required to determine the effect of any bridge construction over a stream. However, construction over a stream is considered an obstruction to the flow and therefore may increase the flood water level upstream of the construction.

5. To locate the true elevations at a site, surveyors have established _____
_____ marks also known as _____ marks.

elevation reference, bench

6. Cross sections describe the of the floodplain.

shape

7. What is the datum used for your community's flood insurance study, FIRM, and profiles?

Depends on the community. Check the Legend or Key to your FIRM.

8. Flood profiles are developed by plotting the flood elevations at the _____
_____ and connecting the plotted points.

cross sections

9. To make a floodplain map, the base flood elevations are plotted on a _____ map or a _____ map.

topographic or contour

10. The _____ is defined as the stream channel and that portion of the adjacent floodplain that must remain open to permit passage of the base flood.

Floodway

11. A floodway analysis conducted to the minimum NFIP standard allows the fringe to be obstructed until the base flood level is increased by how much?

one foot

UNIT 3—LEARNING CHECK #3 -ANSWERS

1. What causes storm surge?

Storms that bring air pressure changes and strong winds that “pile” water up against the shore

2. What is wave runoff?

When waves hit the shore, water moves with such force that it keeps traveling inland higher than the stillwater flood level.

3. Instead of cross sections, coastal flood engineers survey _____ .

transects

4. The BFEs for coastal studies are the _____ plus the _____ .

stillwater elevations, wave runoff

5. The most hazardous part of the coastal floodplain is the _____ area, which is shown on the map as a _____ Zone.

coastal high hazard, V

6. What differentiates shallow flooding from riverine flooding?

Shallow flooding is distinguishable from riverine or coastal flooding because it occurs in areas where there is no channel or identifiable flow path.

7. Flood studies that do not identify BFEs are called _____ .

approximate studies

UNIT 3—LEARNING CHECK #4 -ANSWERS

1. Prior to 1986, the maps published with an FIS are the _____ and the _____.
Since 1986, the map published with an FIS is the _____.

old format FIRM, FBFM or Floodway Map

new format FIRM

Is your community's FIRM a flat or Z-fold map?

Depends on the community.

2. How many panels does your FIRM have?

Depends on the community.

3. What is the map scale of your FIRM?

Depends on the community.

4. What does an elevation reference mark look like on a FIRM? “

Locations are identified with a small “x” and the designation “ERM” or “RM” followed by a number.

5. What is an AO Zone?

The area subject to sheet flow, ponding, or shallow flooding.

6. What is the FIRM effective date for your community?

Depends on the community. This is the date of the first FIRM for your community. It is an important date to know as it determines whether buildings are considered pre-FIRM or post-FIRM. If you are unsure of the date, contact your FEMA Regional Office or State NFIP Coordinator.

7. How is a floodway shown on the Flood Boundary and Floodway Map?

It's the white area adjacent to and including the channel.

8. How is a floodway shown on the new format FIRM?

It is a shaded area with diagonal lines.

9. A Zone C on an old format FIRM is shown as a Zone ____ on the new format FIRM.

Zone X

10. CBRA stands for _____
_____.

Coastal Barriers Resources Act

11. What communities' floodplains are shown on a countywide FIRM?

All the communities in the county, even those currently not in the NFIP.

12. Floodways are shown along the _____ toe of a levee on the FIRM.

landside

13. Areas behind recognized levees are designated as _____.

Shaded Zone X

UNIT 3—LEARNING EXERCISE -ANSWERS

1. The base flood elevation is the elevation of the ____ - year flood or the ____ % annual chance flood.

100, 1

2. The Special Flood Hazard Area or SFHA is how the _____ floodplain is shown on FEMA maps.

base flood

3. The SFHA is shown on a FIRM as a Zone that begins with the letter ____ or ____ .

A or V

4. What are the components of a Flood Insurance Study?

Flood Insurance Study report

Flood Insurance Rate Map

Flood Boundary and Floodway Map for studies conducted prior to 1986. In studies conducted since 1986, the floodway data are shown on the FIRM and there is no separate Flood Boundary and Floodway Map.

5. List three things that a FIRM is used to determine.

Whether a property is in the floodplain

The flood insurance zone that applies to a property

The approximate BFE at a site

6. _____ is the study of a watershed's behavior during and after a storm.

hydrology

7. Surveyors reference elevation to a common _____ .

datum

8. Most permanent FIS elevation reference marks are referenced to what datum?

National Geodetic Vertical Datum or NGVD

9. A hydraulic study uses the hydrology, cross-section information, and stream characteristics to determine the flood _____ .

elevations (also velocities and floodplain widths)

10. Cross sections are shown on which map?

*Floodway Map
New format FIRM*

11. Flood profiles are used to determine what?

Flood elevations along a river or a stream between cross sections

12. In riverine situations, the floodplain is divided into two separate parts for floodplain management purposes. These parts are the _____ and the _____.

floodway, flood fringe

13. Based on the minimum NFIP standard, if the flood fringe were completely filled, how high could the base flood elevation go up?

one foot

14. What FIRM zone has wave heights greater than three feet?

V Zone

15. Instead of using a base flood elevation, some shallow flooding areas are defined using a base flood _____ .

depth

16. An approximate study shows the base _____ but does not show the base flood _____ .

Floodplain, elevation

17. How many digits are there in the NFIP community identification number?

They always have six digits. This is important to avoid confusion with the five-digit countywide FIRM Number. The community identification number does not include the panel number and other numbers that appear near it on the FIRM title block.

18. What is an AH Zone?

Shallow flooding base floodplain with base flood elevations.

19. What was the problem with the way the floodway was shown on the old format Flood Boundary and Floodway Maps?

The white area looked like it was a C Zone outside the floodplain. Also, people who had only a FIRM did not know of the floodway hazard.

20. The new format FIRMs include:

*floodways and floodplain management information
simplified flood insurance zones*

21. Do Q3 Flood Data show base flood elevations if they are available?

No. They are designed primarily to determine if a property is in or out of the SFHA.

UNIT 4- LEARNING CHECK #1

Using what you have learned so far, use the FIS report and FIRM for Flood County, USA to answer the following questions.

1. What is the base flood discharge on the Rocky River just upstream of Wellington Road?
2. What is the 10-year peak discharge for Cobb Brook?
3. How many cross sections were surveyed for Cobb Brook?
4. What is the width of the floodway for the Rocky River at cross-section G?
5. What is the flood elevation at cross-section G of the Rocky River that you would use for regulating new construction?
6. What is the best source of base flood elevation data for regulatory purposes for a coastal floodplain?
7. In which FIRM Zone is Site F located?
8. What is the regulatory base flood elevation at Site F?

UNIT 4-LEARNING CHECK #2

1. How many feet does one inch on Flood County FIRM panel 38 represent?
2. How many feet does one inch on Flood County FIRM panel 25 represent?
3. Using Flood County FIRM panel 40 and the engineer's scale, what is the width of the floodway at cross-section F on the Rocky River?
4. Using the Floodway Data Table, what is the floodway width at cross-section F on the Rocky River?
5. Using FIRM panel 40 and the engineer's scale, what is the distance between cross-sections F and G on the Rocky River?
6. What is the distance between cross-sections F and G on the Rocky River according to the Floodway Data Table?
7. Site C is within the Town of Floodville. How high is the base flood elevation at Site C?
8. What is the regulatory base flood elevation at cross-section D on the Rocky River?
9. RM 40-2 is located on panel 40 near the intersection of South Road and Dairy Road. How far is RM 40-2 from the closest SFHA?
10. Site E is on panel 25 at the western limit of Cedar Hill Road just north of Dean Lake. What is the base flood elevation at Site E?
11. A 50' x 50' building is located 200 feet south of RM 40-2 on panel 40. Is it in the floodway?

UNIT 4-LEARNING CHECK #3

1. What is the base flood elevation for the Rocky River at cross-section C:
 - a. Using the flood profiles in the FIS report?
 - b. Using the Floodway Data Table?
 - c. If these numbers are different, which BFE should you use?
2. An “I” symbol is plotted 1,910 feet upstream of the confluence with the Rocky River on Flood Profile 01P. What does this symbol represent?
3. Is the footbridge upstream or downstream from the limit of detailed study?
4. Using Flood Profile 03P, determine the BFE on the Rocky River for a site that is 520 feet downstream of Fox Croft Drive.
5. How far is the Fox Croft Drive bridge from cross-section D on the Rocky River?
6. A developer proposes to place a structure 625 feet (0.12) miles upstream from the Martling Way Bridge adjacent to the Rocky River (FIRM panel 38). Using the flood profiles, tell the developer how high the structure would have to be elevated to be above the base flood elevation as well as the 500-year flood elevation.
7. A particular site is 750 feet upstream of Argyle Way adjacent to the Rocky River (FIRM panel 38). What is the base flood elevation here?

UNIT 4-LEARNING CHECK #4

1. What office is the primary repository for your FIS, FIRM, or Floodway Map?
2. How do you get more copies of your FIRM?
3. What are the four types of map changes?
4. Mrs. Murphy says she has a survey that shows that her house is higher than the flood level. What type of map change should she request?
5. For what locations on her property will Mrs. Murphy need elevation data?
6. A builder wants to get a bank loan to develop an area. His plans are to fill some low spots and get all the building sites out of the floodplain. His banker will not grant a loan for the project unless she is reassured that the FIRM will be changed when the project is finished. What type of map change should the builder request?

UNIT 4-LEARNING EXERCISE

1. Using the Flood Insurance Study for Flood County, USA and Incorporated Areas:
2. What is the community number for the unincorporated areas of Flood County?
3. What is the best map to use to determine if a property is in the SFHA?
4. What is the best map to use to determine if a property is in a floodway?
5. What is the effective date of the Flood County FIRM?
6. Is the Flood County FIRM in the old format or new format?
7. Look at the Flood County FIRM Index. Why is there no FIRM panel for the northwest corner of the county?
8. If you measured a distance on the ground as 500 feet, how many inches would it be on the Flood County FIRM panel 25?
9. How many miles of stationing would there be if you measured a distance between two cross sections as 1,050 feet?
10. Marge's house is located at Site F on Flood County FIRM panel 40. How far is her house from the boundary of the nearest coastal barrier?
11. Examining the Atlantic Coastline, what is the highest wave crest elevation shown on the FIRM?
12. What FIRM panel is RM 38-1 on?
13. What is the base flood elevation at the location given orally?
14. If a surveyor wanted to locate RM 38-1 on the ground, what would he or she look for?
15. How high above sea level is RM 40-1?
16. A site is located at the point formed by the intersection of Glebe Way and Foley Drive between Foley Drive and the Rocky River.
17. On which FIRM panel is the site?
18. In which FIRM zone is the site?
19. What is the base flood elevation at the site?
20. The property is in which of the following? (Check those that apply.)

- _____ 100-year floodplain
- _____ 100-year floodway
- _____ 500-year floodplain
- _____ Coastal High Hazard Area
- _____ Designated coastal barrier

21. A site is on the banks of Cobb Brook, 100 feet west of Tullamore Lane bridge.
- a. On which FIRM panel is the site?
 - b. In which FIRM zone is the site?
 - d. What is the base flood elevation at the site using the FIRM?
 - e. What is the base flood elevation at the site using the profile?
22. A vacant lot near Site D was recently purchased. The new owners ask for your help in locating the best spot to build a new house. The FIRM shows the entire property in the SFHA. You are handy with a transit, so you survey the proposed building site during a visit to the property. You find that the building site is above the BFE. The owners want you to inform their bank so they won't have to buy flood insurance. What do you say?
23. When the Flood County FIS was completed, the watershed of the Rocky River was relatively undeveloped. Over the last 15 years, there has been a lot of new construction throughout this small watershed. The Town Engineer says that the base flood elevations are probably out of date and underestimate the true flood hazard. What can you do to attempt to get your FIRM updated?

UNIT 4-LEARNING CHECK #1 -ANSWERS

1. What is the base flood discharge on the Rocky River just upstream of Wellington Road?

2,610 cubic feet per second (cfs). See Table 3 on page 9 of the Flood County FIS report. This is a tough question if you forgot that the base flood is the same as the 100-year flood.

2. What is the 10-year peak discharge for Cobb Brook?

560 cfs. See Figure 4-1 or Table 3 on page 9 of the Flood County FIS report.

3. How many cross sections were surveyed for Cobb Brook?

3; cross-sections A through C

4. What is the width of the floodway for the Rocky River at cross-section G?

230 feet

5. What is the flood elevation at cross-section G of the Rocky River that you would use for regulating new construction?

11.6 feet. Don't forget to use the "regulatory" base flood water-surface elevation.

6. What is the best source of base flood elevation data for regulatory purposes for a coastal floodplain?

The FIRM

7. In which FIRM Zone is site F?

VE

8. What is the regulatory base flood elevation at site F?

13.4 feet, NGVD (13 feet from the FIRM plus 0.4 foot to make sure that the regulatory elevation will be high enough)

9. How many feet does one inch on the Flood County FIRM panel 38 represent?

500 feet

10. How many feet does one inch on the Flood County FIRM panel 25 represent?

2,000 feet

11. Using the Flood County FIRM panel 40 and the engineer's scale, what is the width of the floodway at cross-section F on the Rocky River?

Approximately 250 feet

12. Using the Floodway Data Table, what is the floodway width at cross-section F on the Rocky River?

270 feet

13. Using the FIRM panel 40 and the engineer's scale, what is the distance between cross-sections F and G on the Rocky River?

Approximately 700 feet (0.13 mile) measured along the stream channel.

14. What is the distance between cross-sections F and G on the Rocky River according to the Floodway Data Table?

668 feet (0.13 mile)

15. Site C is within the Town of Floodville. How high is the base flood elevation at Site C?

11 feet

16. What is the regulatory base flood elevation at cross-section D on the Rocky River?

11.2 feet

17. RM 40-2 is located on panel 40 near the intersection of South Road and Dairy Road. How far is RM 40-2 from the closest SFHA?

Approximately 500 feet to Zone AE to the south.

18. Site E is on panel 25 at the western limit of Cedar Hill Road just north of Dean Lake. What is the base flood elevation at Site E?

We don't know. It's an approximate A Zone.

19. A 50' x 50' building is located 200 feet south of RM 40-2 on panel 40. Is it in the floodway?

No, it is not because the floodway boundary is approximately 600 feet south of RM 40-2.

UNIT 4—LEARNING CHECK #2 -ANSWERS

1. What is the base flood elevation for the Rocky River at cross-section C:

a. Using the flood profiles in the FIS report?

11.0 feet

b. Using the Floodway Data Table?

10.9 feet

2. If these numbers are different, which BFE should you use?

The BFE provided in the Floodway Data Table is more accurate.

3. An “I” symbol is plotted 1,910 feet upstream of the confluence with the Rocky River on Flood Profile 01P. What does this symbol represent?

A footbridge

4. Is the footbridge upstream or downstream from the limit of detailed study?

Downstream

5. Using Flood Profile 03P, determine the BFE on the Rocky River for a site that is 520 feet downstream of Fox Croft Drive.

11.4 feet. On profile 03P, 5,200 feet is one inch from the x-axis. The site is approximately one inch to the left of the “I” symbol for the Fox Croft Drive bridge.

6. Using Flood Profile 03P, determine how far the Fox Croft Drive bridge is from cross-section D of the Rocky River.

1,980 feet, or 0.38 mile

7. A developer proposes to place a structure, 625 feet (0.125 miles) upstream from the Martling Way bridge adjacent to the Rocky River (FIRM Panel 38). Using the flood profiles, tell the developer how high the structure would have to be elevated to be protected from the base flood elevation and the 500-year flood elevation.

For the base flood, the structure should be elevated above 10.8 feet NGVD. For the 500-year flood, it should be elevated above 11.8 feet NGVD.

8. A particular site is 750 feet upstream of Argyle Way adjacent to the Rocky River (FIRM panel 38). What is the BFE here?

11.2 feet NGVD as seen on Flood Profile 03P.

UNIT 4—LEARNING CHECK #3 -ANSWERS

1. What office is the primary repository for your FIS, FIRM, and/or Floodway Map?

Depends on the community, but it is a local community office.

2. How do you get more copies of your FIRM?

Call or send a mail or fax request to the Map Service Center in Jessup, Maryland.

3. What are the four types of map changes?

A restudy is a new Flood Insurance Study for some or all of the community.

A limited map maintenance project (LMMP) is a small-scale restudy that is limited in size and cost.

An amendment is used to remove an area that was inadvertently included in the SFHA.

A map revision is used for all other cases.

4. Mrs. Murphy says she has a survey that shows that her house is higher than the flood level. What type of map change should she request?

A Letter of Map Amendment (LOMA) is the appropriate way to remove a single lot from the SFHA based on elevation data.

5. For which locations on her property will Mrs. Murphy need elevation data?

The elevation of the lowest grade adjacent to the building.

6. A builder wants to get a bank loan to develop an area. His plans are to fill some low spots and get all the building sites out of the floodplain. His banker will not grant a loan for the project unless she is reassured that the FIRM will be changed when the project is finished. What type of map change should the builder request?

A Conditional Letter of Map Revision based on fill (CLOMR-F).

UNIT 4—LEARNING EXERCISE -ANSWERS

1. Using the Flood Insurance Study for Flood County, USA and Incorporated Areas:

2. What is the community number for the unincorporated areas of Flood County?

990099

3. What is the best map to use to determine if a property is in the SFHA?

FIRM

4. What is the best map to use to determine if a property is in a floodway?

FIRM

5. What is the effective date of the Flood County FIRM?

August 19, 1998

6. Is the Flood County FIRM in the old format or new format?

New format

7. Look at the Flood County FIRM Index. Why is the FIRM not printed for the northwest corner of the county?

There is no SFHA on this panel. The area covered by panel 0030 D is in Zone C.

8. If you measured a distance on the ground as 500 feet, how many inches would it be on Flood County FIRM panel 25?

The scale of panel 25 is 1"=2,000'. 500 feet would be 0.25 inches.

9. How many miles of stationing would there be if you measured a distance between two cross sections as 1,050 feet?

About 0.2 mile. $1,050 \text{ feet} / 5,280 \text{ feet per mile} = 0.198 \text{ miles}$, rounded to 0.2.

10. Marge's house is located at Site F on Flood County FIRM panel 0040. How far is her house from the boundary of the nearest coastal barrier?

Approximately 2,900 feet.

11. Examining the Atlantic Coastline, what is the highest wave crest elevation shown on the FIRM?

14 feet

12. What FIRM panel is RM 38-1 on?

0038 D

13. What is the base flood elevation at the location given orally?

The answer depends on location given.

14. If a surveyor wanted to locate RM 38-1 on the ground, what would he or she look for?

A chiseled square in the southwest corner of northwest wing wall of Argyle Way Bridge over the Rocky River. See the Elevation Reference Marks legend on the left border of FIRM panel 38.

15. How high above sea level is RM 40-1?

16.54 feet NGVD.

16. A site is located at the point formed by the intersection of Glebe Way and Foley Drive between Foley Drive and the Rocky River.

17. On which FIRM panel is the site?

0038 D

18. In which FIRM zone is the site?

Zone AE

19. What is the base flood elevation at the site?

10 feet

20. The property is in which of the following? (Check those that apply.)

<input type="checkbox"/> 100-year floodplain	<i>yes</i>
<input type="checkbox"/> 100-year floodway	<i>no</i>
<input type="checkbox"/> 500-year floodplain	<i>yes</i>

21. (If it's in the 100-year floodplain, it's in the 500-year floodplain too.)

___ Coastal High Hazard Area *no (it's not in the V Zone)*
___ Designated coastal barrier *no*

22. A site is on the banks of Cobb Brook, 100 feet west of Tullamore Lane bridge.

23. On which FIRM panel is the site?

0038 D

24. In which FIRM zone is the site?

Unshaded Zone X

25. What is the base flood elevation at the site using the FIRM?

No BFEs in Zone X.

26. What is the base flood elevation at the site using the profile?

There are no profiles for Zone X.

27. A vacant lot near Site D was recently purchased. The new owners ask for your help in locating the best spot to build a new house. The FIRM shows the entire property in the SFHA. You are handy with a transit, so you survey the proposed building site during a visit to the property. You find that the building site is above the BFE. The owners want you to inform their bank so they won't have to buy flood insurance. What do you say?

It must be noted that banks (and others who must read the FIRM to determine if flood insurance is required) must go by the map. They cannot make on-site interpretations based on data other than the FIRM. However, they may recommend that the property owner submit a request for a letter of map revision or map amendment to FEMA so the map can be officially changed to reflect the more accurate data.

28. When the Flood County FIS was completed, the watershed of the Rocky River was relatively undeveloped. Over the last 15 years, there has been a lot of new construction throughout this small watershed. The Town Engineer says that the base flood elevations are probably out of date and underestimate the true flood hazard. What can you do to attempt to get your FIRM updated?

Request a restudy or a limited map maintenance project from FEMA.

UNIT 5 LEARNING CHECK #1

1. What publication has the NFIP requirements for communities?
2. Most of the requirements relative to your community's ordinance are in 44 CFR Parts ____ and ____ .
3. Does your ordinance comply with the latest NFIP requirements?
4. Which part of 44 CFR 60.3 covers the requirements for areas with a FIRM, but no base flood elevations?
5. What is "Basic rule #1" for using maps and data?
6. What map do you use if recently annexed areas do not show up on your community's FIRM?
7. If you find information that shows the ground to be higher than the BFE, can a bank use that data when determining whether a flood insurance policy must be purchased?
8. Site E is in the approximate A Zone of Dean Lake. A developer wants to build a small commercial building on a 3 acre site. Where do you get a base flood elevation for Site E?
9. A developer downstream of Dean Lake wants to build a 40 acre subdivision that crosses Ireland Creek. You need a base flood elevation before you review the plans. What options do you tell the developer he has?
10. A restudy was performed on the Josias River. The preliminary study will not be final for another five months. It shows a new BFE at Site N that is two feet higher than the BFE in your current FIS. Which one do you use to determine the flood protection level for a new home at Site N?

UNIT 5-LEARNING CHECK #2

1. What is basic rule #2 on what needs a permit in the floodplain?
2. Define “development” as the term is used in your ordinance.
3. Does your community only require building permits? If so, does someone who wants to fill a vacant lot need a permit from the community?
4. The State in which Flood County is situated requires a permit from the state Department of Environmental Protection for development on primary sand dunes. A permit applicant wants to build on one near Site F. Department staff informs you that based on the plans they have seen, they will have to deny the state permit. Should the Flood County permit officer issue a floodplain development permit?
5. What is Basic rule #3 as it relates to encroachments in riverine floodplains?
6. An encroachment review should review projects in a floodway for what two things?
7. A farmer wants to build a dairy barn in the floodway. Will he need to provide you with a “no-rise” certification before you can issue the permit?
8. The same farmer wants to build a small addition onto his farmhouse (also in the floodway). Can this be designed so he won’t have to pay for an engineer’s encroachment review?
9. In a riverine AE Zone with a base flood elevation, what must a developer show in order to demonstrate that he is meeting Basic Rule #3?
10. Does your state have a more restrictive standard than allowing flood heights to increase by one foot?

UNIT 5-LEARNING CHECK #3

1. What does Basic rule #4 say about new buildings in A Zones?
2. Where would elevation on piles or columns be preferred?
3. Can a basement be considered the “lowest floor?”
4. If a residence is elevated above the BFE in an A Zone, where do you measure how high the building is?
5. What can be allowed under the lowest floor of an elevated building?
6. Mr. Jones shows you plans for a house elevated on a concrete block crawl-space. The area of the crawlspace will be 1,750 square feet.

How many standard 8” x 16” openings will be needed?

How high can they be above ground level?

Can Mr. Jones put his hot water heater in the crawlspace?

7. Mrs. Smith is elevating a house in the AE Zone 8’ above grade. How can you make sure that the area below the lowest floor won’t be improved, finished or otherwise turned into living space?
8. What three things do you need to check for to ensure that a building is floodproofed?
9. Can a new home in the flood fringe be floodproofed?
10. What’s the NFIP definition of “basement?”
11. If a building is proposed to be located in a riverine floodplain with flood velocities of 8-10 feet per second, what should you ask the builder to provide to assure you that the building won’t get washed away during a flood?
12. The builder of a house to be elevated on concrete columns wants to use wood for the stairway. He is concerned that wood will swell and warp if it gets wet during a flood. Can a portion of the house below the BFE be built of wood?
13. How is a manufactured home outside of a manufactured housing park treated differently from a conventional “stick built” home?
14. How is a 600 square foot motor home that is permanently attached to a reinforced block wall foundation treated differently from a manufactured home?

UNIT 5-LEARNING CHECK #4

1. What does Basic rule #5 say about new buildings in V Zones?
2. Can a new building be built in the V Zone elevated on a crawlspace?
3. Where is the lowest floor measured in a V Zone?
4. What does the permit official do to be sure that a V Zone building will be adequate to resist the wind and water loads?
5. What's the best way to deal with sand dunes in a V Zone development site?
6. If a subdivider makes sure that all building sites are above the BFE, does he need to do anything more to meet the NFIP requirements?
7. How can you protect a sewer system from flooding?

UNIT 5-LEARNING EXERCISE

1. In what part of the Code of Federal Regulations would you find the definition for “development.?”
2. Where do I find the NFIP requirements for areas mapped with V Zones?
3. If a community has a FIRM that shows floodways and V Zones, which parts of 44 CFR 60.3 must it abide by?
4. If your community follows the requirements of 44 CFR 60.3(d), does it have to worry about what’s in 44 CFR 60.3(b)?
5. A building official finds it easier to read an old flood map prepared on an aerial photograph by the Corps of Engineers. He doesn’t want to use the current FIRM because it doesn’t show all the buildings and features that the photograph does. Can he make permit decisions based on the Corps map instead of the FIRM?
6. A developer wants to build in an area mapped as an approximate A Zone on Ireland Creek. He conducts a detailed flood study which is approved by the Town Engineer. It shows that several lots in the A Zone are actually higher than the BFE calculated in the study.
7. Can you issue permits for building on those sites and treat them as C Zone sites?
8. Will the buyers of the properties have to buy flood insurance policies?
9. Joe Hunter wants to build a small hunting cabin on a lake in an approximate A Zone. It will be the only building within two miles. There are no known sources of a base flood elevation. The cabin will cost less than \$10,000 and he does not want to pay \$2,000 for an engineering study to develop a BFE. What can you do to make sure the property is protected from flooding?
10. Will a developer in an approximate A Zone have to prepare a detailed study to calculate base flood elevations if the development is:
 - 4 acres?
 - 60 lots?
 - Reserving all the SFHA as open space?
11. A restudy was performed on the Rocky River. The preliminary study will not be final for another five months. It shows a new BFE at Site B that is two feet lower than the BFE in your current FIS. Which one do you use to determine the flood protection level for a new home at Site A?
12. Does dredging a creek to make it deeper to reduce flood levels need a floodplain permit?

13. Does replacing an old manufactured home with a new one on the same foundation need a permit?
14. If an old manufactured home is replaced with a new one on the same foundation, will the new one have to be elevated above the BFE?
15. If a project will involve filling a wetland, is it likely that a federal or state permit will be needed?
16. A builder wants to put a house in the floodway. How much can his project increase the base flood elevation (in feet)?
17. Will paving a dirt street in the floodway need an engineer's "no-rise" certification?
18. A city councilman complains that the NFIP floodway regulations prevent construction of a flood control dam that will protect people from flooding. What can you tell him?
19. Does a substantial improvement to an existing building have to meet the same requirements as construction of a new building?
20. Can a new nonresidential building be built:
 - a. On fill in the flood fringe?
 - b. On fill in the floodway?
 - c. On fill in the V Zone?
 - d. At grade, but floodproofed in the flood fringe?
 - f. At grade, but floodproofed in the V Zone?
21. A builder wants to build an apartment building on stem walls parallel to the flow of water with the lowest floor 8' above grade. Can the lower area be used as a parking lot?
22. What's the best record to keep to be sure that a house was elevated high enough?
23. How many standard 8" x 16" openings are needed for a building that will have a 2,250 square foot crawlspace?
24. Can the owner store garden tools in a floodable crawlspace?
25. A business on the Mississippi River wants to build a floodproofed warehouse in the flood fringe. The plans are to have the walls built of reinforced concrete up to the BFE. Several garage doors will be open at grade to allow trucks in and out, but the design includes movable shields that can be put in place before floodwaters arrive. There would be no other openings below the BFE. The warehouse will have a 24-hour security force that will be trained on how to install the shields. The design engineer will certify that the building will be floodproofed (with human intervention) up to the base flood elevation. Can you approve these plans?

26. A builder wants to build a “bi-level” house where the lowest floor is three feet below grade. The lowest floor has large windows and includes three bedrooms and a bathroom. Because it is habitable space, the owner does not consider this a “basement.” Does the NFIP consider this a “basement?”
27. The area below a planned elevated house in the V Zone will have a 260 square foot enclosure to house the entryway and storage closets. The builder wants to insulate the area and finish it with wallboard, wallpaper and carpeting. He says it’s OK because the area is under 300 square feet. What do you tell him?
28. Where can you find standards for tying down manufactured homes?
29. A new house is planned to be built in an SFHA marked “Zone AO (depth 3 feet).” How high should the lowest floor be?
30. Why are pilings and posts preferred in V Zones?

UNIT 5—LEARNING CHECK #1 -ANSWERS

1. What publication has the NFIP requirements for communities?

Chapter 44 of the Code of Federal Regulations

2. Most of the requirements relative to your community's ordinance are in 44 CFR Parts ____ and ____.

59 and 60

3. Does your ordinance comply with the latest NFIP requirements?

Check with your FEMA Regional Office or State NFIP Coordinator

4. Which part of 44 CFR 60.3 covers the requirements for areas with a FIRM, but no base flood elevations?

44 CFR 60.3(b)

5. What is "Basic rule #1" for using maps and data?

You must use the latest maps and flood data published by FEMA.

6. What map do you use if recently annexed areas do not show up on your community's FIRM?

The FIRM for the county or the community the property used to be in. It is important to note that the community generally must also adapt the map in its ordinance to be legally enforceable.

7. If you find information that shows the ground to be higher than the BFE, can a bank use that data when determining whether a flood insurance policy must be purchased?

No. Insurance agents and lenders must use the current FIRM when setting insurance rates and determining whether flood insurance is required. If a person wants to vary from the current FIRM to obtain different premium rates or to not have to purchase a flood insurance policy, the FIRM must be officially revised or amended. This can be done through a LOMA.

8. Site E is in the approximate A Zone of Dean Lake. A developer wants to build a small commercial building on a 3 acre site. Where do you get a base flood elevation for Site E?

Try these sources (in order of preference):

Check with your state NFIP coordinator, local water-related districts, the Corps of Engineers, etc. to see if there are any existing studies.

It is possible that the highway agency did a study of the stream when the Turnpike bridge was built.

See if the Town Engineer or the developer's engineer will conduct a study.

Use the flood of record plus a margin of protection

9. A developer downstream of Dean Lake wants to build a 40 acre subdivision that crosses Ireland Creek. You need a base flood elevation before you review the plans. What options do you tell the developer he has?

*He can conduct a flood study and produce the BFEs at his expense or
He can set the A Zone aside as open space and not conduct a flood study.*

10. A restudy was performed on the Josias River. The preliminary study will not be final for another five months. It shows a new BFE at Site N that is two feet higher than the BFE in your current FIS. Which one do you use to determine the flood protection level for a new home at Site N?

The draft revised data should be used unless the community disagrees with the data and intends to appeal it. As noted previously, the community must first legally adapt the preliminary study in their ordinance.

UNIT 5—LEARNING CHECK #2 -ANSWERS

1. What is basic rule #2 on what needs a permit in the floodplain?

A permit is required for all development in the SFHA.

2. Define “development” as the term is used in your ordinance.

Your ordinance should have a definition that reads very much like: “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.”

3. Does your community only require building permits? If so, does someone who wants to fill a vacant lot need a permit from the community?

Depends on the community. If the answer is not “yes,” then you need to revise your ordinance and permit procedures.

4. The state in which Flood County is situated requires a permit from the state Department of Environmental Protection for development on primary sand dunes. A permit applicant wants to build on one near Site F. Department staff informs you that based on the plans they have seen, they will have to deny the state permit. Should the Flood County permit officer issue a floodplain development permit?

No. The local permit should not be issued until staff are certain that the other agencies’ requirements are met. If it is just a question of time and a state permit is expected to be issued, a local permit could be issued conditioned on obtaining a state permit. However, if it is clear that the project violates the state regulations, a local permit should not be issued until the matter is settled.

5. What is Basic rule #3 as it relates to encroachments in riverine floodplains?

Development must not increase the flood hazard on other properties.

6. An encroachment review should review projects in a floodway for what two things?

You must determine whether the project will obstruct flood flows and cause an increase in flood heights upstream or adjacent to the project site and

You should determine whether the project will result in increases in downstream flooding by removing an existing obstruction. While you are not required to do this by NFIP minimum requirements, these changes can cumulatively cause significant increases in downstream flooding.

7. A farmer wants to build a dairy barn in the floodway. Will he need to provide you with a “no-rise” certification before you can issue the permit?

Yes

8. The same farmer wants to build a small addition onto his farmhouse (also in the floodway). Can this be designed so he won't have to pay for an engineer's encroachment review?

Yes, if it is located in the conveyance shadow of the farmhouse.

9. In a riverine AE Zone with a base flood elevation, what must a developer show in order to demonstrate that he is meeting Basic Rule #3?

He must conduct an encroachment review that demonstrates 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, and

Is consistent with the technical criteria contained in Chapter 5 (Hydraulic Analyses) of the Flood Insurance Study: Guidelines and Specifications for Study Contractors, FEMA-37, 1995.

10. Does your state have a more restrictive standard than allowing flood heights to increase by one foot?

Depends on the state. Some states have more restrictive encroachment standards, such as 0.5' or 0.1'.

UNIT 5—LEARNING CHECK #3 -ANSWERS

1. What does Basic rule #4 say about new buildings in A Zones?

New, substantially improved or substantially damaged buildings must be protected from damage by the base flood.

2. Where would elevation on piles or columns be preferred?

In areas where flooding is likely to have high velocities or waves.

3. Can a basement be considered the “lowest floor?”

Yes.

4. If a residence is elevated above the BFE in an A Zone, where do you measure how high the building is?

At the top of the lowest floor.

5. What can be allowed under the lowest floor of an elevated building?

Only building access, vehicle parking, and storage.

6. Mr. Jones shows you plans for a house elevated on a concrete block crawl-space. The area of the crawlspace will be 1,750 square feet.

How many standard 8” x 16” vents will be needed?

1,750 divided by 128 = 13.67, rounded up to 14 vents

How high can they be above ground level?

The bottom of the vents must be no higher than one foot above grade.

Can Mr. Jones put his hot water heater in the crawlspace?

No. Unless the water heater can be entirely above the BFE.

7. Mrs. Smith is elevating a house in the AE Zone 8’ above grade. How can you make sure that the area below the lowest floor won’t be improved, finished or otherwise turned into living space?

Require that the lower area must be kept open or require the owner to sign a nonconversion agreement (requiring large openings will also help).

8. What three things do you need to check for to ensure that a building is floodproofed?

Below the BFE:

Walls are watertight (substantially impermeable to the passage of water), Structural components can resist hydrostatic and hydrodynamic loads and effects of buoyancy, and Utilities are protected from flood damage.

9. Can a new home in the flood fringe be floodproofed?

No. Elevation is the only method allowed for new residential buildings in the SFHA.

10. What's the NFIP definition of "basement?"

"Basement" means any area of the building having its floor subgrade (below ground level) on all sides.

11. If a building is proposed to be located in a riverine floodplain with flood velocities of 8-10 per second, what should you ask the builder to provide to assure you that the building won't get washed away during a flood?

A statement from an architect or engineer that the design of the building includes "anchoring adequate to prevent flotation, collapse and lateral movement" during the base flood. These are hazardous velocities and you should discourage development in these areas.

12. The builder of a house to be elevated on concrete columns wants to use wood for the stairway. He is concerned that wood will swell and warp if it gets wet during a flood. Can a portion of the house below the BFE be built of wood?

Yes, provided it is pressure treated (.40 CCA minimum), naturally decay resistant lumber or marine grade plywood

13. How is a manufactured home outside of a manufactured housing park treated differently from a conventional "stick built" home?

They are both treated the same. They must meet the same construction and elevation requirements.

14. How is a 600 square foot motor home that is permanently attached to a reinforced block wall foundation treated differently from a manufactured home?

They are both treated the same. They must meet the same construction and elevation requirements.

UNIT 5—LEARNING CHECK #4 -ANSWERS

1. What does Basic rule #5 say about new buildings in V Zones?

There are special building requirements in addition to the building protection requirements for buildings in A Zones.

2. Can a new building be built in the V Zone elevated on a crawlspace?

No. It can only be elevated on pilings, posts, piers or columns to avoid obstructions to the wave action.

3. Where is the lowest floor measured in a V Zone?

At the bottom of the lowest horizontal structural member.

4. What does the permit official do to be sure that a V Zone building will be adequate to resist the wind and water loads?

Have an engineer certify that the design and planned methods of construction are in accordance with accepted standards of practice to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components.

5. What's the best way to deal with sand dunes in a V Zone development site?

Don't touch them. They provide important flood protection by breaking waves during coastal storms. If they are to be disturbed, the permit applicant should have an engineer's or geologist's report that their removal will not increase flood damage.

6. If a subdivider makes sure that all building sites are above the BFE, does he need to do anything more to meet the NFIP requirements?

*The subdivider also needs to make sure that:
All public utilities and facilities, such as sewer, gas, electrical, and water systems are located and constructed to minimize or eliminate flood damage, and
Adequate drainage is provided to reduce exposure to flood hazards;*

7. How can you protect a sewer system from flooding?

Through careful system design. Manholes should be raised above the 100year flood level or equipped with seals to prevent leakage. Pumping stations should have electrical panels elevated above the BFE.

UNIT 5—LEARNING EXERCISE -ANSWERS

1. In what part of the Code of Federal Regulations would you find the definition for “development.?”

44 CFR 59.1 Definitions

2. Where do I find the NFIP requirements for areas mapped with V Zones?

44 CFR 60.3(e)

3. If a community has a FIRM that shows floodways and V Zones, which parts of 44 CFR 60.3 must it abide by?

All parts up through 60.3(e)

4. If your community follows the requirements of 44 CFR 60.3(d), does it have to worry about what’s in 44 CFR 60.3(b)?

Yes. The requirements are cumulative in Section 60.3.

5. A building official finds it easier to read an old flood map prepared on an aerial photograph by the Corps of Engineers. He doesn’t want to use the current FIRM because it doesn’t show all the buildings and features that the photograph does. Can he make permit decisions based on the Corps map instead of the FIRM?

No. The community must use the latest maps and data provided by FEMA. If the other map shows a higher BFE and a larger floodplain, the community may adopt it in its ordinance as the regulatory floodplain and exceed the minimum NFIP requirements. The map must be approved by the FEMA Regional Office before this is done.

6. A developer wants to build in an area mapped as an approximate A Zone on Ireland Creek. He conducts a detailed flood study which is approved by the Town Engineer. It shows that several lots in the A Zone are actually higher than the BFE calculated in the study.

7. Can you issue permits for building on those sites and treat them as C Zone sites?

*-Yes, as long as the Town Engineer assures you that the developer’s study
-Reasonably reflects flooding conditions expected during the base flood,
-Is technically correct, and
-Represents the best data available.*

8. Will the buyers of the properties have to buy flood insurance policies?

Yes, unless a map amendment or Letter of Map Amendment (LOMA) is issued by FEMA.

9. Joe Hunter wants to build a small hunting cabin on a lake in an approximate A Zone. It will be the only building within two miles. There are no known sources of a base flood elevation. The cabin will cost less than \$10,000 and he does not want to pay \$2,000 for an engineering study to develop a BFE. What can you do to make sure the property is protected from flooding?

Require that the lowest floor of the cabin be at least five feet above grade.

10. Will a developer in an approximate A Zone have to prepare a detailed study to calculate base flood elevations if the development is:

4 acres? *No*
60 lots? *Yes*
Reserving all the SFHA as open space? *No*

11. A restudy was performed on Rocky River. The preliminary study will not be final for another five months. It shows a new BFE at Site B that is two feet lower than the BFE in your current FIS. Which one do you use to determine the flood protection level for a new home at Site B?

When the BFE in the new study is lower than the BFE in the existing study, the existing FIS data should be used until the new study is final.

12. Does dredging a creek to make it deeper to reduce flood levels need a floodplain permit?

Yes. It is considered development and all development needs a permit.

13. Does replacing an old manufactured home with a new one on the same foundation need a permit?

Yes

14. If an old manufactured home is replaced with a new one on the same foundation, will the new one have to be elevated above the BFE?

Yes, unless it is in an existing manufactured home park. Then the owner has the option of elevating either above the BFE or 36" above grade on reinforced piers.

15. If a project will involve filling a wetland, is it likely that a federal or state permit will be needed?

Yes. The U.S. Army Corps of Engineers requires a Section 404 permit for most wetland filling activities. A local permit should not be issued until it is clear that the project does not violate Section 404 rules.

16. A builder wants to put a house in the floodway. How much can his project increase the base flood elevation (in feet)?

Zero. A project in a floodway is not allowed to cause any increase in floodwaters.

17. Will paving a dirt street in the floodway need an engineer's "no-rise" certification?

No, as long as the grade of the street is no higher than it was before the paving project.

18. A city councilman complains that the NFIP floodway regulations prevent construction of a flood control dam that will protect people from flooding. What can you tell him?

The community can apply for a conditional letter of map revision if it can provide the following:

An evaluation of alternatives which, if carried out, would not result in an increase in the BFE more than allowed, along with documentation as to why these alternatives are not feasible.

Documentation of individual legal notice to all affected property owners (anyone affected by the increased flood elevations, within and outside of the community) explaining the impact of the proposed action on their properties.

Concurrence, in writing, from the chief executive officer of any other communities affected by the proposed actions.

Certification that no structures are located in areas which would be affected by the increased BFE (unless they have been purchased for relocation or demolition).

A request for revision of BFE determinations in accordance with the provisions of 44 CFR 65.6 of the FEMA regulations.

19. Does a substantial improvement to an existing building have to meet the same requirements as construction of a new building?

Yes

20. Can a new nonresidential building be built:

On fill in the flood fringe? Yes

21. On fill in the floodway? Probably not. It would be hard to show that the fill does not cause an increase in flood heights.

<i>On fill in the V Zone?</i>	<i>No</i>
<i>At grade, but floodproofed in the flood fringe?</i>	<i>Yes</i>
<i>At grade, but floodproofed in the V Zone?</i>	<i>No</i>

22. A builder wants to build an apartment building on stem walls parallel to the flow of water with the lowest floor 8' above grade. Can the lower area be used as a parking lot?

Yes

23. What's the best record to keep to be sure that a house was elevated high enough?

A FEMA Elevation Certificate. Any surveyor's or engineer's record of the elevation of the lowest floor meets the NFIP requirements, but the FEMA form is recommended.

24. How many standard 8" x 16" openings are needed for a building that will have a 2,250 square foot crawlspace?

2,250 divided by 128 = 17.57, rounded up to 18.

25. Can the owner store garden tools in a floodable crawlspace?

Yes, if there is enough warning time to move it.

26. A business on the Mississippi River wants to build a floodproofed warehouse in the flood fringe. The plans are to have the walls built of reinforced concrete up to the BFE. Several garage doors will be open at grade to allow trucks in and out, but the design includes movable shields that can be put in place before floodwaters arrive. There would be no other openings below the BFE. The warehouse will have a 24-hour security force that will be trained on how to install the shields. The design engineer will certify that the building will be floodproofed (with human intervention) up to the base flood elevation. Can you approve these plans?

Yes, assuming there is adequate warning time to install the shields, which there probably is on the Mississippi River.

27. A builder wants to build a "bi-level" house where the lowest floor is three feet below grade. The lowest floor has large windows and includes three bedrooms and a bathroom. Because it is habitable space, the owner does not consider this a "basement." Does the NFIP consider this a "basement?"

Yes and the lowest floor (i.e., the basement) must be above the BFE.

28. The area below a planned elevated house in the V Zone will have a 260 square foot enclosure to house the entryway and storage closets. The builder wants to insulate the area and finish it with wallboard, wallpaper and carpeting. He says it's OK because the area is less than 300 square feet. What do you tell him?

It's not OK. Any enclosed space below the lowest floor must be built of flood resistant materials and free of obstruction, or constructed with non-supporting breakaway walls, open wood latticework or insect screening.

29. Where can you find standards for tying down manufactured homes?

Check first to see if there are state regulations. If not, see FEMA's Manufactured Home Installation in Flood Hazard Areas, FEMA-85.

30. A new house is planned to be built in an SFHA marked "Zone AO (depth 3 feet)." How high should the lowest floor be?

At least 3 feet above the highest adjacent grade.

31. Why are pilings and posts preferred in V Zones?

They can better withstand the wind and water loads.

UNIT 6 LEARNING CHECK #1

1. What NFIP program recognizes local regulatory standards that are more restrictive than the minimum NFIP regulations?
2. If a regulatory requirement prohibits an owner from any use of his land, it is referred to by the legal term _____ .
3. In how many court cases have the NFIP regulations been overruled as unconstitutional?
4. If a state requirement is more restrictive than the NFIP requirements, which set of rules must a community follow?
5. Does your community's ordinance have any provisions that are more restrictive than the minimum NFIP requirements?
6. Name two higher regulatory standards that can be used to encourage building sites completely out of the floodplain?
7. What is freeboard?
8. What is the preferred flood protection approach for critical facilities?
9. How does compensatory storage work?
10. What is "stormwater management?"

UNIT 6-LEARNING CHECK #2

1. Is your community subject to any of the following flood hazards of special concern?

Coastal erosion

Tsunamis

Closed basin lakes

Uncertain flow paths or alluvial fans

Upstream dams

Ice jams

Mudflows

2. If so, have you enacted any additional regulatory provisions to better protect future development from damage?
3. Since there are several federal agencies that regulate wetland development, protect rare and endangered species, etc., is there any need for your community to consider any additional environmental protection measures?
4. Name three types of regulations that can protect natural resources in your floodplains.

UNIT 6-LEARNING EXERCISE

1. Does the NFIP allow communities to enact more restrictive regulatory standards?
2. Can a floodplain regulation ever prohibit new buildings from a portion of the floodplain?
3. Name two types of floodprone areas where many communities prohibit development.
4. What's the advantage of requiring dry land access if buildings are protected from flooding?
5. How could a developer of an 80-acre subdivision reduce the amount of runoff that leaves the property during a storm?
6. Do Federal agencies have to meet any floodplain development rules similar to the NFIP requirements?

UNIT 6-LEARNING CHECK #1 -ANSWERS

1. What NFIP program recognizes local regulatory standards that are more restrictive than the minimum NFIP regulations?

The Community Rating System (CRS)

2. If a regulatory requirement prohibits an owner from any use of his land, it is referred to by the legal term _____ .

Taking

3. In how many court cases have the NFIP regulations been overruled as unconstitutional?

None.

4. If a state requirement is more restrictive than the NFIP requirements, which set of rules must a community follow?

The more restrictive state requirement.

5. Does your community's ordinance have any provisions that are more restrictive than the minimum NFIP requirements?

Depends on the community.

6. Name two higher regulatory standards that can be used to encourage building sites completely out of the floodplain?

Subdivision design that encourages cluster development on high ground

Low density zoning that gives owners large lots large enough to avoid small floodplains

7. What is freeboard?

An additional height requirement above the base flood elevation that provides a margin of safety against extraordinary or unknown risks.

8. What is the preferred flood protection approach for critical facilities?

Keep them out of the 500-year floodplain. The next best approach is to protect them to the 500-year flood level.

9. How does compensatory storage work?

The developer is required to offset new fill put in the floodplain by excavating an additional floodable area to replace the lost flood storage area.

10. What is “stormwater management?”

Efforts that reduce the impact of increased runoff that results from new development in the watershed.

UNIT 6-LEARNING CHECK #2 -ANSWERS

1. Is your community subject to any of the following flood hazards of special concern?

Coastal erosion
Tsunamis
Closed basin lakes
Uncertain flow paths or alluvial fans
Upstream dams
Ice jams
Mudflows

Depends on the community.

2. If so, have you enacted any additional regulatory provisions to better protect future development from damage?

Depends on the community.

3. Since there are several federal agencies that regulate wetland development, protect rare and endangered species, etc., is there any need for your community to consider any additional environmental protection measures?

Probably. Federal programs may not address the particular needs of your locality.

4. Name three types of regulations that can protect natural resources in your floodplains.

*Wetland protection regulations
Habitat protection regulations
Restrictions on on-site sewage disposal
Water quality regulations and rules on stormwater runoff (non point sources of pollution)
Designating unique or valuable areas for special protection*

UNIT 6—LEARNING EXERCISE -ANSWERS

1. Does the NFIP allow communities to enact more restrictive regulatory standards?

Yes. “.. 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.” (44 CFR 60.1(d))

2. Can a floodplain regulation ever prohibit new buildings from a portion of the floodplain?

Yes, if the area is sufficiently dangerous and/or there is a clear relationship between the prohibition and protecting the public from the hazard created by the development.

3. Name two types of floodprone areas where many communities prohibit development.

*High hazard areas, such as flash flood areas and very deep floodways
Natural or sensitive areas, such as wetlands*

4. What’s the advantage of requiring dry land access if buildings are protected from flooding?

It protects people by allowing them to evacuate when floodwaters come up and allows emergency service vehicles to protect the properties during a flood.

5. How could a developer of an 80-acre subdivision reduce the amount of runoff that leaves the property during a storm?

Include stormwater detention or retention basins to hold or delay the runoff from the site.

6. Do Federal agencies have to meet any floodplain development rules similar to the NFIP requirements?

Yes. The National Environmental Policy Act (NEPA) and Executive Order 11988 require Federal agencies to meet the same or more restrictive development standards.

UNIT 7 - LEARNING CHECK #1

1. Review your floodplain regulations and identify where the following provisions are found.

Purpose statement

Definitions of

- base flood elevation
- building or structure
- development
- floodway
- lowest floor
- substantial improvement
- substantial damage

Adoption of the FIRM or other floodplain map

Adoption of the Flood Insurance Study

Requirement for a permit for all development in the floodplain

Construction standards:

- floodway construction (if applicable)
- encroachment analysis where floodways are not mapped
- building elevation criteria
- floodproofing criteria
- anchoring requirements
- standards for manufactured (mobile) homes
- standards for manufactured home parks
- construction standards in V Zones
- construction standards peculiar to the zones in your community
- standards for subdivisions
- standards for water and sewer service
- rules on water course alterations

Designation of administrator

Duties of the administrator

Appeals process

Enforcement procedures and penalties

Abrogation and greater restriction

Severability

2. Check your community's other regulatory ordinances to determine if there are any inconsistencies between them and your floodplain construction standards.

UNIT 7-LEARNING CHECK #2

1. What activities are exempt from regulation under your floodplain ordinance?
2. Does your community have a permit application form that makes sure things like a floodway encroachment analysis or V Zone certification are not missed?
3. What five items need to be checked to ensure an application for a permit is complete?
4. What departments or offices in your community should review a permit application before it is approved?
5. During your permit review, you find that the applicant's site plan shows that the ground is currently higher than the BFE. Should you continue to treat this as a floodplain development permit?
6. What's the best way to make sure the applicant's engineering certifications are sufficient?
7. What are the key items you need to check when reviewing the plans for a new house to be built on pilings in the V Zone?
8. Match the list of proposed projects with the documents that will be needed in order to determine if the project should be built in the floodplain.

- New shopping center parking lot in the floodway
- New house in the fringe
- New business in the V Zone
- Reconstruction of a state highway bridge
- New house built over a floodable, but enclosed garage
- Floodplain development permit application
- Site and/or building plans
- Floodway encroachment analysis
- Floodproofing certification
- Non-conversion agreement
- V Zone certification

UNIT 7-LEARNING CHECK #3

1. When is the best time to make the first site inspection?
2. When should you make the second inspection of a building on a slab foundation?
3. What are your two options for making sure a new building is high enough before you allow construction to proceed after the second inspection?
4. What should you check for during the third inspection?
5. If a project meets all of the ordinance requirements and is built according to the approved plans, what does the owner get after the final inspection?

UNIT 7-LEARNING CHECK #4

1. If a FEMA staff person finds a project in violation of the FEMA NFIP requirements in your community, who is responsible for correcting the violation?
2. You discover that Mrs. Murphy has ordered five truckloads of fill to raise her back yard in the floodway. She never asked for a permit. What is the recommended first step to dealing with this situation?
3. If a project is found underway in the floodplain, what is the first step you should take?
4. What legal recourses do you and your attorney have to bring a violation into compliance?
5. What are the NFIP procedures for submitting an appeal to your Board of Appeals?
6. Mr. Wilson wants to build a new house at grade instead of to the BFE, six feet above grade. You tell him he will need a variance. Which of the following are good and sufficient causes for granting him a variance?
 7. An elevated house will look bad
 8. Mrs. Wilson is old and has trouble with stairs
 9. It will cost more money than the builder can afford
 10. The builder has a contract with the bank to have it completed and sold in four months and changing plans will prevent meeting that deadline.
 11. No one has ever seen a flood on that site.
12. Mr. Wilson is applying for a variance to build his house below the BFE. What two things must you tell him (in writing)?

UNIT 7-LEARNING CHECK #5

1. Why should you keep permit records?
2. What records should be kept in your permit file?
3. Who is responsible for ensuring that the elevation certificate is completed correctly?
4. What are the four situations when a record of an engineer's or surveyor's certification is needed?
5. A property has been annexed from the county into your city, but the FIRM has not been revised to reflect the annexation. What is the NFIP community number that is recorded in Item 1, Section B of the FEMA Elevation Certificate?
6. Is a V Zone Certification needed for a residential building?
7. Where do you get a Biennial Report to send in to FEMA?

UNIT 7-LEARNING EXERCISE

1. Does your community have formal written permit review procedures to ensure that a development proposal is properly reviewed and inspected?
2. What are the four situations where a certification will be needed before a floodplain development permit can be issued?
3. A development plan proposes to fill and re-grade an area of the fringe to give most of the lots building sites that are above the BFE. The developer says “then we won’t have the banks telling people my subdivision is in the floodplain.” What do you tell the developer?
4. What are the key items you need to check when reviewing the plans for a new house to be built on a slab foundation on fill in the fringe?
5. You deny an application to build a house in the floodplain because the plans show a proposed basement 6’ below the BFE. What recourses does the applicant have now?
6. What should you check for during the first site inspection?
7. When should you make the second inspection for a building to be elevated on a crawlspace or columns?
8. If you use a level to verify the elevation of a building during the second inspection, will the builder still need to provide an as-built elevation certificate?
9. When is the best time to see if a crawlspace has adequate openings?
10. During the second inspection, you find that the builder wants to build the lowest floor three feet below the BFE in order to save on construction costs. What repercussions would the owner face if the community issued a certificate of occupancy for the building and did not pursue any enforcement action?
11. If the third inspection reveals that the builder of an apartment house has made a change to the structure that results in a major violation of your floodplain regulations, what can you do?
12. How can Section 1316 help a local permit official faced with a subdivider who refuses to build houses in compliance with the floodplain regulations?
13. Can a community grant a variance to allow a project in the floodway that will cause a ½ foot increase in flood heights.
14. Name two situations where special exceptions may be granted for a variance.

15. Permit records should be kept systematically. Your system should be keyed so you can retrieve permit files by:
16. What are the advantages of using the FEMA Elevation Certificate as a record of a building's lowest floor elevation?
17. Can a surveyor sign a Floodproofing Certificate?
18. What is needed to support a No-rise certification?

UNIT 7-LEARNING CHECK #1 -ANSWERS

1. This learning check is a review of where the various NFIP requirements appear in your own ordinance. There are no correct answers, only the need to make sure that all the items listed in the learning check are covered.

UNIT 7-LEARNING CHECK #2 -ANSWERS

2. What activities are exempt from regulation under your floodplain ordinance?

Depends on the community. Small projects and activities by other governmental agencies may be exempt. Check with your State NFIP Coordinator to verify that any exempt activities are either covered by other regulations or are too small to be of concern.

3. Does your community have a permit application form that makes sure things like a floodway encroachment analysis or V Zone certification are not missed?

Depends on the community. If not, you'll find Figure 7-4 very helpful.

4. What five items need to be checked to ensure an application for a permit is complete?

*All forms are completed and signed
Site, grading, building, etc. plans are complete
All necessary certifications are provided
All necessary state and federal permits are being obtained
Copies of the application are forwarded to other departments for review*

5. What departments or offices in your community should review a permit application before it is approved?

Depends on the community. This is a very important procedure to check to be sure that a project will meet all of your community's development requirements.

6. During your permit review, you find that the applicant's site plan shows that the ground is currently higher than the BFE. Should you continue to treat this as a floodplain development permit?

You do not have to. It's still a good idea to encourage the applicant to incorporate flood protection measures in case a future flood is higher than the predicted BFE (e.g., don't build any homes with basements).

7. What's the best way to make sure the applicant's engineering certifications are sufficient?

Have your community's engineer review them.

8. What are the key items you need to check when reviewing the plans for a new house to be built on pilings in the V Zone?

The proposed elevation of the lowest floor

Whether there will be any enclosures below the elevated floor

The V Zone certification signed by a registered professional architect or engineer.

The materials used in the area below the BFE.

9. Match the list of proposed projects with the documents that will be needed in order to determine if the project should be built in the floodplain.

New shopping center parking lot in the floodway *a, b, c*

New house in the fringe *a, b*

New business in the V Zone *a, b, f*

Reconstruction of a state highway bridge see below

New house built over a floodable, but enclosed garage *a, b, e*

- a. Floodplain development permit application*
- b. Site and/or building plans*
- c. Floodway encroachment analysis*
- d. Floodproofing certification*
- e. Non-conversion agreement*
- f. V Zone certification*

The state highway department may be exempt from local regulations. However, it is a good idea to talk to the State NFIP Coordinator to ensure that the project meets all state floodplain management requirements.

UNIT 7–LEARNING CHECK #3 -ANSWERS

1. When is the best time to make the first site inspection?

After the site is staked out and before permanent foundation work has begun.

2. When should you make the second inspection of a building on a slab foundation?

When the forms are in place, but before the concrete is poured.

3. What are your two options for making sure a new building is high enough before you allow construction to proceed after the second inspection?

*Have the builder provide an elevation certificate
Check the elevation yourself during the second inspection*

4. What should you check for during the third inspection?

Ensure that the foundation and floor elevation have not been altered since the second inspection.

Obtain an as-built elevation or floodproofing certificate.

Verify that enclosures below the lowest floors have adequate openings.

Ensure that nothing subject to flood damage, such as a furnace or air conditioning unit, has been located below the lowest floor.

Check breakaway walls in V Zones.

Check for floodway encroachments.

Check the anchoring system used in securing manufactured homes.

5. If a project meets all of the ordinance requirements and is built according to the approved plans, what does the owner get after the final inspection?

A certificate of occupancy, certificate of compliance, use permit or other official document that allows the building to be occupied or used.

UNIT 7–LEARNING CHECK #4 –ANSWERS

1. If a FEMA staff person finds a project in violation of the FEMA NFIP requirements in your community, who is responsible for correcting the violation?

Your local permit official.

2. You discover that Mrs. Murphy has ordered five truckloads of fill to raise her back yard in the floodway. She never asked for a permit. What is the recommended first step to dealing with this situation?

Talk to Mrs. Murphy and explain why a permit is needed and why it is important not to fill in the floodway. You should get voluntary compliance.

3. If a project is found underway in the floodplain, what is the first step you should take?

Advise the owner to stop work and tell him or her (in writing) that the project is in violation and what should be done to correct it.

4. What legal recourses do you and your attorney have to bring a violation into compliance?

A fine (that can increase for each day the violation continues)
Recording the violation in the property's deed records
A court injunction to stop work

5. What are the NFIP procedures for submitting an appeal to your Board of Appeals?

There are none, or, more correctly, they are whatever your ordinance specifies.

6. Mr. Wilson wants to build a new house at grade instead of to the BFE, six feet above grade. You tell him he will need a variance. Which of the following are good and sufficient causes for granting him a variance?

7. An elevated house will look bad

8. Mrs. Wilson is old and has trouble with stairs

9. It will cost more money than the builder can afford

10. The builder has a contract with the bank to have it completed and sold in four months and changing plans will prevent meeting that deadline.

11. No one has ever seen a flood on that site.

None of these. They do not show an exceptional hardship, they are not unique to the property, nor do they pertain to the land, not the owners.

12. Mr. Wilson is applying for a variance to build his house below the BFE.

What two things must you tell him (in writing)?

- (i) the issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance up to amounts as high as \$25 for \$100 of insurance coverage and;
- (ii) such construction below the base flood level increases risks to life and property.

UNIT 7–LEARNING CHECK #5 -ANSWERS

1. Why should you keep permit records?

Records do the following:

Show what you approved and what you told the developer.

Form a paper trail needed for administrative or legal proceedings.

Give future owners information about the property.

Are checked by FEMA or the state to determine if your community is in full compliance with the NFIP.

2. What records should be kept in your permit file?

The permit application form and all attachments, including the site plan.

All correspondence pertinent to the project.

Flood and floodway data prepared by the developer.

Engineering analyses of floodway encroachments and watercourse alterations.

Special engineering designs for enclosures below the BFE.

In coastal high hazard areas, engineering certifications of designs and construction methods of new and substantially improved buildings.

In coastal high hazard areas, certification of specially designed break away walls.

Any variances or appeals proceedings.

Records of inspections of the project while under construction.

Documentation of the As-built lowest floor elevation of all new and substantially improved buildings.

Certification of the elevation to which any nonresidential building has been floodproofed.

Certificates of compliance or occupancy.

3. Who is responsible for ensuring that the elevation certificate is completed correctly?

The permit official

4. What are the four situations when a record of an engineer's or surveyor's certification is needed?

Elevation certificate: needed for new or substantially improved buildings that are elevated in the SFHA

Floodproofing certificate: needed for new or substantially improved nonresidential buildings that are floodproofed.

V Zone certification: needed for new or substantially improved buildings in V Zones

No-rise certification: needed for development projects in floodways (or its equivalent in riverine floodplains where the floodway has not been mapped)

5. A property has been annexed from the county into your city, but the FIRM has not been revised to reflect the annexation. What is the NFIP community number that is recorded in Item 1, Section B of the FEMA Elevation Certificate?

Your city's NFIP number. The county NFIP number is entered in Item 2 of Section B.

6. Is a V Zone Certification needed for a residential building?

Yes. It is needed for all buildings and substantial improvements in the V Zone.

7. Where do you get a Biennial Report to send in to FEMA?

Don't worry. FEMA sends it to the community every two years.

UNIT 7–LEARNING EXERCISE -ANSWERS

1. Does your community have formal written permit review procedures to ensure that a ! proposal is properly reviewed and inspected?

The answer should be “yes,” although there is no NFIP requirement for written procedures. You are responsible for ensuring that your ordinance is legally enforceable and that will require that you be able to demonstrate that you have adequate administrative procedures.

2. What are the four situations where a certification will be needed before a floodplain development permit can be issued?

*Floodway encroachment analysis
Engineer’s certification of floodproofing design
Non-conversion agreement for enclosed lower areas
V Zone design certification*

3. A development plan proposes to fill and re-grade an area of the fringe to give most of the lots building sites that are above the BFE. The developer says “then we won’t have the banks telling people my subdivision is in the floodplain.” What do you tell the developer?

While the permit office can use better ground elevation data to determine that a building location is above the BFE (and therefore outside the SFHA), the property will remain in the SFHA on the FIRM. That means that it is still subject to the flood insurance purchase requirement and the rates will be set at SFHA rates. It is the owner’s responsibility to submit a request for a Letter of Map Revision (LOMR) in order to have the FIRM reflect the better data.

4. What are the key items you need to check when reviewing the plans for a new house to be built on a slab foundation on fill in the fringe?

*The proposed elevation of the lowest floor
Your building code should also require you to make sure the fill will be properly compacted and protected from erosion and will not cause local drainage problems on neighboring properties.*

5. You deny an application to build a house in the floodplain because the plans show a proposed basement 6’ below the BFE. What recourses does the applicant have now?

*He can drop the idea and withdraw the application
He can redesign the house so the lowest floor (including basement) is above the required flood protection level.
He can appeal to the Board of Appeals if he thinks you misread or misinterpreted the requirements
He can apply for a variance to allow the basement.*

6. What should you check for during the first site inspection?

*The location of the floodplain and floodway boundaries.
Setbacks from lot lines, channel banks, etc.
Floodway encroachments, if applicable.*

7. When should you make the second inspection for a building to be elevated on a crawlspace or columns?

After the foundation is completed, so you can check if it is high enough before the lowest floor is built.

8. If you use a level to verify the elevation of a building during the second inspection, will the builder still need to provide an as-built elevation certificate?

Yes

9. When is the best time to see if a crawlspace has adequate openings?

During the second inspection, before the floor is built. This will allow the builder to install the needed openings with a minimum of disruption to the structure.

10. During the second inspection, you find that the builder wants to build the lowest floor three feet below the BFE in order to save on construction costs. What repercussions would the owner face if the community issued a certificate of occupancy for the building and did not pursue any enforcement action?

Even though the certificate of occupancy says the owner had a “legal” building, the flood insurance rates would be based on the elevation of the lowest floor. The annual insurance premium would be very high. A few years of such premiums would likely be more expensive than the extra cost of meeting the ordinance’s elevation requirement.

11. If the third inspection reveals that the builder of an apartment house has made a change to the structure that results in a major violation of your floodplain regulations, what can you do?

Withhold the certificate of occupancy. (This assumes that you have an ordinance that states that utilities cannot be turned on and/or apartments cannot be rented until the certificate is issued.)

12. How can Section 1316 help a local permit official faced with a subdivider who refuses to build houses in compliance with the floodplain regulations?

It authorizes FEMA to deny flood insurance to a property declared in violation of the community’s ordinance. Among other things, this will prevent the property from receiving any federal grants and loans and may limit mortgages from federally regulated or insured lending institutions.

13. Can a community grant a variance to allow a project in the floodway that will cause a ½ foot increase in flood heights.

No. "Variances shall not be issued by a community within any designated regulatory floodway if any increase in flood levels during the base flood discharge would result..." (44 CFR 60.6(a)1.)

14. Name two situations where special exceptions may be granted for a variance.

Historic buildings and functionally dependent uses.

15. Permit records should be kept systematically. Your system should be keyed so you can retrieve permit files by:

Geographical identifier, such as street address

16. What are the advantages of using the FEMA Elevation Certificate as a record of a building's lowest floor elevation?

It includes all the data needed for NFIP compliance It meets the requirements of the Community Rating System It is needed by insurance agents to write a policy.

17. Can a surveyor sign a Floodproofing Certificate?

No, it must be signed by a registered professional engineer.

18. What is needed to support a No-rise certification?

The engineering or no-rise certification must be supported by technical data and signed by a registered professional engineer. The supporting technical data should be based on the standard step-backwater computer model used to develop the 100-year floodway shown on your FIRM or Flood Boundary and Floodway Map and the results tabulated in your Flood Insurance Study.

UNIT 8 - LEARNING CHECK #1

1. What is the basic rule on improvements and repairs to existing buildings in the floodplain?
2. Mrs. Murphy got a permit two months ago to remodel her living room and kitchen. Now she wants a permit to remodel three bedrooms and two bathrooms. Should you check each of these separately to determine if each project is a substantial improvement?
3. What is the substantial improvement formula?
4. Which of the following items must be included when calculating the cost of an improvement project?
 - Attached deck
 - Plumbing
 - Permit fees
 - Contractor's overhead and profit
 - Architect's plans
 - Landscaping
 - Built-in bookcases
5. What factors are considered when determining market value?
6. What are three good sources for obtaining the market value of a house?
7. Mr. Jones proposes a \$50,000 addition to his \$80,000 home in the floodplain. Is this a substantial improvement?
8. If Mr. Jones' project will be a substantial improvement, what do you need to check to see if the whole house has to be elevated or just the addition?

UNIT 8-LEARNING CHECK #2

1. What is the formula for determining substantial damage?
2. What is the basic rule on calculating the cost of the damage?
3. A tornado swept through town and substantially damaged 25 buildings in the floodplain. How can you help the property owners comply with the floodplain ordinance's substantial damage regulations?
4. Mr. Johnson prepared a list of everything he has to do to repair his flooded home. Which of the following items are counted toward the cost of repairs when determining substantial damage? What is the dollar amount that should be counted?
 - ___ Clearing broken trees and debris away from the house (\$2,500)
 - ___ Replacing the warped flooring (\$3,000)
 - ___ New doors (\$1,000) to replace old ones (worth \$500)
 - ___ Replacing the old kitchen cabinets (valued at \$5,000) with custom hardwood cabinets valued at \$15,000.
 - ___ New wall to wall carpeting (\$1,800)
 - ___ New furniture (\$12,000)
 - ___ New wiring (\$2,000) to bring the building up to current code (This is a standard requirement of the community. The building was not cited as having a code violation.)
 - ___ Permit fee (\$500)
 - ___ Clean out and test the furnace (done free as a public service by the utility company, but otherwise worth \$250 if done by a private contractor)
 - ___ New bushes and replacement fence (\$1,500)
5. What's the best way to determine if a building is "historic" and eligible for exemption from the substantial improvement requirement?

UNIT 8-LEARNING EXERCISE

1. What kind of projects need a permit so you can check to see if they would be substantial improvements?
2. A home was built to post-FIRM standards in 1990. The lowest floor was elevated four feet above grade, to the BFE in effect at that time. In 1995, a new FIRM went into effect. The new BFE is now six feet above grade at that site.

How high would a small (less than substantial) addition have to be elevated?

How high would a large (substantial) addition have to be elevated?

3. Mrs. Murphy bought her property for \$100,000 last year. Is this a good basis for determining its market value?
4. Based on tax assessor's records, the market value of 123 Main Street is \$75,000. The owner wants to replace the HVAC and plumbing, remodel the kitchen and both bathrooms and convert his basement to a finished family room. His total cost is \$20,000 for supplies. If a contractor were to do the job, the total cost would be \$45,000. However, since he is a handyman and will do all the work himself, the total cost of his project is \$20,000. What is your response?
5. Mrs. Smith wants a new second story that will double the size and value of her house. The floor of the new story will be above the BFE. Will the old first floor have to be elevated?
6. The substantial damage regulations only apply if the building was damaged by a flood. True or false?
7. A flooded property owner has a brother who is a plumbing contractor. His brother's repair estimate shows the damage at 48% of the building's value. You think it should be higher. What can you do to prevent an argument over who's numbers are right?
8. Mrs. McGillicuddy is on a fixed income. Her home was flooded and substantially damaged. Her flood insurance policy will pay for the repairs. When told that she will also have to elevate her house, she thinks she should apply for a variance due to the financial hardship. What do you tell her?
9. Before the flood, Mr. Johnson had been cited by the community for a code violation. The paint on his garage door had been peeling, which was a violation of the local housing maintenance code. Since the flood left mud up to the high water line, he decided to repaint the whole house. Can he claim exemption of the cost of the painting because it had been cited as a code violation?

UNIT 8-LEARNING CHECK #1 -ANSWERS

1. What is the basic rule on improvements and repairs to existing buildings in the floodplain?

If the cost of improvements or the cost to repair the damage exceeds 50 percent of the market value of the building, it must be brought up to current floodplain management standards.

2. Mrs. Murphy got a permit two months ago to remodel her living room and kitchen. Now she wants a permit to remodel three bedrooms and two bathrooms. Should you check each of these separately to determine if each project is a substantial improvement?

No. They should be counted as one project and their total cost combined.

3. What is the substantial improvement formula?

A project is a substantial improvement if:

$$\frac{\text{Cost of improvement project}}{\text{Market value of the building}} \geq 50 \text{ percent}$$

4. Which of the following items must be included when calculating the cost of an improvement project?

<input type="checkbox"/> Attached deck	<i>yes</i>
<input type="checkbox"/> Plumbing	<i>yes</i>
<input type="checkbox"/> Permit fees	<i>no</i>
<input type="checkbox"/> Contractor's overhead and profit	<i>yes</i>
<input type="checkbox"/> Architect's plans	<i>no</i>
<input type="checkbox"/> Landscaping	<i>no</i>
<input type="checkbox"/> Built-in bookcases	<i>yes</i>

5. What factors are considered when determining market value?

"The price a willing buyer and seller agree upon." Factors to consider are the building's original quality, subsequent improvements, age and current condition.

6. What are three good sources for obtaining the market value of a house?

An independent appraisal by a professional appraiser.

Detailed estimates of the structure's actual cash value (the replacement cost for a building, minus a depreciation percentage based on age and condition).

Property appraisals used for tax assessment purposes with an adjustment recommended by the tax appraiser to reflect market conditions (adjusted assessed value).

The value of buildings taken from NFIP claims data (usually actual cash value).

Qualified estimates based on sound professional judgment made by the staff of the local building department or tax assessor's office.

7. Mr. Jones proposes a \$50,000 addition to his \$80,000 home in the floodplain. Is this a substantial improvement?

Yes, 50,000 divided by 80,000 = 0.625, more than 50%

8. If Mr. Jones' project will be a substantial improvement, what do you need to check to see if the whole house has to be elevated or just the addition?

Check the extent of work on the common wall and the existing building. If the common wall is demolished as part of the project, the existing building and the addition must be elevated.

UNIT 8—LEARNING CHECK #2 -ANSWERS

1. What is the formula for determining substantial damage?

*A building was substantially damaged if:
 $\frac{\text{Cost to repair}}{\text{Market value of the building}} > 50 \text{ percent}$*

2. What is the basic rule on calculating the cost of the damage?

Substantial damage is determined regardless of the actual cost to the owner. You must figure the true cost of bringing the building back to its pre-damage condition using qualified labor and materials obtained at market prices.

3. A tornado swept through town and substantially damaged 25 buildings in the floodplain. How can you help the property owners comply with the floodplain ordinance's substantial damage regulations?

Help the owner obtain financial assistance. Many programs are available after a disaster declaration.

4. Mr. Johnson prepared a list of everything he has to do to repair his flooded home. Which of the following items are counted toward the cost of repairs when determining substantial damage? What is the dollar amount that should be counted?

Clearing broken trees and debris away from the house (\$2,500) \$0
 Replacing the warped flooring (\$3,000) \$3,000
 New doors (\$1,000) to replace old ones (worth \$500) \$1,000
 Replacing the old kitchen cabinets (valued at \$5,000) with custom hardwood cabinets valued at \$15,000. \$15,000
 New wall to wall carpeting (\$1,800) \$1,800
 New furniture (\$12,000) \$0 (not part of the structure)
 New wiring (\$2,000) to bring the building up to current code (This is a standard requirement of the community. The building was not cited as having a code violation.) \$2,000
 Permit fee (\$500) \$0
 Clean out and test the furnace (done free as a public service by the utility company, but otherwise worth \$250 if done by a private contractor) \$250
 New bushes and replacement fence (\$1,500) \$0 (not part of the structure)

5. What's the best way to determine if a building is "historic" and eligible for exemption from the substantial improvement requirement?

See if it's on an approved list of historic structures (see Figure 7-13)

UNIT 8—LEARNING EXERCISE -ANSWERS

1. What kind of projects need a permit so you can check to see if they would be substantial improvements?

Remodeling projects.

Rehabilitation projects.

Building additions.

2. A home was built to post-FIRM standards in 1990. The lowest floor was elevated four feet above grade, to the BFE in effect at that time. In 1995, a new FIRM went into effect. The new BFE is now six feet above grade at that site.

a. *How high would a small (less than substantial) addition have to be elevated?*

To at least four feet above grade.

b. *How high would a large (substantial) addition have to be elevated?*

To at least six feet above grade.

3. Mrs. Murphy bought her property for \$100,000 last year. Is this a good basis for determining its market value?

It's a start, but the true market value may be different this year, depending on the local housing market. You also need to subtract the value of the land, landscaping, and detached structures that would have been in the purchase price for the property.

4. Based on tax assessor's records, the market value of 123 Main Street is \$75,000. The owner wants to replace the HVAC and plumbing, remodel the kitchen and both bathrooms and convert his basement to a finished family room. His total cost is \$20,000 for supplies. If a contractor were to do the job, the total cost would be \$45,000. However, since he is a handyman and will do all the work himself, the total cost of his project is \$20,000. What is your response?

The total cost of the project must be the true cost, including the cost of labor and donated materials. This project will be a substantial improvement.

5. Mrs. Smith wants a new second story that will double the size and value of her house. The floor of the new story will be above the BFE. Will the old first floor have to be elevated?

Yes. The project should be a substantial improvement and the entire building will need to be elevated in this situation.

6. The substantial damage regulations only apply if the building was damaged by a flood. True or false?

False, the damage can be from any cause.

7. A flooded property owner has a brother who is a plumbing contractor. His brother's repair estimate shows the damage at 48% of the building's value. You think it should be higher. What can you do to prevent an argument over who's numbers are right?

Get the cost to repair from an objective third-party or undebatable source, such as:

A licensed general contractor.

A professional construction estimator.

Insurance adjustment papers (exclude damage to contents).

Damage assessment field surveys conducted by building inspection, emergency management or tax assessment agencies after a disaster.

8. Mrs. McGillicuddy is on a fixed income. Her home was flooded and substantially damaged. Her flood insurance policy will pay for the repairs. When told that she will also have to elevate her house, she thinks she should apply for a variance due to the financial hardship. What do you tell her?

Her flood insurance policy has Increased Cost of Compliance coverage that will help pay for the cost of meeting the ordinance's requirement to elevate. Your office may be able to help her find financial assistance to pay for the rest of the cost, if needed.

9. Before the flood, Mr. Johnson had been cited by the community for a code violation. The paint on his garage door had been peeling, which was a violation of the local housing maintenance code. Since the flood left mud up to the high water line, he decided to repaint the whole house. Can he claim exemption of the cost of the painting because it had been cited as a code violation?

No. Only exempt the items specifically required by the citation and what is minimally necessary to comply.

UNIT 9 - LEARNING CHECK #1

1. Where does a property owner go to buy a flood insurance policy?
2. Can I buy a flood insurance policy with building coverage on the following?
 - An apartment building
 - A septic tank
 - An open sided park pavilion
 - A motor home
 - A boat dock
 - A mobile home on a foundation in a mobile home park
 - A flower garden
3. What is the maximum amount of contents coverage I can get for a single family dwelling?
4. Can I wait and buy a flood insurance policy after I hear the National Weather Service issue a flood warning?
5. Which of the following programs is likely to require a flood insurance policy as a condition of financial assistance?
 - Department of Veterans Affairs mortgage loan guarantees
 - HUD Community Development Block Grants
 - Federal disaster assistance
 - Home improvement loans from a bank participating in FDIC
 - Mortgage from a federal credit union
6. Does your local government have flood insurance coverage on the buildings it owns in the floodplain?
7. Do I need an elevation certificate to purchase a flood insurance policy on a pre-FIRM building?
8. Is there much of a cost savings on flood insurance if the lowest floor of a Post-FIRM building is one foot above the BFE instead of at the BFE?
9. Can I get a good flood insurance rate on a building in an AE Zone that is floodproofed to the base flood elevation?
10. What's the best way to get a good flood insurance rate for a new building in an approximate A Zone?

UNIT 9-LEARNING CHECK #2

1. What are some of the benefits of joining the Community Rating System?
2. Does your community implement any of the 18 activities credited by the CRS?
3. What is a CBRS zone?
4. Can I request a LOMA to get my property out of a CBRS zone?
5. Are there any CBRS zones in Flood County?

UNIT 9 LEARNING EXERCISE

1. Who sets the rates and coverage rules for flood insurance policies, FEMA or private insurance companies?
2. What are the two types of flood insurance coverage available?
3. Can I get flood insurance coverage for furniture in a basement?
4. Can a bank require flood insurance for a property outside the SFHA shown on the latest FIRM?
5. What are the two key factors in rating Post-FIRM buildings?
6. How do I know how much a flood insurance policy will cost for a Post-FIRM building with the lowest floor four feet below the BFE?
7. How can your community help its residents get lower flood insurance rates?
8. Can a community get CRS credit for activities implemented by a state agency on behalf of the community?
9. Can non-CRS communities obtain and benefit from CRS publications?
10. RM 38-1 is located near Site A on Flood County's FIRM. Is RM 38-1 in an SFHA?
11. Is RM 38-1 in a CBRS zone?
12. Mrs. Murphy's Chowder House was built at the east end of Vassar Road on panel 38 in 1994. The restaurant got flooded last month. Which of the following can help Mrs. Murphy rebuild her damaged restaurant?
 - An NFIP flood insurance policy
 - A FEMA disaster assistance grant
 - A Small Business Administration disaster loan

UNIT 9-LEARNING CHECK #1 -ANSWERS

1. Where does a property owner go to buy a flood insurance policy?

To any licensed casualty insurance agent.

2. Can I buy a flood insurance policy with building coverage on the following?

An apartment building *yes*

A septic tank *no*

An open sided park pavilion *no*

A motor home *no, unless it's permanently attached to a foundation*

A boat dock *no*

A mobile home on a foundation in a mobile home park *yes*

A flower garden *no*

3. What is the maximum amount of contents coverage I can get for a single family dwelling?

\$100,000

4. Can I wait and buy a flood insurance policy after I hear the National Weather Service issue a flood warning?

Yes, but no claim can be paid. There is a 30-day waiting period before coverage takes effect.

5. Which of the following programs is likely to require a flood insurance policy as a condition of financial assistance?

- Department of Veterans Affairs mortgage loan guarantees yes

- HUD Community Development Block Grants yes

- Federal disaster assistance yes

- Home improvement loans from a bank participating in FDIC yes

- Mortgage from a federal credit union yes

6. Does your local government have flood insurance coverage on the buildings it owns in the floodplain?

Depends on the community. This is an important thing to check because flood insurance may be the only source of funds to rebuild and repair those buildings after a flood.

Do I need an elevation certificate to purchase a flood insurance policy on a Pre-FIRM building?

No. However, if you have one that shows the building to be at or above the BFE, you can get a Post-FIRM actuarial rate that is lower than the rate for Pre-FIRM buildings.

7. Is there much of a cost savings on flood insurance if the lowest floor of a Post-FIRM building is one foot above the BFE instead of at the BFE?

Yes. For example, the rate for the first layer of building coverage for a single family building located in an AE Zone goes from \$.89/\$100 coverage to \$.55, a savings of nearly 40%.

8. Can I get a good flood insurance rate on a building in an AE Zone that is floodproofed to the base flood elevation?

Probably not. Unless the building is floodproofed to at least one foot above the BFE, the rate will be based on the elevation of the lowest floor. If the lowest floor is two or more feet below the BFE, it will be a submit for rate.

9. What's the best way to get a good flood insurance rate for a new building in an unnumbered A Zone?

Obtain or develop a base flood elevation for the site and require the building to be elevated above it.

UNIT 9—LEARNING CHECK #2 -ANSWERS

1. What are some of the benefits of joining the Community Rating System?

Residents get reduced flood insurance premiums

The community's flood program receives recognition from a national evaluation program.

Technical assistance in designing and implementing some activities is available at no charge from ISO.

It encourages the community to maintain its program during times of diminished interest in flood issues.

2. Does your community implement any of the 18 activities credited by the CRS?

Depends on the community. If your community implements five or more of the activities listed, it may be worth your while to obtain a copy of the CRS Application or contact the ISO/CRS Specialist for your area. Call 317/848-2898, your State NFIP Coordinator or your FEMA Regional Office for the name and phone number of your ISO/CRS Specialist.

3. What is a CBRS zone?

An undeveloped coastal barrier (barrier island, sand spit, or similar land form) that is designated as part of the Coastal Barriers Resources System.

4. Can I request a LOMA to get my property out of a CBRS area ?

No. The U.S. Fish and Wildlife Services can interpret the boundaries and FEMA can correct map errors, but only Congress can change the designation.

5. Are there any CBRS area in Flood County?

Yes. Panels 38 and 40 of Flood County contain CBRS areas designated in 1983 and after 1990.

UNIT 9—LEARNING EXERCISE -ANSWERS

1. Who sets the rates and coverage rules for flood insurance policies, FEMA or private insurance companies?

FEMA

2. What are the two types of flood insurance coverage available?

Building and contents coverage

3. Can I get flood insurance coverage for furniture in a basement?

No

4. Can a bank require flood insurance for a property outside the SFHA shown on the latest FIRM?

Yes. Any lender can require flood insurance wherever it wants (Federal law doesn't give lenders a choice for properties in the SFHA).

5. What are the two key factors in rating Post-FIRM buildings?

FIRM Zone and the lowest floor's elevation in relation to the BFE

6. How do I know how much a flood insurance policy will cost for a Post-FIRM building with the lowest floor four feet below the BFE?

The insurance agent has to send information on the building in for a special individualized rating known as "submit for rate."

7. How can your community help its residents get lower flood insurance rates?

Join the Community Rating System (CRS)

8. Can a community get CRS credit for activities implemented by a state agency on behalf of the community?

Yes

9. Can non-CRS communities obtain and benefit from CRS publications?

Yes

10. RM 38-1 is located near Site A on Flood County's FIRM. Is RM 38-1 in an SFHA?

Yes

11. Is RM 38-1 in a CBRS zone?

No

12. Mrs. Murphy's Chowder House was built at the east end of Vassar Road on panel 38 in 1994. The restaurant got flooded last month. Which of the following can help Mrs. Murphy rebuild her damaged restaurant?

An NFIP flood insurance policy

A FEMA disaster assistance grant

A Small Business Administration disaster loan

None of these programs are available because the building was built in a CBRS area 4 years after it was designated as such.

UNIT 10 - LEARNING CHECK #1

1. Who is responsible for disaster and emergency response activities in your community?
2. Is there a written emergency response plan that identifies your department's duties during and after a disaster?
3. What are the objectives of a building condition survey?
4. What are the three categories of building condition that are determined during the building condition survey?
5. What is one of the best guides you can give to owners and residents of flooded buildings?
6. Can your community waive the requirement for a development permit so people can repair their flooded homes more quickly?
7. When you inspect a flooded building to determine if the structure is substantially damaged, which of the following items should you check?
 - Walls and ceiling
 - Foundation
 - Deck or porch
 - Molding and built-in bookcase
 - Ductwork
 - Water heater
 - Kitchen cabinets
8. Does your community or state license contractors or have procedures to prevent "fly by night" unqualified contractors from preying on disaster victims?
9. What sources of assistance are there to help your post-disaster permit operations?

UNIT 10 -LEARNING CHECK #2

1. What's a good definition of "flood hazard mitigation?"
2. What are the six basic strategies of flood hazard mitigation measures?
3. What are some of the benefits of preparing a mitigation plan?
4. What are the guidelines of multi-objective management?
5. Where can you get technical help in planning and implementing a mitigation program?
6. List some of the sources of financial assistance that are available for a mitigation program.
7. Could my community be eligible for a Section 404 Hazard Mitigation Grant even if it did not receive a disaster declaration?

UNIT 10 - LEARNING EXERCISE

1. The Building condition survey identifies three categories of building condition. Which two need permits?
2. What type of work may not need a permit after a flood?
3. Once you advise an owner that a permit may be necessary, do you need to inspect the building or can you save time and just wait for a permit application?
4. Who can help you make sure people don't reoccupy damaged buildings before they have passed an inspection?
5. Can constructing a levee and maintaining sand dunes be considered flood hazard mitigation measures?
6. What's more important: a plan document or the planning process?
7. Which of the following are benefits of multi-objective management?

It helps look at all possible solutions

It coordinates flood issues with other community concerns.

The cost of implementing programs is shared with others.

The floodplain and watershed are treated as resources.

8. What are the two types of grants available through the Flood Mitigation Assistance Program?
9. If a flood is bad enough to result in a Presidential disaster declaration, why should my city need flood insurance policies on the buildings it owns in the floodplain?

UNIT 10 - LEARNING CHECK #1 -ANSWERS

1. Who is responsible for disaster and emergency response activities in your community?

Each community may have a different name for the emergency manager. Get to know yours.

2. Is there a written emergency response plan that identifies your department's duties during and after a disaster?

Depends on the community. There should be one that clearly identifies what is expected of your office.

3. What are the objectives of a building condition survey?

To determine if any building is so dangerous that it should not be reentered without a careful inspection, and

To determine which buildings will need a floodplain development permit before they can be repaired or reoccupied.

4. What are the three categories of building condition that are determined during the building condition survey?

Apparently safe: No exterior signs of structural damage. People can be allowed back in, but they will need building permits for repairs.

Building obviously substantially damaged: The flood swept the building away, it has collapsed or it is missing one or more walls. The building cannot be reoccupied without major structural work.

Could be substantially damaged: The building may be substantially damaged, but such damage is not obvious.

5. What is one of the best guides you can give to owners and residents of flooded buildings?

Repairing Your Flooded Home

6. Can your community waive the requirement for a development permit so people can repair their flooded homes more quickly?

No. You can waive the permit fee, but you must require permits to see if the buildings could be substantially damaged and subject to your floodplain ordinance's requirements.

7. When you inspect a flooded building to determine if the structure is substantially damaged, which of the following items should you check?

Walls and ceiling

Foundation

Deck or porch

Molding and built-in bookcase

Ductwork

Water heater

Kitchen cabinets

All of the above need to be checked because the NFIP considers all of them part of the building's structure.

8. Does your community or state license contractors or have procedures to prevent “fly by night” unqualified contractors from preying on disaster victims?

Depends on the community. It's worth checking out before the disaster happens.

9. What sources of assistance are there to help your post-disaster permit operations?

State NFIP coordinator

FEMA Regional Office

State building code agency

Model building code organization

Local or state health department

Cooperative Extension Service

Other communities willing to provide mutual aid

Building officials association

UNIT 10 – LEARNING CHECK #2 -ANSWERS

1. What's a good definition of "flood hazard mitigation?"

All actions that can be taken to reduce property damage and the threat to life and public health from flooding.

2. What are the six basic strategies of flood hazard mitigation measures?

Prevention

Property protection

Natural resource protection

Emergency services

Structural projects

Public information

3. What are some of the benefits of preparing a mitigation plan?

Preparing a plan will:

Ensure that all possible activities are reviewed and implemented.

Link floodplain management policies to specific activities.

Ensure that activities are coordinated.

Educate residents

Build public and political support

Fulfill planning requirements for state or federal assistance programs.

Facilitate implementation of floodplain management activities

4. What are the guidelines of multi-objective management?

Keep the effort locally based.

Understand the flood problem and its relation to the watershed.

Think broadly about possible solutions to reduce the flood problem.

Identify the other community concerns and goals that could have a bearing on the flood problem.

Obtain expert advice and assistance from government agencies and private organizations.

Build a partnership among the private and public groups and individuals that can be enlisted to work on the objectives.

5. Where can you get technical help in planning and implementing a mitigation program?

National Park Service's Rivers, Trails and Conservation Assistance Program

The soil and water conservation district.

Natural Resources Conservation Service

Cooperative Extension Service

Watershed, stormwater management or flood control districts.

Regional or metropolitan water, sewer or sanitary districts.

Regional planning commissions and councils of government

The state or county emergency management or civil defense agency (see Appendix B).

The state natural resources or water resources agency.

Local watershed councils or associations.

U.S. Army Corps of Engineers.

Association of State Floodplain Managers.

Floodplain Management Resource Center

6. List some of the sources of financial assistance that are available for a mitigation program.

Property owners willing to cost share on projects that help them FEMA's Flood

Mitigation Assistance Program FEMA's Public/Infrastructure Program FEMA's

Human Services programs FEMA's Hazard Mitigation Grant Program

5. Could my community be eligible for a Section 404 Hazard Mitigation Grant even if it did not receive a disaster declaration?

Yes, under a 1997 FEMA ruling, all communities in the state are eligible after the disaster declaration.

UNIT 10 – LEARNING EXERCISE -ANSWERS

1. The Building condition survey identifies three categories of building condition. Which two need permits?

Building obviously substantially damaged: The flood swept the building away, it has collapsed or it is missing one or more walls. The building cannot be reoccupied without major structural work.

Could be substantially damaged: The building may be substantially damaged, but such damage is not obvious.

2. What type of work may not need a permit after a flood?

Cleanup and temporary emergency repairs

3. Once you advise an owner that a permit may be necessary, do you need to inspect the building or can you save time and just wait for a permit application?

As soon as possible after the notice is delivered, your office should inspect each flooded property to review needed repairs and determine if a permit is needed.

4. Who can help you make sure people don't reoccupy damaged buildings before they have passed an inspection?

Make sure that utility companies won't turn service back on unless there is an "Approved to Connect" sign posted on the building.
Instruct police and other departments about the permit requirements and ask them to report to you any construction projects under way without posted permit signs.
Get the news media to help spread the word on the requirements and why they are needed.

5. Can constructing a levee and maintaining sand dunes be considered flood hazard mitigation measures?

Yes

6. What's more important: a plan document or the planning process?

The process.

7. Which of the following are benefits of multi-objective management?

It helps look at all possible solutions
It coordinates flood issues with other community concerns.
The cost of implementing programs is shared with others.

The floodplain and watershed are treated as resources.
All of these are benefits of M-O-M.

8. What are the two types of grants available through the Flood Mitigation Assistance Program?

Planning grants to help develop or update a flood mitigation plan

Project grants to implement projects in conformance with the flood mitigation plan

9. If a flood is bad enough to result in a Presidential disaster declaration, why should my city need flood insurance policies on the buildings it owns in the floodplain?

Federal disaster assistance for a flooded public building will be reduced by the amount of flood insurance coverage the community should have on that building. It does not matter whether the building is insured; FEMA will still only provide assistance for damage that exceeded the level of insurance.