

# Flood Zone Essentials and Determining Base Flood Elevation (BFE)

Offering 2 | March 2024



# FEMA

# Learning objectives

---

- Learn about FEMA's flood maps and flood zones.
- Determine if a structure is in/out of the special flood hazard area (SFHA).
- Determine sources of BFE for structures based on location.
- View follow up resources.



# Flooding can happen & does happen in all flood zones

- Special Flood Hazard Areas (SFHA):
  - Zones A, AE, AH, AO, A1-A30, AR, A99, V, VE, V1-V30
- Moderate flood hazard areas:
  - Zones B and X (shaded)
- Minimal flood hazard areas:
  - Zones C and X (unshaded)
- Undetermined flood hazard area:
  - Zone D

1% annual chance floodplain for riverine and coastal flood events

These areas may also flood due to a greater size riverine or coastal flood event, or from rainfall and lack of adequate drainage



# Special Flood Hazard Areas (SFHAs): All Zones A & V

- **Minimum Federal Floodplain Management Regulations**
  - *Require permits for all proposed construction and other developments.*
  - *Require that all new construction and substantial improvements of residential structures... have the lowest floor or lowest horizontal structural member...elevated to or above the base flood level.*
  - *Find additional requirements at [44 CFR 60.3](#) and in your local floodplain ordinance.*
- **Mandatory Purchase of Flood Insurance**
  - *Flood insurance is mandatory for all federally-backed mortgages in the SFHA. Federal agencies are prohibited from providing loans and grants to any property located in a special flood hazard area unless the property is covered by flood insurance.*



**FEMA**

# Zones A, and AE with and without Floodway

---

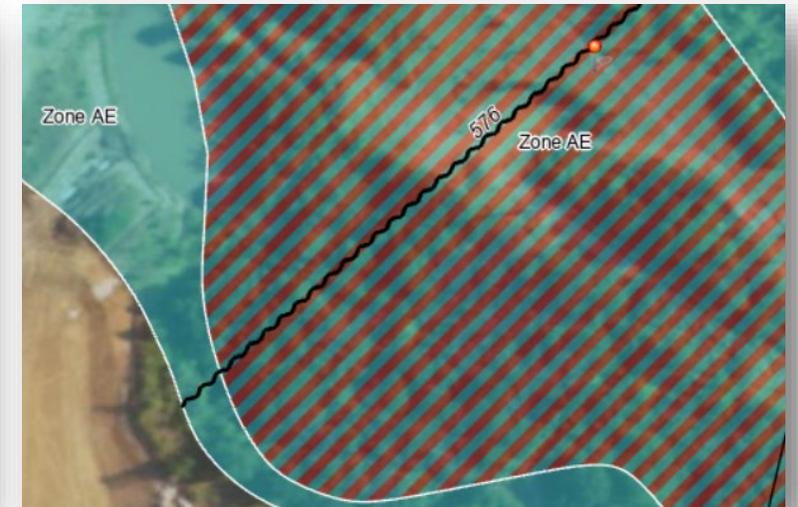
**Zone A**



**Zone AE without Floodway**



**Zone AE with Floodway**



# Zones AO and AH

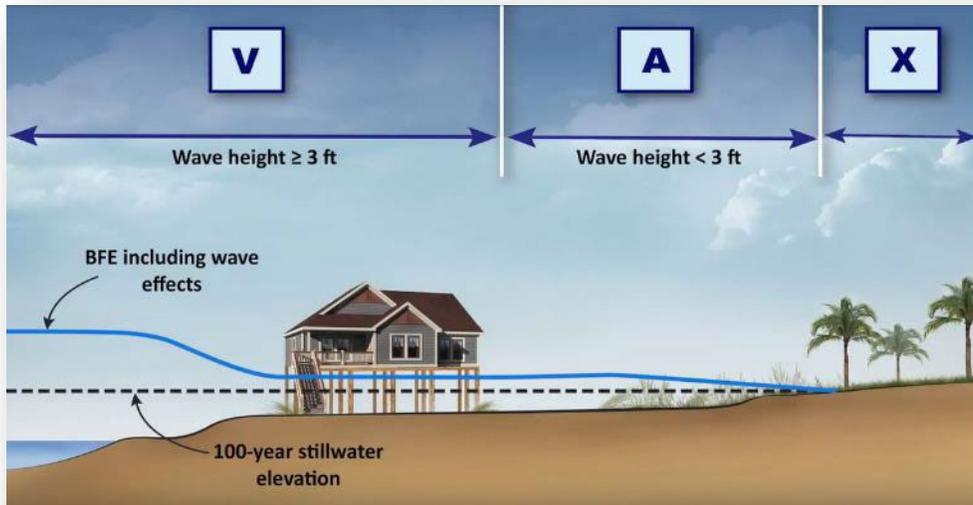
**Zone AO**



**Zone AH**



# Coastal areas



# When structures cross flood zones or BFE boundaries



**If a structure is partially in two or more zones, choose the more restrictive zone and BFE.**



# Where To Find BFE

## Zone A - potential data sources for BFE (community's responsibility)

---

- Utilize Best Data Available
    - [Base Level Engineering \(BLE\)](#)
    - US Army Corps Engineers (USACE)
    - Historical Flooding High Water Marks
    - Infrastructure Pre-Existing Engineering
  - Require New Data
    - 50 lots/ 5 acres
    - Require Engineering Analysis
- [FEMA Publication 265](#) – Managing Floodplain Development in Approximate Zone A Areas



# Estimated Base Flood Elevation (estBFE) Viewer

Welcome to the  
**Estimated Base Flood Elevation Viewer**

Base Level Engineering assessments are produced using high resolution ground data to create technically credible flood hazard information that may be used to expand and modernize FEMA's current flood hazard inventory.

**High Flood Risk**  
This location is in a 1% (100 year) flood zone.  
[View Report](#)

**Property Look Up**  
Where data are available, produce a property-specific report with estimated base flood information.  
[What's My Flood Risk?](#)

**View Base Level Engineering Data**  
Access all available Base Level Engineering data without GIS software.  
[I Want to Explore](#)

**Download Datasets & Models**  
Download the Base Level Engineering data presented in the viewer.  
[I Want to Download](#)

File Name	Size	Download
12030106_Models.zip	383.9 MB	<a href="#">Download</a>
12030106_Depth01.zip	82.8 MB	<a href="#">Download</a>
12030106_Depth002.zip	91.3 MB	<a href="#">Download</a>
12030106_Elev01.zip	19.5 MB	<a href="#">Download</a>
12030106_Elev002.zip	20.1 MB	<a href="#">Download</a>
12030106_VectorData.zip	263.7 MB	<a href="#">Download</a>

Click [HERE](#) for the estBFE Viewer.



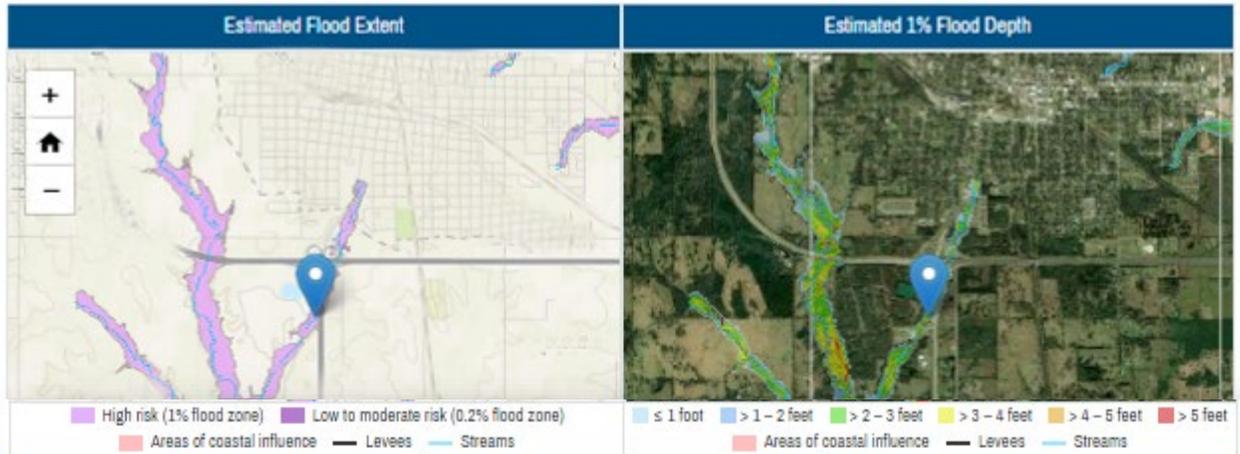
Available



In Progress

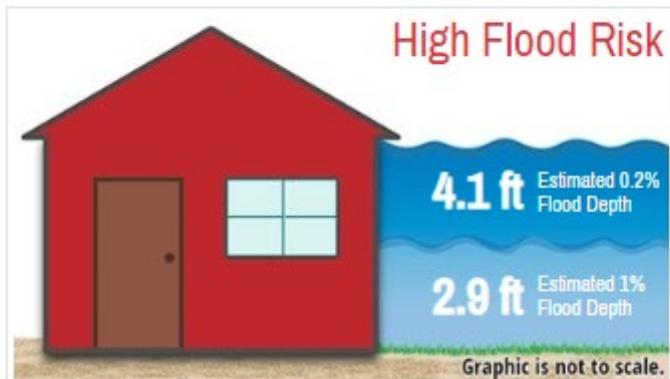
Flood Risk Information Report

FEMA is providing a look at flood data availability and relative Base Level Engineering analysis through the Estimated Base Flood Elevation Viewer (Estimated BFE Viewer). Base Level Engineering uses high resolution ground elevation data, flood flow calculations, and fundamental engineering modeling techniques to define flood extents for streams. The viewer is an effective tool for property owners, community officials, and land developers to identify flood risk, estimated flood elevations, and flood depths for watersheds where Base Level Engineering has been prepared.



Flood Event	Estimated Flood Depth*	Estimated Base Flood Elevation*
1 Percent (100 Year)	2.9 feet above land surface	496.1 feet NAVD 1988
0.2 Percent (500 Year)	4.1 feet above land surface	497.2 feet NAVD 1988

\* The information included in this report is based on the location marker shown in the map. Results are not considered an official determination.



## Documenting estimated BFE on the Elevation Certificate (EC)

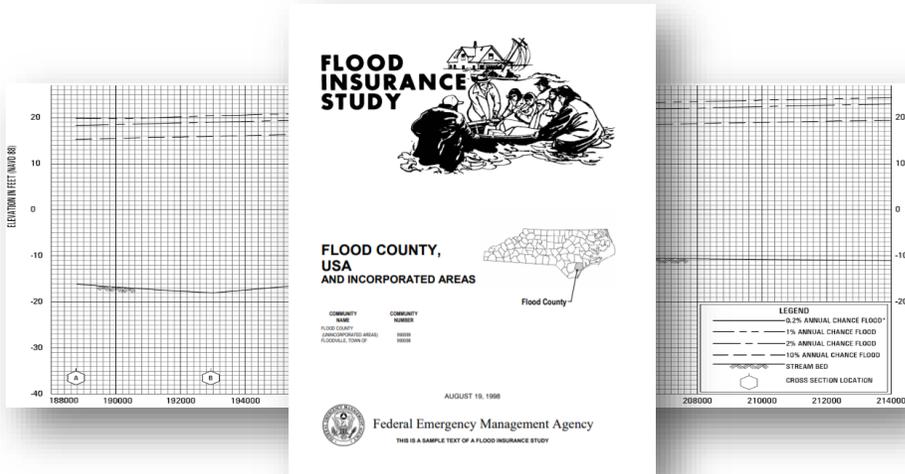
**SECTION B – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION**

B8. Flood Zone(s): A      B9. Base Flood Elevation(s) (BFE) (Zone AO, use Base Flood Depth): 496.1

B10. Indicate the source of the BFE data or Base Flood Depth entered in Item B9:  
 FIS    FIRM    Community Determined    Other: FEMA Base Level Engineering, {Date of Study}

B11. Indicate elevation datum used for BFE in Item B9:    NGVD 1929    NAVD 1988    Other/Source: \_\_\_\_\_

# Data sources for BFE in areas of detailed studies



FIRM and FIS

### FEMA Flood Map Service Center: Welcome!

Looking for a Flood Map? [?](#)

Enter an address, a place, or longitude/latitude coordinates:

[Search](#)

Looking for more than just a current flood map?  
Visit [Search All Products](#) to access the full range of flood risk products for your community.

### FEMA Flood Map Service Center: Search All Products

Choose one of the three search options below and optionally enter a posting date range.

Jurisdiction	Jurisdiction Name	Product ID <a href="#">?</a>
-- Select --		
Effective Products (113)		
▶ FIRM Panels (23)		
▶ FIS Reports (5)		

Map Service Center

### FEMA's National Flood Hazard Layer (NFHL) Viewer

with Web Application for ArcGIS

Find address or place:

**NFHL Print Tool**

- 1) Choose a map area
- 2) Choose to create a print-size FIRMette or full-size FIRM.
- 3) Press "Execute" - The process may take up to 1 minute.\*

Size\*

File Format\*

[Help](#) [Run](#)

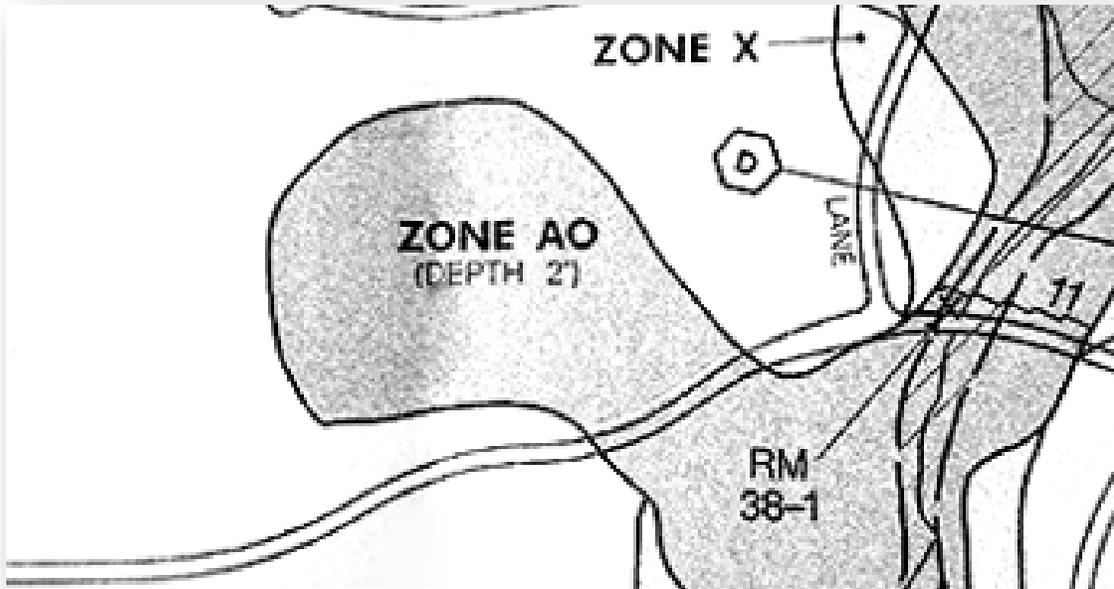
11 of 21  
FIRM Panels 22019CM439F  
Map Effective Date: 2/17/2011 4:00 PM  
Map #  
Download a graphic of the map (available if map panel is printed)  
Download county GIS data  
Zoom In

National Flood Hazard Layer



FEMA

## Zone AO BFE



Documenting Zone AO BFE on the Elevation Certificate (EC)

B8. Flood Zone(s): **AO**      B9. Base Flood Elevation(s) (BFE) (Zone AO, use Base Flood Depth): **2 ft**

B10. Indicate the source of the BFE data or Base Flood Depth entered in Item B9:

FIS    FIRM    Community Determined    Other: \_\_\_\_\_



**FEMA**

# Zone AH BFE

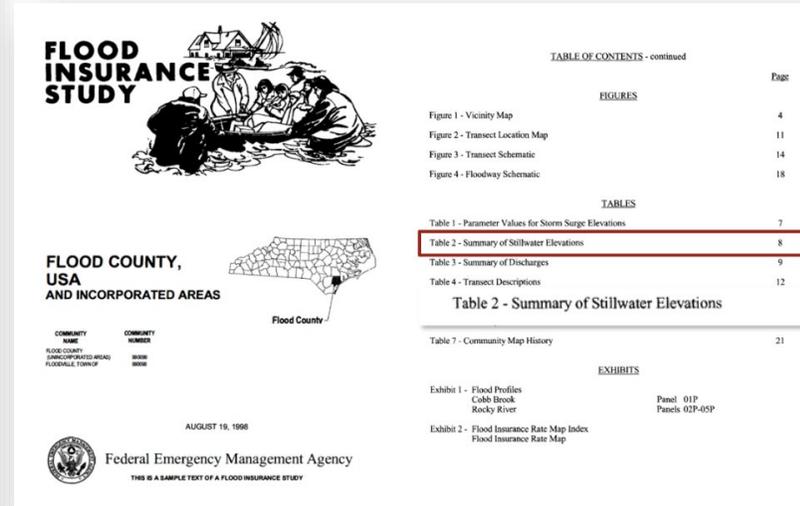
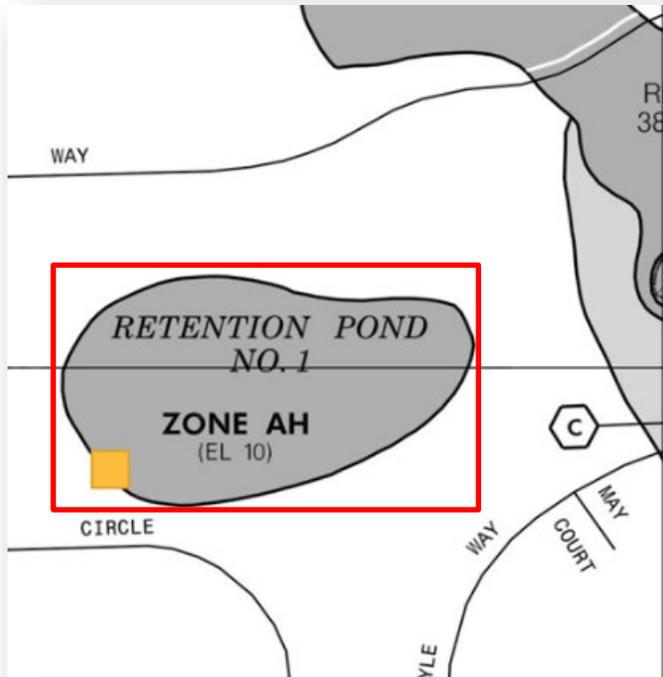


TABLE OF CONTENTS - continued

FIGURES	Page
Figure 1 - Vicinity Map	4
Figure 2 - Transect Location Map	11
Figure 3 - Transect Schematic	14
Figure 4 - Floodway Schematic	18

TABLES	Page
Table 1 - Parameter Values for Storm Surge Elevations	7
Table 2 - Summary of Stillwater Elevations	8
Table 3 - Summary of Discharges	9
Table 4 - Transect Descriptions	12

EXHIBITS	Page
Exhibit 1 - Flood Profiles Cobb Brook Rocky River	Panel 01P Panels 02P-05P
Exhibit 2 - Flood Insurance Rate Map Index Flood Insurance Rate Map	

TABLE 2 - SUMMARY OF STILLWATER ELEVATIONS

FLOODING SOURCE AND LOCATION	ELEVATION (feet NGVD)			
	10-YEAR	50-YEAR	100-YEAR	500-YEAR
ATLANTIC OCEAN Entire open coast shoreline within Flood County	6.7	8.7	10.0 <sup>1</sup>	12.6
JESCO LAKE Entire shoreline within Flood County	6.9	8.9	10.3	12.8
SILVER LAKES Entire shoreline within Flood County	8.6	9.6	10.4	13.5
SOUTH LAKE Entire shoreline within Flood County	6.9	8.9	10.3	12.8
STONE LAKE Entire shoreline within Flood County	7.0	9.0	10.2	12.8
RETENTION POND NO. 1 Entire shoreline within Flood County	N/A	N/A	10.0	N/A

<sup>1</sup> Includes wave set-up of 0.5 foot

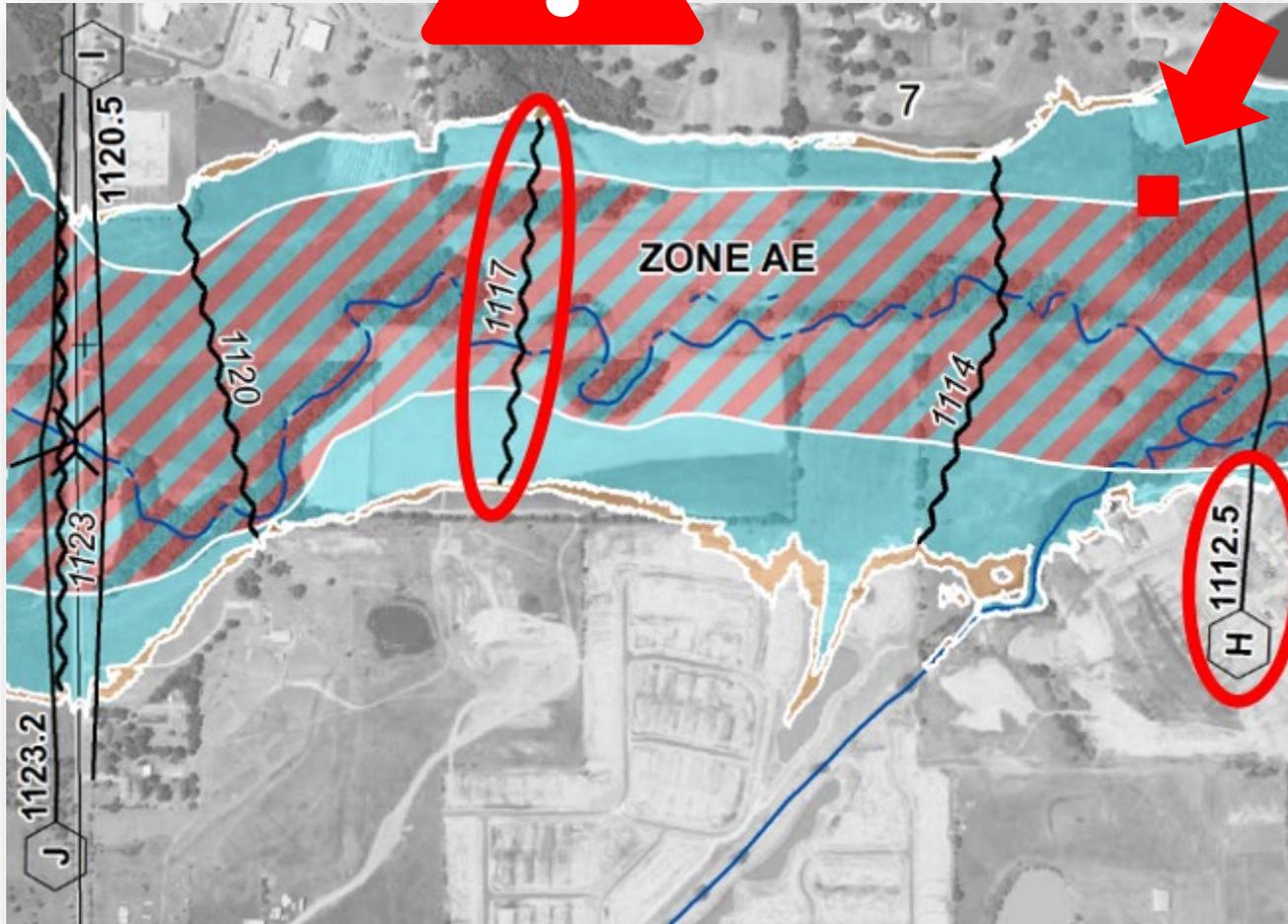
B8. Flood Zone(s): **AH**      B9. Base Flood Elevation(s) (BFE) (Zone AO, use Base Flood Depth): **10.0**

B10. Indicate the source of the BFE data or Base Flood Depth entered in Item B9:

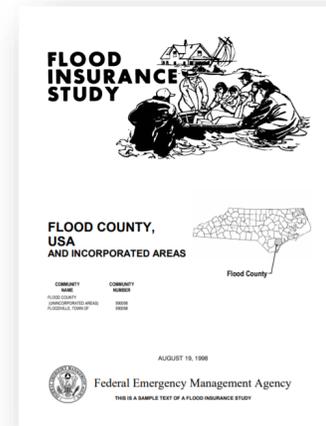
- FIS  
  FIRM  
  Community Determined  
  Other: \_\_\_\_\_



## Zone AE BFE



- Do not use the BFEs shown here on the FIRM.
- Measure the distance from the nearest cross-section, along the thalweg, to the upstream corner of the structure.
- Then, go to the Flood Insurance Study (FIS) and find the Flood Profile for this flooding source.



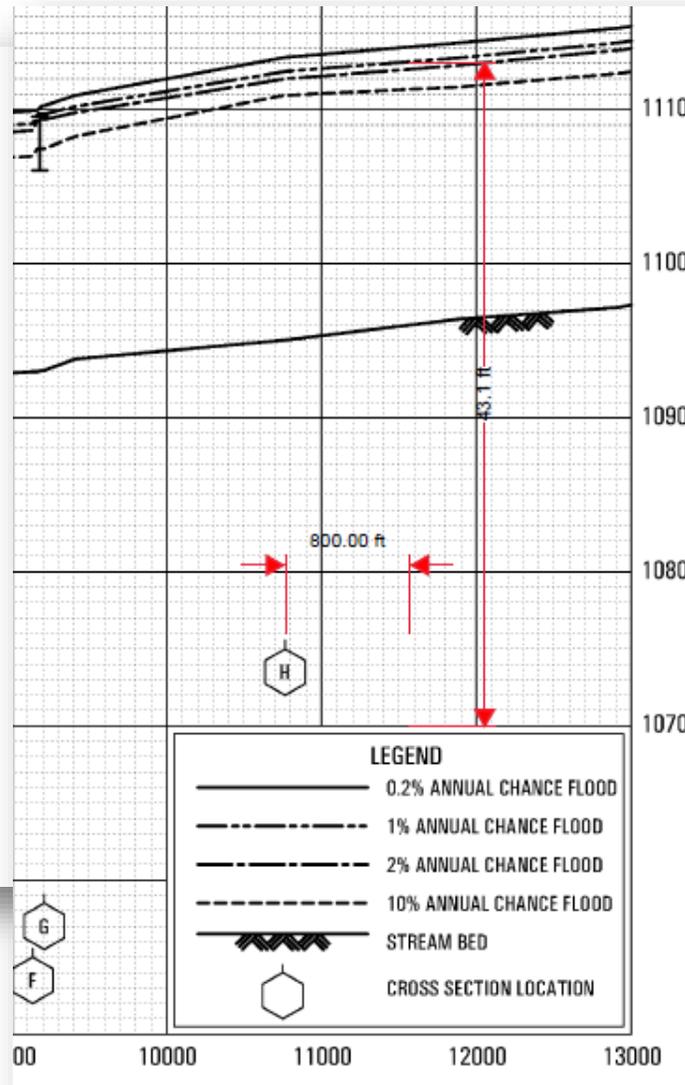
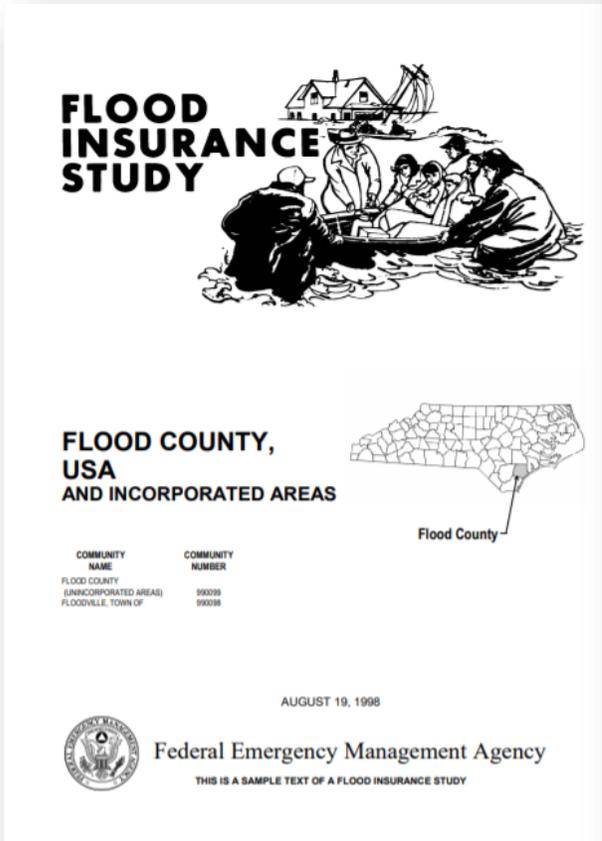
For in-depth training, take these on-demand courses:

- [NFIP 101](#), Unit 3
- [How to Read a FIRM](#)
- [How to Use a FIS](#)



FEMA

# Using a Flood Insurance Study (FIS)



- At the Flood Profile for the flooding source, in the FIS, measure the same distance from the cross section.
- Use the 1% annual chance flood line, shown in the legend to determine the BFE. 1113.1 shown here.
- B10 in the EC should be marked FIS and your BFE will rarely be a whole number.

B8. Flood Zone(s): AE B9. Base Flood Elevation(s) (BFE) (Zone AO, use Base Flood Depth): 1113.1

B10. Indicate the source of the BFE data or Base Flood Depth entered in Item B9:

FIS  FIRM  Community Determined  Other: \_\_\_\_\_

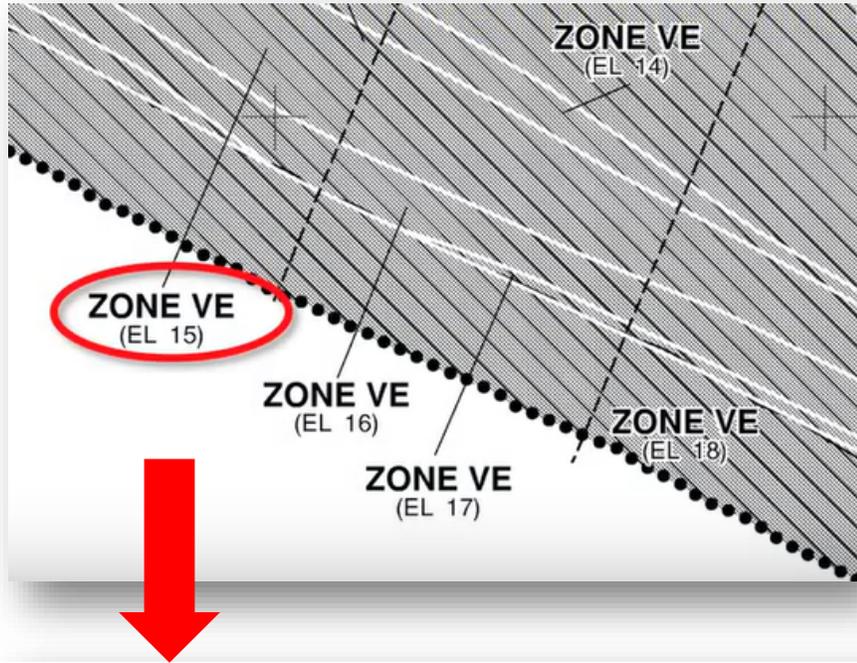
## Zone AE w/ static elevations and Flood Profile data in the FIS



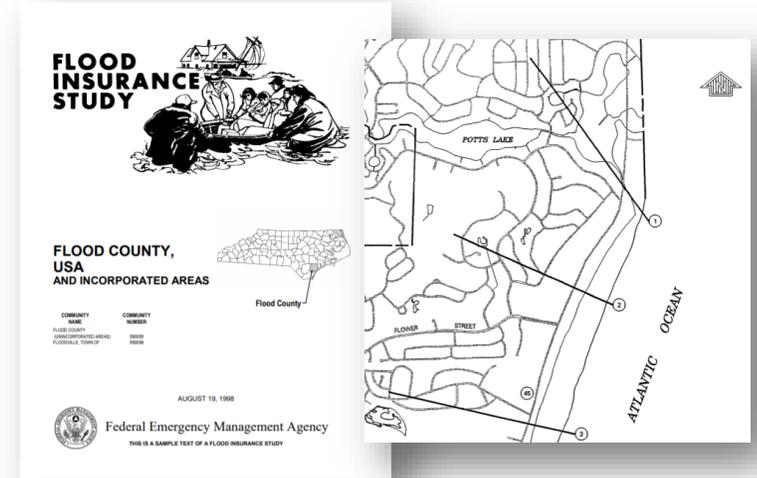
What data source is required to be used in this situation?

# Zone VE BFE

## FIRM



The FIS can give you more information about coastal areas, but you can pull the BFE directly from the FIRM.



B8. Flood Zone(s): **VE**      B9. Base Flood Elevation(s) (BFE) (Zone AO, use Base Flood Depth): **15**

B10. Indicate the source of the BFE data or Base Flood Depth entered in Item B9:

FIS    FIRM    Community Determined    Other: \_\_\_\_\_

# Resources

---

- [FEMA Flood Maps](#)
- [Guide: Flood Zones, Flood Maps](#)
- [Zone A Manual](#)
- [Est BFE Viewer](#)
- [BLE Resources](#)
- [Guidance for Floodway Analysis](#)
- [Elevation Certificate and Dry Floodproofing Certificate](#)
- FEMA IS courses *How to Read a [FIRM](#) and How to Use a [FIS](#)*
- FEMA [NFIP 101](#), Unit 3-Mapping



# Who are your FEMA and state contacts?

---

## Arkansas

- State NFIP contact: Shawn Jackson, [shawn.jackson@agriculture.arkansas.gov](mailto:shawn.jackson@agriculture.arkansas.gov), (501) 582-3959
- FEMA contact: Pedro Perez, [pedro.perez@fema.dhs.gov](mailto:pedro.perez@fema.dhs.gov), (940) 383-7365

## Louisiana

- State NFIP contact: Susan Veillon, [susan.veillon@la.gov](mailto:susan.veillon@la.gov), (225) 379-3017
- FEMA Contacts: Justin McBride, [justin.mcbride@fema.dhs.gov](mailto:justin.mcbride@fema.dhs.gov), (202) 664-9962;  
Braydon Williams, [braydon.williams@fema.dhs.gov](mailto:braydon.williams@fema.dhs.gov), (202) 615-6352

## Oklahoma

- State NFIP contact: Jon Phillips, [jon.phillips@owrb.ok.gov](mailto:jon.phillips@owrb.ok.gov), (405) 530-8902
- FEMA Contact: Darrin Dutton, [darrin.dutton@fema.dhs.gov](mailto:darrin.dutton@fema.dhs.gov), (940) 383-7398

## New Mexico

- State NFIP contact: TBD
- FEMA Contact: Tyler Thompson, [tyler.thompson@fema.dhs.gov](mailto:tyler.thompson@fema.dhs.gov), (771) 208-9698

## Texas

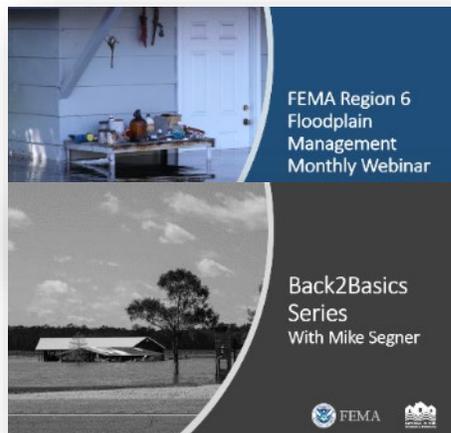
- State NFIP contact: Richie Hernandez, [richie.hernandez@twdb.texas.gov](mailto:richie.hernandez@twdb.texas.gov), (512) 656-6081
- FEMA contacts: Brian Bartley, [brian.bartley@fema.dhs.gov](mailto:brian.bartley@fema.dhs.gov), (940) 383-7207  
Bradford Case, [bradford.case@fema.dhs.gov](mailto:bradford.case@fema.dhs.gov), (202) 769-6745  
Keoka Jenkins, [keoka.Jenkins@fema.dhs.gov](mailto:keoka.Jenkins@fema.dhs.gov),



**FEMA**

# Training

- [Register](#) for future R6 floodplain trainings
- [View](#) past R6 recorded floodplain trainings
- [Register](#) for future R6 Virtual Brown Bag mapping trainings
- Take free, [online training](#) from FEMA's Emergency Management Institute
- Take the free, online FEMA [NFIP 101](#) hosted by ASFPM: Use the Course as a Refresher or for 12 hours of CFM credit



IS-273	<a href="#">How to Read a Flood Insurance Rate Map (FIRM)</a>
IS-274	<a href="#">How to Use a Flood Insurance Study (FIS)</a>
IS-279.a	<a href="#">Introduction to Retrofitting Flood-Prone Residential Buildings</a>
IS-280	<a href="#">Overview of: Engineering Principles and Practices for Retrofitting Flood-Prone Residential Structures, FEMA Publication 259, 3rd Edition</a>
IS-285	<a href="#">Substantial Damage Estimation for Floodplain Administrators</a>

 COURSE FOR PROFESSIONAL CREDIT	 USE THE COURSE AS A REFERENCE GUIDE
<p>For students new to floodplain management, taking the course from beginning to end is recommended. To earn professional credit, taking the course from beginning to end is required.</p> <p>12 CECs for CFMs*</p> <p>*Completing the entire course is required in order to earn professional credit. Unfortunately, we are not able to offer partial credit for this course at this time. Please ensure that you select the option "For Professional Credit" if you intend to earn CECs by taking this course.</p>	<p>For more experienced Floodplain Administrators, use the course to refresh your knowledge on basic floodplain management tools, terms, and concepts.</p> <p>***NOT FOR PROFESSIONAL CREDIT***</p> <p>*Your activity will not be tracked by the learning management system if you take the course via this link. As a matter of policy, ASFPM will not award CECs when activity and engagement cannot be verified. If you are seeking CECs or other professional credit, please choose the "For Professional Credit" option and complete the entire course.</p>

Braydon Williams, CFM  
Emergency Management Specialist  
FEMA Region 6 Mitigation  
Floodplain Management & Insurance  
[braydon.williams@fema.dhs.gov](mailto:braydon.williams@fema.dhs.gov)

Shari Anglin  
Outreach & Training Specialist  
FEMA Region 6 Mitigation  
Floodplain Management & Insurance  
[shari.anglin@fema.dhs.gov](mailto:shari.anglin@fema.dhs.gov)



FEMA