

# SECTION 9: MAPS AND DATA

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Flood maps and flood data were discussed in sections 3 and 4. This section builds on that information, covering the NFIP requirements as to when and how a community must use those maps and data.

## 9.1. NFIP MAPS AND DATA

### 9.1.1. Adopting and enforcing NFIP floodplain maps and data

**Basic Rule #1:**

***The floodplain administrator should check to make sure they have the latest flood maps and data published by FEMA. The latest maps must be used to administer the floodplain management ordinance.***

A community must adopt and enforce floodplain management regulations based on data provided by FEMA (44 CFR 60.2(h)). This includes the floodplain boundaries, base flood elevations, Flood Insurance Rate Map (FIRM) zones, and floodway boundaries shown on the current Flood Insurance Rate Map, Flood Boundary Floodway Map and/or Flood Insurance Study.

***44 CFR 60.2(h): The community shall adopt and enforce flood plain management regulations based on data provided by the [Federal Insurance] Administrator. Without prior approval of the Administrator, the community shall not adopt and enforce flood plain management regulations based upon modified data reflecting natural or man-made physical changes.***

### 9.1.2. Adopting and enforcing more restrictive data

44 CFR 60.2(h) does not prevent a community from adopting and enforcing regulations based on data more restrictive than that provided by FEMA. For example, a community may want to regulate to a historical flood which was higher than the BFEs shown on the FIRM. However, such data must be approved by the FEMA Regional Office before it is used.

This requirement does not prevent a community from applying other technical data to identify and regulate floodprone areas not shown on FEMA maps. For example, many cities and urban counties map and regulate areas on small tributary streams that are not shown on the FIRM.

The community may always advise as to the accuracy of the latest maps data. FEMA provides proposed revisions of the FIRM for the community to review and comment to FEMA prior to publication. The community also has a formal 90-day appeals period before BFEs are made final. If the community at any time has scientific or technical data to support a revision to the regulatory map, they should submit a request for a map revision as noted in Section 7.

### 9.1.3. Annexations

If a property is in a recently annexed area that does not show up on the community's map, the county's map and base flood elevations (BFEs) should be used to determine the flood protection requirements. The county's FIRM should be formally adopted in the local ordinance to strengthen the community's basis for regulating areas not currently shown on the community FIRM. This will no longer be a concern once a countywide map is the regulatory FIRM for a community.

## 9.2. EXCEPTIONS TO THE BASIC RULE

In some cases, the FIRM may not be accurate or reflect the most recent flood data. Four occasions where a community may vary from the effective FIRM and other data provided by FEMA are:

1. When ground elevations do not agree with the FEMA FIRM (Section 9.2.1.).
2. When FEMA has provided draft revised data (Section 9.2.2.).
3. When FEMA provides “advisory” flood hazard data (Section 9.2.3.).
4. When the FEMA data is insufficient. This occurs in approximate A Zones where base flood elevations and floodway boundaries are not provided with the FIRM or Flood Insurance Study (Section 9.2.4.).

Note: These situations only apply to the use of flood data for floodplain management purposes. Insurance agents and lenders must use the regulatory FIRM when determining insurance rates and whether flood insurance is required. If a person wants to vary from the regulatory FIRM to obtain different premium rates or to avoid purchasing a flood insurance policy, the FIRM must be officially revised or amended.

### 9.2.1. When FIRM and ground data disagree

The BFEs published in the Flood Insurance Study set the minimum level for flood protection purposes. The maps are a graphic portrayal of that information.

As explained in Section 4 on floodplain mapping, since a flood study contractor usually may not have detailed topographic mapping to use in preparing the flood maps, the flood boundaries are interpolated between cross sections using available topographical information. This can result in inaccuracies in drawing the boundaries on the map.

**When the ground is higher than the flood elevation:** The BFE in relation to the actual ground elevation sets the floodplain limits for regulatory purposes. When ground surveys show that the natural ground elevation (i.e. no fill was placed) of a development site is above the BFE, the floodplain administrator can record the data and issue the permit. If the owner wants the property removed from the Special Flood Hazard Area designation (e.g., to remove the Federal mandate to purchase flood insurance), he or she can request a Letter of Map Amendment. It is up to the developer or property owner to apply for a map change, not the floodplain administrator. The procedure is discussed in Section 7.

**When the ground is lower than the flood elevation:** If topographic survey shows that area considered outside the 100-year floodplain on published maps is in fact below the BFE, the floodplain administrator should require protection of new buildings to the BFE or flood protection elevation. Even though a site may be outside the mapped SFHA, the floodplain administrator is not doing future occupants any favors by ignoring the known flood hazard.

The community's ordinance may be changed to define the regulated floodplain as "the area designated on a FIRM and adjacent areas that are below the base flood elevation." Then the community will have clear authority to regulate those areas even though it is not otherwise required by NFIP regulations.

### 9.2.2. Draft revised NFIP data

Another situation where a community may vary from the official FEMA data is when FEMA has sent preliminary data to the community for review. Communities are required to "reasonably utilize" the data from a draft or preliminary FIRM or flood insurance study.

Four scenarios are possible:

1. Where the original FIRM shows an A Zone with *no* BFEs: Use the draft information. In the absence of other elevation or floodway data, the draft information is presumed to be the best available.
2. Where the original FIRM shows an AE Zone *with* a BFE or floodway and the revision *increases* the BFE or *widens* the floodway: The draft revised data should be used. However, if the community disagrees with the data and intends to appeal, the existing data can be presumed to be valid and may still be used until the appeal is resolved.
3. Where the original FIRM shows an AE Zone *with* a base flood elevation or floodway and the revision *decreases* the BFE or *shrinks* the floodway: The existing data should be used. Because appeals may change the draft data, the final BFE may be higher than the draft. If a floodplain administrator were to allow new construction at the lower level as shown in the draft, the owners may have to pay higher flood insurance premiums.
4. Where the original FIRM shows a B, C or X Zone: NFIP regulations do not require that the draft revised data be used. However, a floodplain administrator is encouraged to use the draft data to regulate development, since these areas are subject to a flood hazard.

If the community intends to appeal preliminary data, it must be done during the official appeals period. Otherwise, they will have to wait for the new map to become official and submit a request for a map amendment or revision.

For more information on this issue, see *Use of Flood Insurance Study (FIS) Data As Available Data*, FEMA Floodplain Management Bulletin 1-98.

**CLOMRs:** The above four scenarios are also relevant for a Conditional Letter of Map Revision or CLOMR. Note the *conditional* part of a CLOMR. A CLOMR provides that *if* a project is constructed as designed, the BFEs can be revised or modified (or the property in question can be removed from the SFHA) *AFTER* the as-built specifications are submitted *AND* the final LOMR is issued.

A building permit cannot be issued based on a lower BFE proposed by a CLOMR until the final LOMR is issued. However, a permit can be issued for that part of the work not dependent on the

changes that will result from the LOMR and condition the full permit upon receipt of the final LOMR (See Section 7 for more details on map changes).

### 9.2.3. Advisory flood hazard data

Sometimes FEMA issues advisory data after a major flood where it was found that the FIRM and/or flood insurance study underestimated the hazard. This information is provided so communities can verify that reconstructed buildings are protected from the true hazard, not the one shown on the FIRM.

When a community receives such advisory information, they should “reasonably utilize” it. If the community agrees with the information, the ordinance should be revised to adopt it. If it disagrees with the data, they should be ready to explain why the community is not requiring construction and reconstruction to be protected. The floodplain administrator and community are not helping residents if they allow them to rebuild without protection from a known hazard.

For more information on this issue, see *Use of Flood Insurance Study (FIS) Data As Available Data*, FEMA Floodplain Management Bulletin 1-98.

### 9.2.4. Approximate A Zones

The fourth occasion where a floodplain administrator may vary from the data provided by FEMA is in approximate A Zones. Approximate A Zones are those areas not studied by the detailed hydrologic/hydraulic methods. These areas are shown as “unnumbered A zones” on the FIRM and “approximate 100-year flood zones” on the Flood Boundary Floodway Map. See the next section for more information.

## 9.3. DATA IN APPROXIMATE A ZONES

The FIS will not contain specific base flood elevations for approximate study areas nor will there be a floodway/fringe designation on the Floodway Map.

**44 CFR 60.3(b)** *When the Administrator has designated areas of special flood hazards (A zones) by the publication of a community's FHBM or FIRM, but has neither produced water surface elevation data nor identified a floodway or coastal high hazard area, the community shall:...*

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

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

Regulating development in approximate or unnumbered A Zones is one of the tougher jobs a floodplain administrator will face, especially in counties that have large areas of such zones.

According to 44 CFR Section 60.3(b)(4), every effort must be made to use any flood data available to achieve a reasonable measure of flood protection.

### 9.3.1. Downstate rules

If the community has adopted IDNR/OWR's downstate model ordinance, then they have a section in their ordinance that reads:

The base flood or 100-year frequency flood elevation for each of the remaining floodplains delineated as an "A Zone" on the Flood Insurance Rate Map of the (City, Village) shall be according to the best data available from federal, state or other sources. Should no other data exist, an engineering study must be financed to determine base flood elevations.

The State Water Survey (SWS) is a main source of assistance. The SWS may have studies prepared for other agencies or for other purposes on file. Data obtained from one of these other sources should be used as long as they:

- ◆ Reasonably reflect flooding conditions expected during the base flood,
- ◆ Are known to be technically correct, and
- ◆ Represent the best data available.

If there are no data available, then a new study must be conducted. Usually the owner pays for the cost of the study since he or she is the one wanting to build on land that may be in the floodplain.

Some good guidance is found in the FEMA publication *Managing Floodplain Development in Approximate Zone A Areas: A Guide for Obtaining and Developing Base (100-Year) Flood Elevations*. This provides information on a number of methodologies for developing BFEs in approximate A zones. These methodologies range from detailed methods that produce BFEs and perform floodway analyses similar to those developed for a Flood Insurance Study to simplified methods that can be used in isolated areas where more costly studies cannot be justified.

If a community has approximate A Zones that are likely to be developed, the floodplain administrator should get a copy of this document and have the community's engineer review it. They can also download FEMA's Quick-2 software for computing flood elevations from the FEMA flood hazard mapping website.

In some cases, the developer will not need to finance an expensive detailed study. These cases are discussed in the next two sections on large and small developments. Whatever method is used, be sure to record on the permit records where the flood elevation came from. This will help being consistent with future development in the same area.

## Floodplain Management Success Story

### The Benefits of Obtaining Detailed Data

The FIRM for the Town of Severn, North Carolina was an approximate Flood Hazard Boundary Map which was converted to a FIRM by letter in 1987. Kirby Creek is delineated as an unnumbered A zone on that map. In 1995, Kirby Creek flooded.

Town officials recognized that rebuilding should not take place until flood risks were better delineated. Since the FIRM did not identify base flood elevations, the Town asked the State to prepare a detailed study with flood elevations to be used in their construction regulations. At the same time the Town adopted a moratorium on the repair of damaged buildings.

The State NFIP Coordinator, the North Carolina Department of Transportation and the U.S. Army Corps of Engineers organized a joint study effort. Each agency sent team members to Severn. The NCDOT provided a survey crew to survey cross sections of Kirby Creek and its tributary. The Corps produced flood profiles for the streams.

As a result of the study the Corps estimated the elevation of the 100-year flood at 95' msl. They estimated the 1995 flood level of 97' msl. as being a 500-year flood. Using this information the Town of Severn adopted a revised floodplain management ordinance, adopted the Corps floodplain map and adopted a requirement that all new construction and substantially damaged buildings be elevated two feet above the 100-year flood elevation.

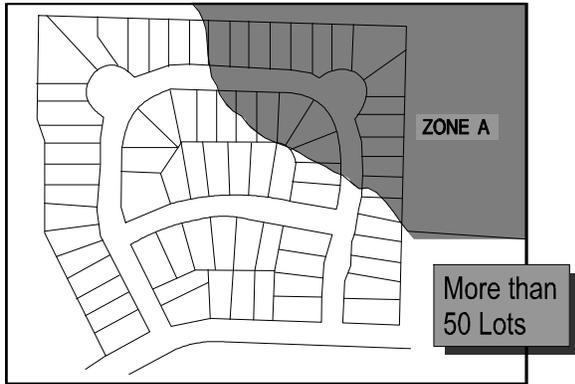
During Hurricanes Fran in 1997 and Floyd in 1999, the water in Kirby Creek reached an elevation near 97' msl. The detailed flood data and the two feet of freeboard limited flood damage to wet insulation under the floors of new structures. Each of these homes would have been flooded about two feet deep had they not been elevated using the new flood data.

### 9.3.2. Large developments

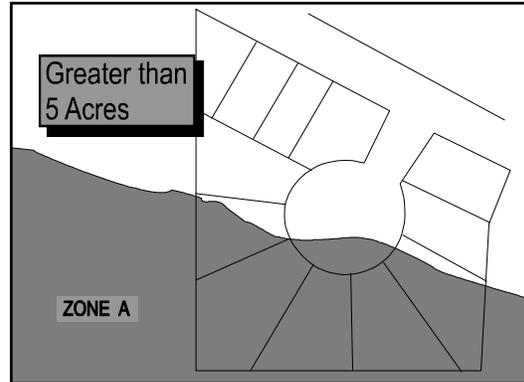
**44 CFR 60.3(b)(3):** *[Communities must] Require that all new subdivision proposals and other proposed development (including proposals for manufactured home parks and subdivisions) greater than 50 lots or 5 acres, whichever is the lesser, include within such proposals BFE data.*

Any subdivision or other large development that meets this threshold must be evaluated to determine if the proposed site is in an approximate A Zone and whether BFEs are required. If BFEs are required, the developer must conduct the required study (the community or Illinois Department of Natural Resources' Office of Water Resources (IDNR/OWR) may provide assistance). The study must provide BFEs and a floodway delineation.

The detailed flood study is required for the affected lots in the subdivisions shown in Figure 9-1 and Figure 9-2. Figure 9-1 shows a 76-lot subdivision with several lots clearly affected by an approximate Zone A area.



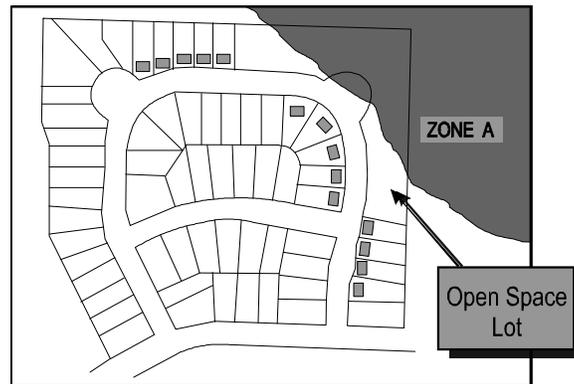
**Figure 9-1: Proposed 76-lot subdivision**



**Figure 9-2: Proposed 6.7-acre subdivision**

The subdivision depicted in Figure 9-2 is only 12 lots, but BFEs are required because the subdivision covers more than five acres. It also clearly shows buildable sites affected by an approximate Zone A area.

In Figure 9-3, the entire approximate Zone A area is to be left as open space. If the planned subdivision shows the floodplain is contained entirely within an open space lot, it may not be necessary to develop BFE data.



**Figure 9-3: Proposed 76-lot subdivision**

The floodplain administrator is encouraged to talk about the flood hazard as early as possible in discussions with subdividers and developers of large areas. If a subdivision or planned unit development will be partially in the floodplain, there may be ways to avoid building in the flood hazard area, which can save the developer the cost of a flood study.

### 9.3.3. Small developments

If the project is an isolated building, such as a cabin in an undeveloped area, or a subdivision or other development that does not meet the thresholds in 44 CFR Section 60.3(b)(3), the floodplain administrator still must ensure that the building is protected from flood damages by meeting the requirements of 44 CFR 60.3(a)(3). This paragraph requires the community to determine if the site is reasonably safe from flooding and, if it is not, that they ensure the building is constructed

with methods and practices that minimize flood damages and meets other construction requirements.

The safest way to protect the building is to require the permit applicant to develop a base flood elevation using one of the methods in the FEMA publication *Managing Floodplain Development in Approximate Zone A Areas: A Guide for Obtaining and Developing Base (100-Year) Flood Elevations*. The floodplain administrator can also develop a BFE but it usually requires the services of an engineer. It will be worth the additional expense if it is the only way to make sure the building is protected from flood damage. There are several methods of determining BFEs at varying costs and levels of detail.

For these small projects, a less expensive alternative to a detailed hydrologic and hydraulic study could be used to obtain a flood elevation that will meet the requirements of 44 CFR 60.3(a)(3). There are several possible ways of establishing this elevation:

1. Check with the State Water Survey for an available study.
2. Walk the site with the property owner and find a site on high ground for the building. Compare the elevation of the site with another site that is outside the mapped A Zone. Sometimes by this method alone a safe building site can be determined or a safe building elevation can be established, particularly in the floodplain of a small stream. Detailed topographic maps that are available may help.
3. Use historical records or the flood of record (the highest known flood level for the area) prepared by a government agency. It may be that a recent flood was close to the base flood. If records of the recent flood can be used, the regulatory flood elevations should be based on them (or create a FPE by adding a foot or two to the historical flood levels to provide a margin of error). Before doing this, get a second opinion from IDNR/OWR or FEMA.
4. Require protection to a set elevation such as at least five feet above existing grade. This will result in lower flood insurance rates than if the building had no protection, but the rates are not as favorable as they would be if a BFE were calculated. This approach should only be used if the floodplain administrator feels confident that the five feet of elevation will provide adequate flood protection to the building.

#### **9.3.4. Northeastern Illinois rules**

If the community adopted IDNR/OWR's model ordinance for the six northeastern counties, then their ordinance has a section that reads something similar to:

The base flood or 100-year frequency flood elevation for each of the remaining SFHAs delineated as an "A Zone" on the Flood Insurance Rate Map of the (City, Village) shall be according to the best data available in the Illinois State Water Survey's Floodplain Information Repository.

When no base flood or 100-year frequency flood elevation exists, the base flood or 100-year frequency flood elevation for a riverine SFHA shall be determined from a backwater model, such as HEC-RAS, HEC-2, or a dynamic model such as FEQ.

The flood flows used in the hydraulic models shall be obtained from a hydrologic model, such as HEC-1, TR-20, or HSPS, or by techniques presented in various publications prepared by the United States Geological Survey for estimating peak flood discharges.

Along any watercourses draining more than one (1) square mile, the above analyses shall be submitted to IDNR/OWR for approval. Once approved it must be submitted to the Illinois State Water Survey Floodplain Information Repository for filing.

For a non-riverine SFHA, the base flood elevation shall be the highest historic flood recorded plus three feet, unless calculated by a detailed engineering study and approved by IDNR/OWR for drainage areas greater than one square mile.

When a BFE is not provided on the Flood Insurance Rate Map, Flood Insurance Study profiles or by a prior permit approval for the site, a determination is required. In northeastern Illinois, it does not matter whether the development is large or small.

This table lists the requirements for BFE approvals in northeastern Illinois:

<b>Drainage Area:</b>	<b>BFE Estimate By:</b>	<b>To Be Approved By:</b>
< 1 square mile	Consulting Engineer (or IDNR/SWS for single lots only)	Local official
≥ 1 square mile	Consulting Engineer (or SWS in rural areas only)	IDNR/Water Resources

The SWS can provide BFE estimates for single lots where the upstream drainage basin area is less than one square mile. SWS can also provide BFE estimates in rural areas regardless of the drainage area. There is a nominal fee for this service.

The IDNR/OWR must approve all BFE estimates in urban/urbanizing areas where the upstream drainage basin area is over 1.0 square mile or rural areas where the upstream drainage basin area is over 10 square miles.

The upstream drainage basin area can be determined by examining the U.S. Geologic Survey's Hydrologic Atlases. Copies of these atlases and technical assistance are available at IDNR/OWR in Bartlett and the following Soil & Water Conservation Districts:

- ◆ Kane-DuPage County (630/584-7961)
- ◆ Will-South Cook County (815/462-3106)
- ◆ McHenry County (815/338-0099)
- ◆ Lake County (847/223-1056)
- ◆ North Cook County (847/468-0071)

### 9.3.5. Submittal to FEMA

When a detailed flood study provides new data in an approximate A Zone, it must be submitted to FEMA within six months. The community can pass that cost on to the developer by requiring that he or she submit a request for a Letter of Map Revision as a condition of approving the development. LOMRs are discussed in Section 7. If the developer doesn't do it, many individual property owners will have to do it later.

**44 CFR 65.3:** *As soon as practicable, but not later than six months after the date such information becomes available, a community shall notify the Administrator of [map] changes by submitting technical or scientific data in accordance with this part.*



Community Rating System credit is provided if BFEs, floodways and related regulatory data are provided in areas not mapped by the NFIP. It does not matter who prepared the study. It can be the developer, the community, or a State or Federal agency (other than FEMA). The size of the watershed or the FIRM zone designation do not matter, either.

This credit can be found in Activity 410, Section 411, of the *CRS Coordinator's Manual* or the *CRS Application*. Most communities that adopted one of the two model ordinances qualify for this credit because the State's procedures are above and beyond the minimum requirements of the NFIP. For more on the CRS, see Section 18.

## 9.4. FLOOD HAZARD DETERMINATIONS

### 9.4.1. Hazard determination form

The Flood Disaster Protection Act requires that banks and other lenders determine if a loan or other financial assistance that they are providing is for a property located in a Special Flood Hazard Area (SFHA).

Local officials may be asked by a bank or lender to determine if a property is in or out of the SFHA. Communities should be aware that lenders are legally responsible for determining if a flood insurance policy is required for a loan. This is called a "flood hazard determination."

Under the 1994 National Flood Insurance Reform Act, if someone other than a lender provides a flood hazard determination to decide if a flood insurance policy is required for a loan, that information must be guaranteed. This information is usually provided on FEMA's Standard Flood Hazard Determination Form, which can be downloaded from FEMA's website.

Note: If asked to sign such a form, the local official is guaranteeing the accuracy of the determination and may assume some liability for the action. Most local officials do not use the form. Banks and map determination companies use it under contract with lending institutions.

#### 9.4.2. Flood hazard determination review

Sometimes the lender or its map determination company incorrectly places a property in the SFHA. The property owner may come to the community asking for help or advice. The local official can double check the determination and the property owner should be informed that the determination is the lender's responsibility and the local government has no authority over it.

If it appears that the property is outside the SFHA, but the map determination says that it is inside, the owner can ask FEMA for a determination review. A Flood Hazard Determination Review is requested jointly by the owner and the lender. Requests must be postmarked not later than 45 days following the date the lender notified the borrower that the property is in an SFHA. The following must be submitted to FEMA:

- A copy of the completed Standard Flood Hazard Determination form (FEMA Form 81-93).
- A copy of the dated notification to the borrower from the lender that the property is in the SFHA.
- A copy of the effective NFIP map panel for the community in which the structure or manufactured home is located, annotated to show the location of the structure or manufactured home.
- A copy of *all* material used by the lender or any third party it has employed to make the flood hazard determination (FEMA must confirm the location of the structure on the NFIP map by examining the data source used to make the determination).
- A letter to FEMA requesting a review of the lender's determination, signed by the borrower and the lender.
- \$80 payment by check or money order made payable to "National Flood Insurance Program."

The materials are sent to the office identified on the form. The applicant should download the latest version of the form from the FEMA website ([www.fema.gov](http://www.fema.gov)) to ensure that the correct office and address are used and that the payment amount has not changed.

If the submittal is complete and on time, FEMA will issue a Letter of Determination Review (LODR). This review does not result in an amendment or revision to the effective NFIP map. It is only a finding about the location of a building or manufactured home relative to a designated SFHA.

A LODR only affects the Federal requirement for purchase of flood insurance. However, the mortgage lender always has the option to require flood insurance as a condition of providing financing, regardless of the location of the structure.

The property owner can submit a request for a LOMA if the map needs to be changed.