Portland Maine | Yes, Google's good here

Ann Machado <amachado@portlandmaine.gov>

Re: Camelot Farms - Zoning Map/Text Amendment Rezoning Application

William Savage <wsavage@acorn-engineering.com> Thu, Aug 10, 2017 at 3:31 PM
To: Ann Machado <amachado@portlandmaine.gov>

Hi Ann,

Well the Camelot Farms rezone is finally official and we are moving forward with the Site Plan/Subdivision permitting. I wanted to circle back on your prior email to provide you with base flood elevation data using FEMA approved engineering methods.

A few things are attached.

1. Zone A Manual: This is FEMA's document for dealing with subdivisions in approximate A zones. The subdivision has been designed so all the lots are outside of the mapped A Zone (from 1998 map) to avoid doing a detailed study of the A zone. The A Zone would reside in the within the open space, please refer to the attached Site Plan. See the attached excerpt which describes why it would be exempt.

2. Additional Supporting information on why a detailed study is not required by FEMA. Preliminary FIRM: This is the latest preliminary FIRM, which is supposed to become effective next summer. The flood zone lines follow the 27' contour on the NAVD88 datum as shown in the attached Site Plan. The "simplified contour interpolation" is another FEMA approved method that utilizes the preliminary data to determine the BFE (see pages III-7 and V-2 of Zone A manual). As you can see in the attached Site Plan the house lots will remain outside the of the Flood Plain.

Given the subdivision is in compliance with the FEMA approved methods for developing base 100-year flood plain elevations and the floodplain will reside within the Open Space lot provides the required documentation that the project meets Section 14 -450.7(c)(1) of Chapter 14.

Please let me know if you have any additional questions or comments.

Best,

Will Savage, PE

Principal

Licensed in Maine

Acorn Engineering, Inc

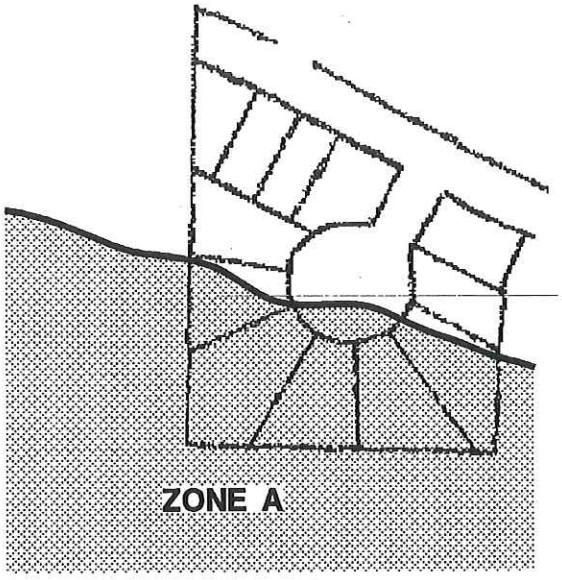
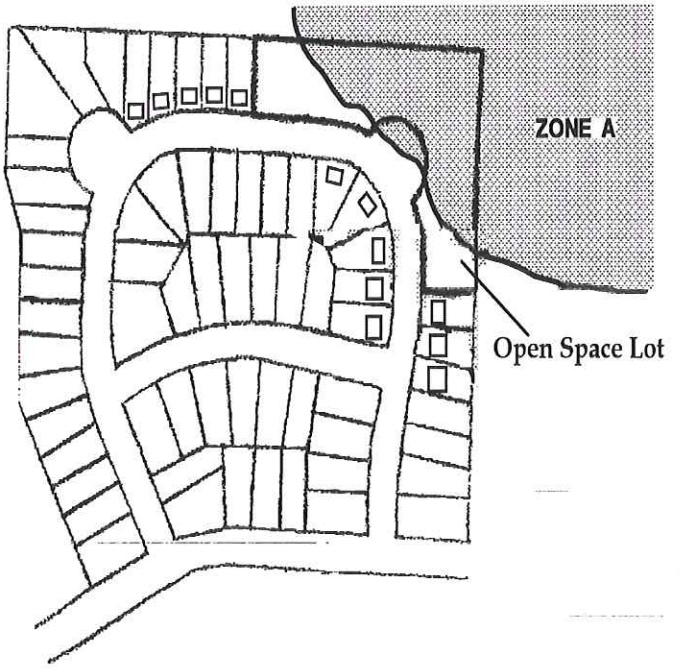


Figure 4 - Proposed 6.7-Acre Subdivision

Communities are encouraged to address the flood hazards at the earliest stages of subdivision planning rather than at the actual placement of individual structures. If a community can work with the developer and others when land is being subdivided, many long-term floodplain management benefits can be achieved, particularly if the floodplain is avoided altogether.

In Figure 5, "Proposed 76-Lot Subdivision," the entire approximate Zone A area is to be dedicated as open space. If the planned subdivision shows the floodplain is contained entirely within an open space lot, it may not be necessary to conduct a detailed engineering analysis to develop BFE data.

Also, it may not be necessary to develop detailed BFE data in large-lot subdivisions or single-lot subdivisions that are within the thresholds under Subparagraph 60.3(b)(3) of the NFIP regulations when the actual building sites are clearly outside of the Zone A area. In Figure 6, "Proposed 5.6-Acre Subdivision," it is evident from the topographic features of this 5.6-acre subdivision that the building sites would be clearly out of the floodplain since the proposal indicates a steep grade between the approximate Zone A area and the building sites which are located on natural high ground.



This is our situation

Figure 5 - Proposed 76-Lot Subdivision

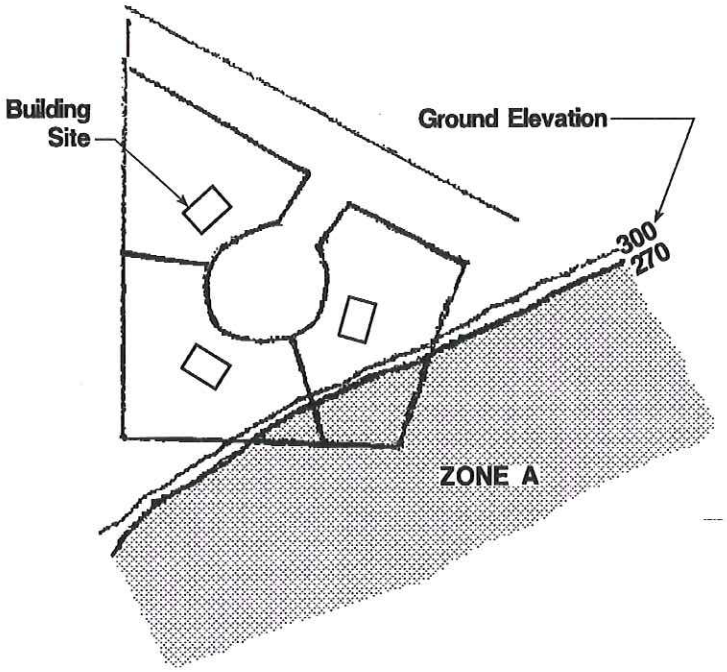


Figure 6 - Proposed 5.6-Acre Subdivision

SPACE AND BULK STANDARDS	
ZONE:	R-3
MINIMUM LOT SIZE	6,500 SF
MINIMUM LOT AREA PER DWELLING UNIT	6,500 SF
MINIMUM STREET FRONTAGE	50'
FRONT YARD	25'
REAR YARD – PRINCIPAL	25'
REAR YARD – ACCESSORY	5'
SIDE YARD	10'
STRUCTURE STEPBACKS (REAR YARD ABOVE 35')	15'
MAXIMUM LOT COVERAGE	35%
MINIMUM LOT WIDTH*	65'
MAXIMUM BUILDING HEIGHT	35'
MAXIMUM ACCESSORY HEIGHT	18'
MINIMUM RECREATIONAL OPEN SPACE PER DWELLING UNIT	300 SF**

*DISTANCE PARALLEL TO THE FRONT OF THE BUILDING MEASURED BETWEEN SIDE LOT LINES THROUGH THAT PART OF THE PRINCIPAL BUILDING WHERE THE LOT IS NARROWEST.
**APPLIES TO PRUD OR MULTIFAMILY DEVELOPMENTS OF 4 OR MORE DWELLING UNITS.

LOT SUMMARY	
SINGLE-FAMILY HOUSE LOTS	99
PLANNED RESIDENTIAL UNIT DEVELOPMENT (PRUD)	1 (25 UNITS)
TOTAL	100 (124 UNITS)


EXTENT OF REGULATORY FLOODWAY
ZONE AE
ZONE A
EXTENT OF 100-YR FEMA FLOODPLAIN PER THE NATIONAL FLOOD INSURANCE PROGRAM, PRELIMINARY FLOOD INSURANCE RATE MAP DATED 4/14/2017 (APPROX. 27')
29' CONTOUR PER EXISTING CONDITIONS PLAN
25-UNIT PRUD LOT
250' STROUDWATER RIVER BUFFER
EXTENT OF ROS ZONE
SPACE RESERVED FOR STORMWATER DETENTION POND, TYP.
30' STORMWATER ROW, TYP.
10' PUBLIC ACCESS ROW, TYP.
SPACE RESERVED FOR PUMP STATION
PARTRIDGE CIRCLE
POTENTIAL AREA FOR DEED PROTECTED GREEN SPACE, TYP.
MAINE TURNPIKE (I-95)
APPROX. EXTENT OF WETLAND IMPACTS, TYP.
WOODED EARTHEN BERM
WESTBROOK STREET
SWAN STREET
OLD WESTBROOK STREET
100 0 100 200
SCALE: 1" = 100'
PRELIMINARY APP
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR	BY / DATE
TRAFFIC	
FEMA	

DRAWING NAME: PRELIMINARY SITE PLAN

PROJECT NAME: STROUDWATER PRESERVE

CLIENT: CAMELOT HOLDINGS, LLC
KENNEBUNK, MAINE 04043

ACORN ENGINEERING, INC.
ACORN ENGINEERING, INC.
155 DANFORTH ST, PORTLAND MAINE 04102
(207) 775-2655

FILE:	1079_CIVIL
JN:	1079
SCALE:	1"=100'
DESIGNED BY:	OJD
DRAWN BY:	OJD
CHECKED BY:	WHS

DRAWING NO.
C-10

III. APPLICABLE NATIONAL FLOOD INSURANCE PROGRAM FLOODPLAIN MANAGEMENT REQUIREMENTS IN APPROXIMATE ZONE A AREAS

The primary requirement for community participation in the NFIP is the adoption and enforcement of floodplain management regulations that meet the minimum standards of the NFIP regulations in Title 44 of the Code of Federal Regulations (CFR) Section 60.3. These minimum standards vary depending on the type of flood risk data provided to the community by FEMA. The intent of floodplain management regulations is to minimize the potential for flood damages to new construction and to avoid aggravating existing flood hazard conditions that could increase potential flood damages to existing structures. To protect structures in riverine and lacustrine areas, the NFIP regulations require that the lowest floor (including basement) of all new construction and substantial improvements of residential structures be elevated to or above the BFE. New or substantially improved non-residential structures in riverine areas must either be elevated or floodproofed (made watertight) to or above the BFE.

Requirements for Obtaining BFE Data

In areas designated as approximate Zone A, where BFEs have not been provided by FEMA, communities must apply the provisions of Paragraph 60.3(b) of the NFIP regulations. Subparagraph 60.3(b)(4) requires that communities:

> Obtain, review and reasonably utilize any base flood elevation and floodway data available from a Federal, State, or other source... [44 CFR 60.3 (b)(4)]

Section IV describes the sources from which BFE data may be obtained. These data are to be used as criteria for requiring that new construction, substantial improvements, and other development within all approximate Zone A areas meet the applicable requirements in Paragraphs 60.3(c) and (d) of the NFIP regulations, including the requirement that structures have their lowest floors elevated to or above the BFE (or floodproofed to or above the BFE for non-residential structures). These data should be used as long as they reasonably reflect flooding conditions expected during the base (100-year) flood, are not known to be scientifically or technically incorrect, and represent the best data available. Communities should consider formally adopting these data by reference as part of their floodplain management regulations.

Requirements for Developing BFE Data

Under Subparagraph 60.3(b)(3) of the NFIP regulations, communities must also:

> 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 base flood elevation data; [44 CFR 60.3 (b)(3)]

This means that any subdivision which meets this threshold must be evaluated to determine if the subdivision proposal is affected by an approximate Zone A area and whether BFE data are required. BFE data are required for the affected lots in the subdivisions shown in Figure 3, "Proposed 76-Lot Subdivision," and Figure 4, "Proposed 6.7-Acre Subdivision." Figure 3 clearly shows a 76-lot subdivision with several lots affected by an approximate Zone A area. The subdivision depicted in Figure 4 is only 12 lots, but because the subdivision is greater than 5 acres and clearly shows buildable sites affected by an approximate Zone A area, BFE data are required.

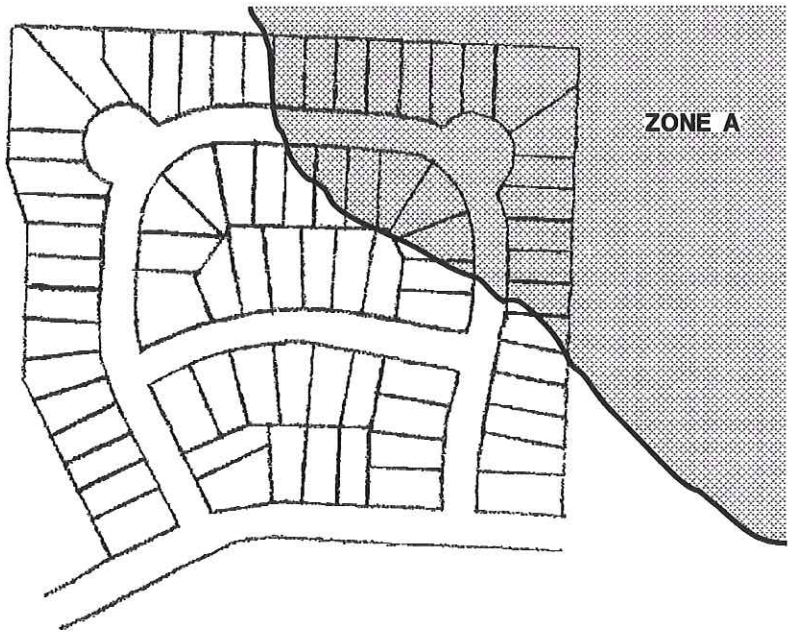


Figure 3 - Proposed 76-Lot Subdivision

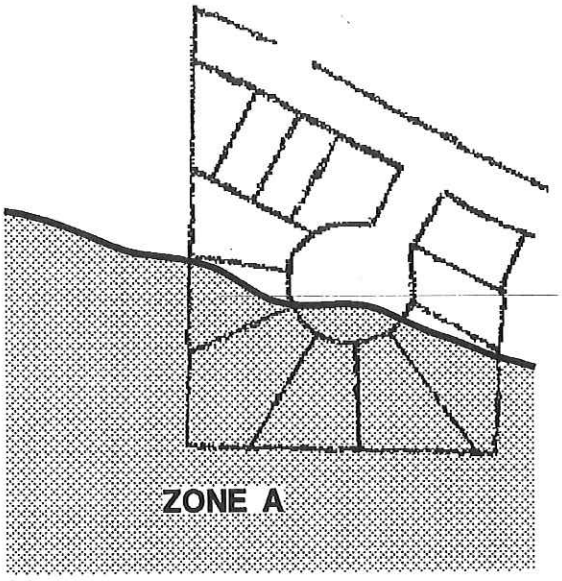


Figure 4 - Proposed 6.7-Acre Subdivision

Communities are encouraged to address the flood hazards at the earliest stages of subdivision planning rather than at the actual placement of individual structures. If a community can work with the developer and others when land is being subdivided, many long-term floodplain management benefits can be achieved, particularly if the floodplain is avoided altogether.

In Figure 5, "Proposed 76-Lot Subdivision," the entire approximate Zone A area is to be dedicated as open space. If the planned subdivision shows the floodplain is contained entirely within an open space lot, it may not be necessary to conduct a detailed engineering analysis to develop BFE data.

Also, it may not be necessary to develop detailed BFE data in large-lot subdivisions or single-lot subdivisions that are within the thresholds under Subparagraph 60.3(b)(3) of the NFIP regulations when the actual building sites are clearly outside of the Zone A area. In Figure 6, "Proposed 5.6-Acre Subdivision," it is evident from the topographic features of this 5.6-acre subdivision that the building sites would be clearly out of the floodplain since the proposal indicates a steep grade between the approximate Zone A area and the building sites which are located on natural high ground.

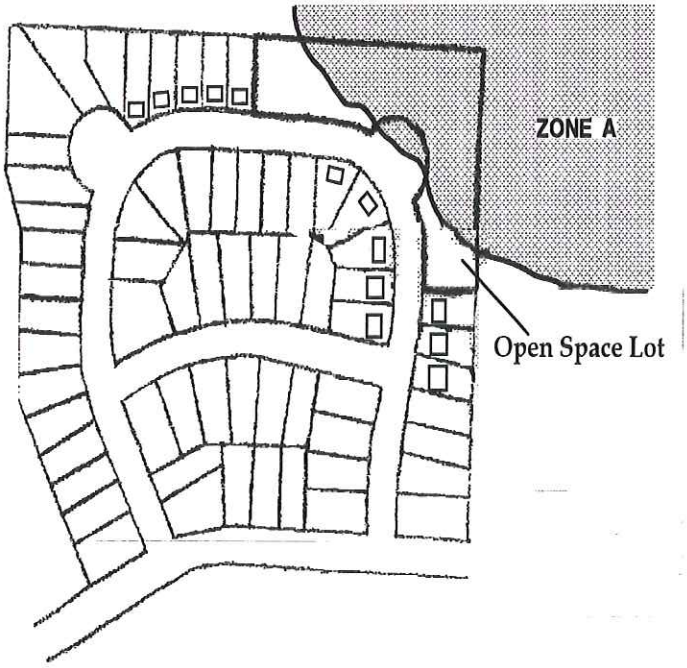


Figure 5 - Proposed 76-Lot Subdivision

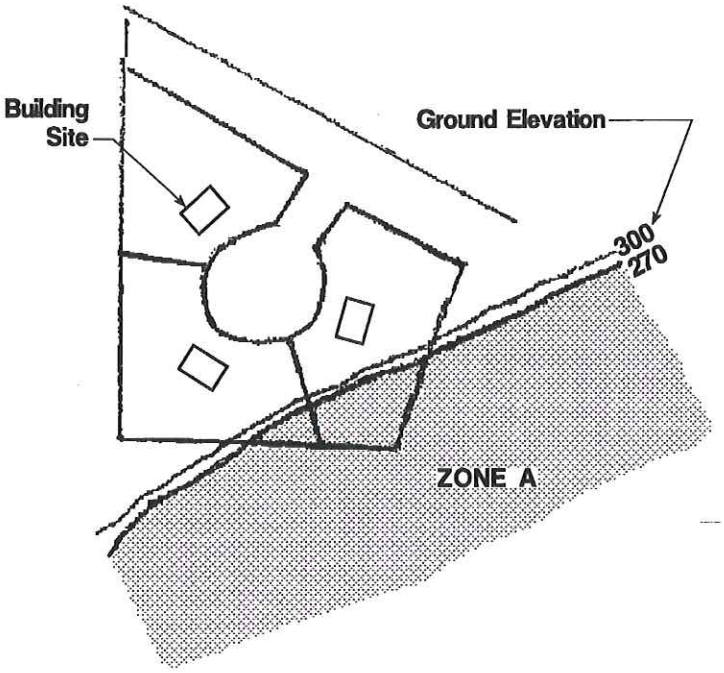


Figure 6 - Proposed 5.6-Acre Subdivision

If the grade between the actual building sites and the approximate Zone A area of the proposed subdivision is relatively gradual, asshown in Figure 7, "Proposed 6.7-Acre Subdivision," the floodplain could extend beyond what is shown on the Flood Insurance Rate Map. It is very likely that flooding could affect the building sites.In this case, an analysis should be conducted to determine the location of the 100-year floodplain and the BFE.

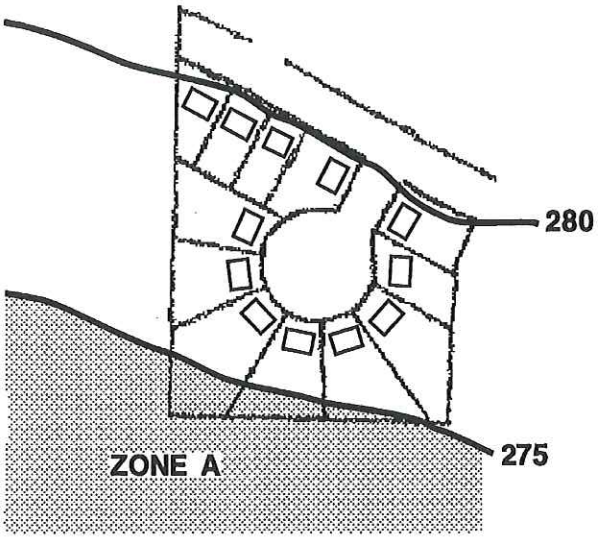


Figure 7 - Proposed 6.7 Acre Subdivision

For developments that exceed the thresholds identified in NFIP regulations Subparagraph 60.3(b)(3), BFEs must be either obtained from other sources or developed using detailed methodologies comparable to those contained in a Flood Insurance Study. Section V describes some of the detailed methodologies available that can be used to develop BFE data when none are available from the sources listed in Section IV.

If the size of the new subdivision or other proposed development falls below the thresholds specified in NFIP regulations Subparagraph 60.3(b)(3) and no BFE data are available from the sources listed in Section IV, the community must still apply, at a minimum, the requirements of Subparagraph 60.3(a)(3) to proposed structures or Subparagraph 60.3(a)(4) to subdivisions and other developments within approximate Zone A areas. These paragraphs require that permit officials:

> Review all permit applications to determine whether proposed building sites will be reasonably safe from flooding. If a proposed building site is in a flood-prone area, all new construction and substantial improvements shall (i) be designed (or modified) and adequately anchored to prevent floatation, collapse, or lateral movement..., (ii) be constructed with materials resistant to flood damage, (iii) be constructed by methods and practices that minimize flood damages, and (iv) be constructed with electrical, heating, ventilation, plumbing, and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding. [44 CFR 60.3(a)(3)]

> Review subdivision proposals ... including manufactured home parks or subdivisions ... to assure that (i) all such proposals are consistent with the need to minimize flood damage within the flood-prone area, (ii) all public utilities and facilities ... are located and constructed to minimize or eliminate flood damage, and (iii) adequate drainage is provided to reduce exposure to flood hazards; [44 CFR 60.3(a)(4)]

One way that communities can ensure that building sites will be reasonably safe from flooding for proposed developments that fall below the thresholds in Subparagraph 60.3(b)(3) is to use the simplified methods outlined in Section V for estimating a BFE. Another approach to ensure that a building site is reasonably safe from flooding is to require the structure to be elevated above the highest adjacent grade by a specified number of feet based on the local official's knowledge of flood conditions in the area. In the absense of available BFE data from other sources, the community may require the permit applicant to elevate the structure two or more feet above the highest adjacant grade which qualifies the structure for reduced flood insurance rates. Elevation of the structure to four feet above the highest adjacant grade will enable the structure to qualify for substantially reduced flood insurance rates.

However, some states and communities require that BFE data be developed for all subdivisions and/or floodplain development within approximate Zone A areas, not just those subdivisions

which meet the 50-lot or 5-acre threshold. A community may, at its discretion, require the use of detailed methods for such development. While this requirement is more restrictive than NFIP minimum requirements, the NFIP regulations specifically recognize and encourage states and communities to adopt and enforce more restrictive floodplain management regulations in those instances where the state or community believes that it is in the best interest of its citizens.

No matter what the size of the subdivision or other development proposal, requests to revise or amend effective Flood Insurance Study information through the procedures outlined in Part 65 and Part 70 of the NFIP regulations must be based on detailed methodologies presented in Section V or other methodologies comparable to those found in a Flood Insurance Study. The analysis used to develop the BFEs must be certified by a registered professional engineer or licensed land surveyor, as appropriate, if the BFEs are to be used to revise or amend an NFIP map.

Use of Draft or Preliminary Flood Insurance Study Data

The data from a draft or preliminary flood insurance study constitutes "available data" under Subparagraph 60.3(b)(4). Communities must reasonably utilize the draft or preliminary flood insurance study data under the section of their ordinance that requires the use of other base flood data when detailed BFE data has not been published in a flood insurance study. Communities are given discretion in using draft or preliminary flood insurance study data only to the extent that the technical or scientific validity of the proposed flood elevation data is questioned. If a community decides not to use the draft or preliminary flood insurance data in a FIS because it is questioning the data through a valid appeal, the community must still assure that buildings are constructed using methods and practices that minimize flood damages in accordance with the requirements under Subparagraphs 60.3(a)(3) and (4).

When all appeals have been resolved and a notice of final flood elevations has been provided by FEMA, communities are required to use the data from the flood insurance study for regulating floodplain development in accordance with Subparagraph 60.3(b)(4) since the data represents the best data available. Communities must regulate floodplain development using the flood insurance study data under Subparagraph 60.3(b)(4) until such time as the community has adopted the effective FIRM and flood insurance study.

Advantages of Developing BFE Data

While the NFIP regulations do not require that communities develop BFE data in approximate Zone A areas when proposed development is below the thresholds in NFIP regulations Subparagraph 60.3(b)(3), there are significant advantages and financial benefits for communities and individual property owners that develop BFE data. These advantages and benefits include:

- protecting structures up to the BFE will minimize and reduce future flood losses, resulting in long-term savings to the individual, the community, and the National Flood Insurance Fund;

- flood insurance policies in approximate Zone A areas that are rated using a BFE will often qualify for significantly lower insurance rates than policies that are rated without a BFE. The difference in flood insurance premiums could be substantial;

- less burden will be placed on the permit official because he or she can require protection to a specified elevation. Without a BFE, the permit official must make judgements as to what constitutes "reasonably safe from flooding" and "constructed with materials and practices that minimize flood damages";

- the NFIP's Community Rating System establishes flood insurance premium discounts of up to 45 percent for policy holders within communities that have a floodplain management program that exceeds NFIP minimum requirements. Sizable Community Rating System credits are available for Community Rating System communities that develop BFEs for areas designated as approximate Zone A on their Flood Hazard Boundary Map or FIRM, or that require site-specific engineering analyses for development proposals; and

- by specifying a BFE in an approximate Zone A area, a building or property can, in some circumstances, be removed from the floodplain by issuance of a Letter of Map Amendment or Letter of Map Revision in accordance with Part 65 and Part 70 of the NFIP regulations. *While these procedures eliminate the requirement that flood insurance be purchased as a condition of obtaining a loan from a Federally insured or regulated lender, a lending institution may, at its discretion, require the purchase of flood insurance.*

Simplified methods may not be used by the community to complete an Elevation Certificate used for flood insurance rating. Communities must use the detailed methodologies described in this section or other methods comparable to those in a Flood Insurance Study for completing the Elevation Certificate. A flood insurance policy for a structure for which a simplified method is used may be rated without an elevation certificate. However, the flood insurance rate may be higher than if the structure is rated using an Elevation Certificate.

Contour Interpolation

Contour interpolation involves superimposing approximate Zone A boundaries onto a topographic map in order to estimate a BFE. BFEs obtained by this method can only be assumed to be as accurate as one-half of the contour interval of the topographic map that is used. Therefore, the smaller the contour interval of the topographic map, the higher the accuracy of the BFE determined from the map. The procedures for using this method are outlined below. Steps 1 through 5 are the same for both riverine and lacustrine (lake) flooding sources.

Step 1 - Obtain a topographic map showing the site being analyzed

Step 2 - Reduce or enlarge the FIRM or topographic map as necessary so that the two are at the same scale

Step 3 - Superimpose the approximate Zone A (100-year) floodplain boundary from the FIRM onto the topographic map

Step 4 - Determine if this method is within the acceptable accuracy limits. The floodplain boundary must generally conform with the contour lines along the flooding source in question. The difference between the water-surface elevations determined on the right overbank and the left overbank must be within one-half of the map contour interval. For lacustrine flooding sources, the difference between the highest and lowest determined water-surface elevations around the flooding source must be within one-half of the map contour interval. Otherwise, this method is not acceptable.

Step 5 - If the method is acceptable, then determine the BFE. Detailed guidance for determining the BFE is provided below.