

### Inside This Issue

- 1 TEMA Announcement
- 2 State Coordinator's Update
- 3 Tennessee LiDAR and Related Mapping Efforts Continue
- 4 Training Opportunities, Website & Social Media, and Newsletter Committee
- 5 TN AFPM Volunteer Opportunities
- 6 Overview of FEMA P-2037, 2019 Edition
- 8 Notice of Funding Opportunity for Hazard Mitigation Assistance Grants Fact Sheet
- 11** Community Lifelines
- 12** Corps of Engineers Flood Plain Management Services (FPMS)
- 14 44 CFR §60.22 Planning considerations for flood-prone areas
- 15 Actions You Can Take to Protect a Flood-Prone House or Business with a Crawlspace

HAVE A QUESTION???

**ask the expert!**

Risk MAP program,  
engineering, mapping, flood  
insurance, etc.

Send the newsletter  
committee your question and  
we will find the right expert to  
answer it in our next issue.

### **INTRODUCING**

*Joseph Gregory*

### **NEW NFIP ASSISTANT**

Joseph Gregory is a California native turned Tennessee transplant. Joseph and his wife Kaeli moved to Tennessee just over a year ago to be closer to family and have been enjoying Nashville's dining, music, culture, and history ever since. In his spare time, Joseph loves spending time watching shows with his family, walking with his wife, reading, listening to podcasts, cooking, hiking, and backpacking.

Professionally, Joseph has spent the last 8 years in education as an administrator and instructor, but he is very excited to begin a career as a public servant in joining the TEMA flood management team!



## State Coordinator's Update

What does it mean to leave a legacy? Maybe a better question is, when you think about people who left a legacy, who comes to mind? Someone of great importance like George Washington or Martin Luther King? Or someone who captured our imagination like Walt Disney? What all these people have in common is that we remember their names.

For many of us, leaving a legacy means being remembered. But a legacy is much more than people knowing our name. Our legacy is like a patchwork quilt made up of everything that we leave behind us, the good and the bad. You can leave a world-changing legacy without anyone ever knowing your name. When you think about production agriculture, does Norman Borlaug come to mind? Probably not. He is known as the Father of the Green Revolution and his work led to dramatic increases in harvest yields in some of the most desperate places on earth. Billions of lives have been affected by his work yet most of us don't remember or know his name.

The truth is that we will ALL leave a legacy, regardless of whether anyone

remembers our name. Our legacies matter, precisely because we can't know the full extent or impact, we have in our community and the world around us. We should see every action, big or small as having the power to change the lives of those around us.

When you think about your role in floodplain management, what do you see? What sort of legacy do you want to leave? How will you touch the lives around you in your community? Will you leave your community a different place than how you found it? There is often a gap between how a community wants to run their floodplain management program and how it will be remembered.

When you think about your role and your legacy in floodplain management it is important to remember you are not alone. You are part of a community dedicated to reducing the loss of life and property from flood disasters. We will continue to provide training opportunities to strengthen, enhance and blossom your knowledge, comfortability and implementation of floodplain management regulations.

*Amy Miller, CFM*

## Tennessee LiDAR and Related Mapping Efforts Continue

The State of Tennessee, Strategic Technology Solutions, GIS Services group (STS GIS) is continuing to work on several mapping projects of interest to the floodplain managers in Tennessee. These projects include statewide LiDAR data development and a new pilot project with FEMA and Wilson County to map flood elevation certificates.

On the LiDAR front, STS GIS is participating in the USGS 3D Elevation Program (3DEP) with the goal to collect and complete statewide LiDAR/elevation data in 2021. Due to flooding in 2019 and 2020, the final stage of data collection in West Tennessee is delayed. LiDAR collection will resume in late 2020 with the final data deliveries expected for summer 2021. LiDAR project updates and information are located at [tnmap.tn.gov](http://tnmap.tn.gov). This site includes several enhancements to LiDAR data sharing and the LiDAR training program listed below.

- LiDAR [Coverage Map](#) that shows project areas and links to downloads
- LiDAR Data reorganized and shared by tile (Example: [Moore Co DEMs](#))
- LiDAR Training Videos Now Available
  - [TN LiDAR Information](#)
  - [ArcGIS Pro](#)
  - [QGIS](#)

### Wilson County Elevation Certificate pilot project

STS GIS, in its role as a FEMA Cooperating Technical Partner (CTP), is also starting a pilot project with Wilson County to scan, georeference, and display the county's flood elevation certificates. Working with the local government officials in Wilson County, the goal is to complete the pilot project in 2021 and integrate the digitally geofenced flood elevation certificates with the State's "Property Viewer" GIS web application to improve public accessibility to this data. The goal is to expand this pilot project to Sumner County in 2021. Questions about these projects can be directed to Dennis Pedersen, Director of GIS Services. [dennis.pedersen@tn.gov](mailto:dennis.pedersen@tn.gov) or 615-741-9356.

### Additional GIS data sets, imagery, services

Additional GIS data sets, imagery, and services can be found at <http://tnmap.tn.gov> and click on "GIS Data" or "TN Base Mapping Program" for more details.

## TRAINING OPPORTUNITIES

### October 1

Floodplain Management Basics Course - watch TN AFPM website for details

### October 2

CFM Exam, 1-4pm, Wood Environment & Infrastructure, Inc.,  
3800 Ezell Road, Suite 100, Nashville, TN 37211  
register through the ASFPM website at [www.floods.org](http://www.floods.org)

### December 4

West TN Regional Training - watch TN AFPM website for details

## 2020 Floodplain Management Webinar Series

### September 3

Floodplain Insurance Basics/Updates &  
Variances

### December 3

Encroachment into the Floodway, CLOMRs &  
LOMRs

<https://share.dhs.gov/hansen-training/>  
Call-in # 1-877-446-3914 PIN: 1565280#

CLICK ON ANY OF THE IMAGES  
TO FOLLOW THE LINK!



Visit our  
website!



## NEWSLETTER COMMITTEE

JAIME TYSON

IF YOU HAVE IDEAS OR  
FEEDBACK IN REGARDS TO  
THE NEWSLETTER,  
PLEASE EMAIL  
[JAIME.TYSON@AECOM.COM](mailto:JAIME.TYSON@AECOM.COM)

# TN AFPM NEEDS YOU!

There are a number of ways that you can get involved with the TN AFPM beyond simple membership and event attendance. We have activities going on behind the scenes all year long! While we are still working to build an official set of committees, there are a number of opportunities to start getting involved.

Below is a brief list with points of contact to get you started. If you'd like to help with something and it isn't specifically listed, don't let that stop you from speaking up. Contact any of the board members and let us know what you're interested in, and we'll do what we can to make it work.



## NEWSLETTER -

**JAIME TYSON (JAIME.TYSON@AECOM.COM)**

## CONFERENCE -

**CINDY POPPLEWELL (CINDY.POPPLEWELL@WOODPLC.COM)**

## MEMBERSHIP -

**WILLIAM VEAZY (TCPLANNING@BELLSOUTH.NET)**

## TRAINING -

## SEE REGIONAL REPRESENTATIVES

**MIDDLE REP  
THOMAS BRASHEAR  
WILSON COUNTY  
BRASHEART@WILSONCOUNTYTN.GOV**

**EAST REP  
DAVID MCGINLEY  
CITY OF KNOXVILLE  
DMCGINLEY@KNOXVILLETN.GOV**

**WEST REP  
JOHN MODZELEWSKI  
SHELBY COUNTY  
JCMOD@AOL.COM**



# FEMA

## Overview of FEMA P-2037, 2019 Edition Flood Mitigation Measures for Multi-Family Buildings

FLOODPLAIN MANAGEMENT DIVISION

July 2019

### Description

This publication provides guidance on flood risk evaluation and mitigation of large multi-family buildings, particularly in urban areas. The focus is mid-rise and high-rise buildings, although many of the approaches could be applied to low-rise buildings. This publication is not intended to address rowhouses or townhouses.

To help readers develop a comprehensive mitigation approach, this publication describes the floodplain management regulatory framework, the process for determining flood risk, potential mitigation measures to address that risk, and information on flood insurance considerations. Primarily, the publication focuses on the retrofit of existing construction<sup>1</sup> to help readers develop a comprehensive mitigation approach. New construction is also addressed.

<sup>1</sup> Buildings existing before a community's first Flood Insurance Rate Map

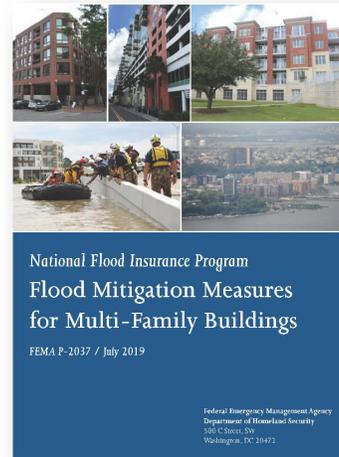
### Key Topics:

- Determining Building Designation Levels:
  - New Construction/SI/SD
  - Legal Non-Conforming Construction
  - Existing Construction
- Applying NFIP Requirements, Substantial Improvement and Substantial Damage to Multi-Family Buildings
- Flood Risks and Hazards for Multi-Family Buildings
  - Determining Flood Protection Level
- Guidance on Lowest Floor Determination on Multi-Family Buildings
- Mitigation Measures for Multi-Family Buildings:
  - Elevation
  - Wet Floodproofing
  - Dry Floodproofing
  - Elevating or Relocating Equipment
  - Dry Floodproofing Building Utility Systems and Creating Vaults
  - Repurposed Lowest Floor
  - Perimeter Floodwall
- Developing a Mitigation Strategy for Existing Multi-Family Buildings

The guidance describes the steps in developing and applying a mitigation strategy and concludes with some representative mitigation scenarios.

### Target Audience

Building owners, designers, investors, builders/contractors, institutional partners, housing agencies and residents, property and facility managers responsible for operating, designing, constructing, or maintaining multi-family buildings, and local officials responsible for enforcing floodplain management regulations or building codes.



### Example of a Multi-Family Building



## Process for Developing a Mitigation Strategy for existing Multi-family Buildings

- Determination of Building Designation**
- New Construction/SI/SD
  - Legal Non-Conforming Construction
  - Existing Construction

Determining which building designation applies to the building(s) is important to any flood protection measure being considered to not result in a building becoming in violation of NFIP and local floodplain management requirements.

### Determine Flood Protection Level

An evaluation of the flood risk should be made including a determination of what Flood Protection Level is appropriate for the building.

### Conduct Site and Building Vulnerability Assessment

Once the Flood Protection Level is selected, a vulnerability assessment of the site and building can be conducted to identify where the building may need to be strengthened and where floodwater could potentially enter the building.

### Evaluate Mitigation Measures and Selection of Measure(s)

Flood mitigation measures, or combination of measures can then be evaluated and selected.

### Finalize Mitigation Strategy

The steps outlined above can help one develop a comprehensive mitigation strategy to reduce the building's vulnerability and improve its resilience to flood damage.

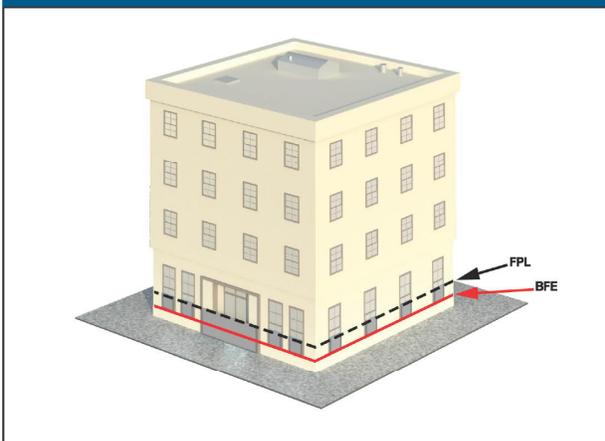
## Benefits of Mitigation:

- Lessen flood damages
- Lessen economic loss
- Allowing occupation of the building in a shorter time frame
- Allowing quicker restoration of utility services
- Lower flood insurance premiums
- Modifications may also include energy efficient improvements

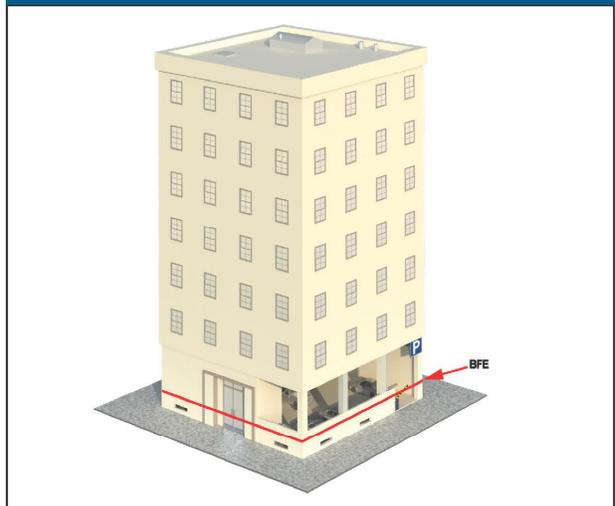
### Mixed-Use Multi-Family Building with Commercial Space



### Example of Mitigation Measure: Dry Floodproofing



### Example of Mitigation Measure: Wet Floodproofing



FEMA FACT SHEET

# Notice of Funding Opportunity for Hazard Mitigation Assistance Grants

## Fiscal Year 2020 Building Resilient Infrastructure and Communities

The Federal Emergency Management Agency (FEMA) makes federal funds available through the new Building Resilient Infrastructures and Communities (BRIC) grant program to states, local communities, tribes and territories (SLTTs) for pre-disaster mitigation activities. BRIC is a new FEMA pre-disaster hazard mitigation program that replaces the existing Pre-Disaster Mitigation (PDM) program. The Disaster Recovery Reform Act, Section 1234; amended Section 203 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) and authorizes BRIC. The BRIC priorities are to:

- incentivize public infrastructure projects;
- incentivize projects that mitigate risk to one or more lifelines;
- incentivize projects that incorporate nature-based solutions; and,
- incentivize adoption and enforcement of modern building codes.

FEMA has published a Notice of Funding Opportunity (NOFO) for the BRIC grant program. The Fiscal Year 2020 (FY20) BRIC NOFO can be accessed at [www.Grants.gov](http://www.Grants.gov). FEMA encourages reviewing the BRIC NOFO before applying, as it provides detailed program information and other grant application and administration requirements.

### Available Funding

For FY20, FEMA will distribute up to \$500 million through the BRIC grant program in the following manner:

- **State/Territory Allocation:** \$33.6 million (up to \$600,000 per Applicant). All 50 states, the District of Columbia, and U.S. territories may apply under the State/Territory Allocation.
- **Tribal Set-Aside:** \$20 million. All Indian tribal governments (federally recognized) may apply under the Tribal Set-Aside.
- **National Competition for Mitigation Projects:** \$446.4 million (estimated). Remaining funds which are not awarded from the State/Territory Allocation or Tribal Set-Aside will be included in the national competition.

Total Available BRIC FUNDING \$500 Million			
Uses of Assistance	\$33.6M State/Territory Allocations	\$20M Tribal Set-Aside	\$446.4M National Competition for Mitigation Projects
Management Costs	✓	✓	✓
Capability and Capacity Building Activities	✓	✓	
Mitigation Projects	✓	✓	✓



**FEMA**

## Funding Caps

The funding caps (federal share) for the BRIC program are as follows:

- State/Territory Maximum Allocation and Activity Caps: \$600,000
  - Up to \$300,000 may be used for mitigation planning and planning-related activities per applicant
- Tribal Set-Aside Activity Caps: The combined cost of the applicant's capability- and- capacity building activities under the Tribal Set-Aside must not exceed \$600,000 per applicant.
- National Competition Cap: \$50 million per subapplication

For additional information on funding caps, visit [FEMA.gov](https://www.fema.gov).

## Cost Share

A cost share is required for all subapplications funded under this program. The non-federal cost share may consist of cash, donated or third-party in-kind services, materials, or any combination thereof. FEMA will provide 100 percent federal funding for management costs. The cost share for BRIC is as follows:

- Generally, the cost share for this program is 75 percent federal/25 percent non-federal.
- Small impoverished communities<sup>1</sup> are eligible for an increase in cost share up to 90 percent federal/10 percent non-federal.
- For insular areas, including American Samoa, Guam, the Northern Mariana Islands, and the U.S. Virgin Islands, FEMA automatically waives the non-federal cost share for the Recipient when the non-federal cost share for the entire award is under \$200,000. The Recipient may request the waiver in its application.

## Application and Funding Deadlines

To apply for funding made available for FY20 through the BRIC program, Applicants must adhere to the following Application and funding deadlines:

Application Opening: September 30, 2020

- Eligible Applicants must apply for funding using the new FEMA Grants Outcome (FEMA GO), which is now the management system for BRIC. The development of FEMA GO was a multi-year effort to modernize and transform the way FEMA conducts grants management. FEMA GO will streamline the process to apply for, track, and manage FEMA grants.
- To apply, please visit <https://go.fema.gov/>.

Application Deadline: January 29, 2021 (3:00 p.m. Eastern Standard Time)

New system-related issues addressed until January 27, 2021 (3:00 p.m. Eastern Standard Time). Applicants experiencing technical problems outside of their control must notify FEMA by this deadline.

Pre-Award Selection Notice: **June 2021**

Period of Performance **Start Date:** Date of the Recipient's federal Award

**End Date:** 36 months from start date for all other subapplications

<sup>1</sup> A small impoverished community is a community of 3,000 or fewer individuals identified by the Applicant that is economically disadvantaged, with residents having an average per capita annual income not exceeding 80 percent of the national per capita income, based on best available data.

## Eligibility Information

To be eligible for BRIC funding, FEMA will require the applicants and subapplicants listed below to have a current FEMA-approved Hazard Mitigation Plan at time of application and award. Further, Section 203 of the Stafford Act requires the applicant meet the following criteria:

- State or territory: Must have received a major disaster declaration under the Stafford Act in the seven years prior to the annual grant application period start date.
- Federally recognized tribe: Must have received a major disaster declaration under the Stafford Act in the seven years prior to the annual grant application period start date or be entirely or partially located in a state that received a major disaster declaration in the seven years prior to the annual grant application period start date. A Federally recognized tribe is eligible to apply for a grant either as an applicant or subapplicant. If a tribe requests to apply through the state, the state must meet the “seven year” declaration criteria.
- FEMA must apply this seven-year requirement for each BRIC grant cycle. As of January 1, 2020, all states, federally recognized tribes, and territories satisfy these criteria.

FEMA will fund the following uses of assistance through BRIC:

- **Capability- and Capacity-Building Activities** can be submitted under the State/Territory Allocation and Tribal Set-Aside. These are activities that enhance the knowledge, skills, and expertise of the current workforce to expand or improve the administration of mitigation assistance.
- **Mitigation Projects** can be submitted under the State/Territory Allocation, Tribal Set-Aside, and the national competition. Mitigation projects are cost-effective projects designed to increase resilience and public safety; reduce injuries and loss of life; and reduce damage and destruction to property, critical services, facilities, and infrastructure.
- **Management Costs** can be submitted under the State/Territory Allocation, Tribal Set-Aside, and national competition. Management costs allow FEMA to provide financial assistance to reimburse the recipient and subrecipient for eligible and reasonable indirect costs, direct administrative costs, and other administrative expenses associated with a specific mitigation project or C&CB activity.

FEMA will provide the following assistance through BRIC:

- Non-Financial Direct Technical Assistance to communities to build a community's capacity and capability to improve its resiliency to natural hazards and to ensure stakeholders are capable of building and sustaining successful mitigation programs, submitting high-quality applications, and implementing new and innovative projects that reduce risk from a wide range of natural hazards.

For additional information on eligibility, view the full FY20 BRIC NOFO, accessible at [www.Grants.gov](http://www.Grants.gov).

## Additional Resources

The resources below provide additional information about the BRIC program and can be found at the BRIC webpage on FEMA.gov:

- BRIC Infographic
- FY20 BRIC Notice of Funding Opportunity (fema.gov)

For general questions about the BRIC program can be directed to the appropriate State Hazard Mitigation Officer (SHMO) or FEMA Regional Office on FEMA.gov. The HMA Helpline is available by telephone at (866) 222-3580.

# Community Lifelines

 lifelines@fema.dhs.gov

 [fema.gov/media-library/assets/documents/177222](https://www.fema.gov/media-library/assets/documents/177222)

## Definition

A lifeline enables the continuous operation of **critical business and government functions** and is essential to **human health and safety** or **economic security**.

## Purpose

Root Cause Analysis

Interdependencies

Prioritization

Ease of Communication

## Assessing

Status → What?

Impact → So What?

Actions → Now What?

Limiting Factors → What's the Gap?

## Stabilization

Occurs when basic lifeline services or capabilities are provided to survivors (may be temporary solutions requiring sustainment).

COMPONENTS of Lifelines



## **Corps of Engineers Flood Plain Management Services (FPMS)**

### **FREE flood plain management technical assistance to local communities!**

#### **Purpose**

People that live and work in the floodplain need to know about the flood hazard and the actions they can take to reduce property damage and to prevent the loss of life caused by flooding. The FPMS program was developed by the Corps of Engineers specifically to foster public understanding of the options for dealing with flood hazards and to promote prudent use and management of the Nation's floodplains.

#### **Types of assistance available**

A wide range of technical services on floodplain issues are available under this program. The following list describes some of the types of work that can be done under the FPMS program: Flood Damage Mitigation Study, Flood Warning and Preparedness Study, Special Flood Hazard Information Report, Flood Inundation Maps, Dam Failure Analysis, Elevation Reference Mark Database, HEC-HMS and HEC-RAS Workshops, Urbanization Analysis, Community Flood Zone Database, and Flood proofing Workshops.

#### **Funding**

State and local governments can receive full federal funding for FPMS technical assistance or can supplement federal funding to expand the scope of a study. Studies requiring federal funds are subject to the availability of funds.

#### **Application process**

Requests for assistance should be directed to the Floodplain Management Services Coordinator (see below). The coordinator will ask questions regarding the requester's floodplain problem, perform a preliminary evaluation as to whether it can/should be addressed through the FPMS program, and explain the FPMS program process. The evaluation process could include a site visit to further determine that the use of the FPMS program is appropriate, if another Corps of Engineers program would be more appropriate, or if the problem lies outside the authority of the Corps of Engineers. Should the final evaluation show that an FPMS study of the situation is appropriate, the requester will need to submit a formal request for FPMS services in the form of a Letter of Intent (LOI) to the U.S. Army Corps of Engineers, Nashville District. A sample letter will be provided to assist the requester with this step. After receipt of a Letter of Intent, the Nashville District will prepare a cost estimate for the study and explain the steps needed to obtain federal funding and set up local funding if applicable.

#### **FPMS Special Study Recent Example: Jefferson County – Ashley Oaks**

Problem: Ashley Oaks Subdivision experienced flooding after the community received approximately 13 inches of rain in February of 2019. Jefferson County called the Corps to visit the site and assess the flooding issue. The Corps recommended utilizing the FPMS program for technical assistance. Jefferson County submitted a LOI in June 2019.



Figure 1. Home flooded in February 2019.

**Corps Technical Assistance:** The scope of this study encompassed a sinkhole analysis to address karst flooding in the subdivision of Ashley Oaks in Jefferson County, TN. This effort included creating a stage-storage curve for each sinkhole and a rainfall-runoff model of the contributing drainage areas using the Hydrologic Engineering Center's Hydrologic Modeling System (HEC-HMS). The stage-storage curve of each sinkhole along with the runoff for each frequency rainfall event, less the sinkhole orifice discharge (seepage), provided the stage-frequency at Ashley Oaks. The model and results were used to develop and evaluate structural and non-structural flood risk management (FRM) alternatives. Life safety, critical infrastructure, and damage levels were considered in designing and evaluating alternatives.

**Alternative Evaluation Conclusion:**

Examination of the alternatives provides a wide variety of options for the County to potentially implement. Alternative 1 provides a reduction in life loss with available egress via road raise. Alternative 2 provides a reduction in water surface elevation via storm culvert addition, depending on the storm type and culvert layout. Alternative 3 provides a risk reduction by adapting to flood risk, via structure elevation and acquisition. All three alternatives provide benefits to the community at various degrees of flood risk management. It is recommended that an economic evaluation be conducted. Corps staff submitted the final report in December of 2019 and presented the results and findings to Jefferson County in February 2020.

**For more information**

If you need more information, you may contact the Floodplain Management Services Program Manager at (615)736-7308.



Figure 2. Alternative 1 map.

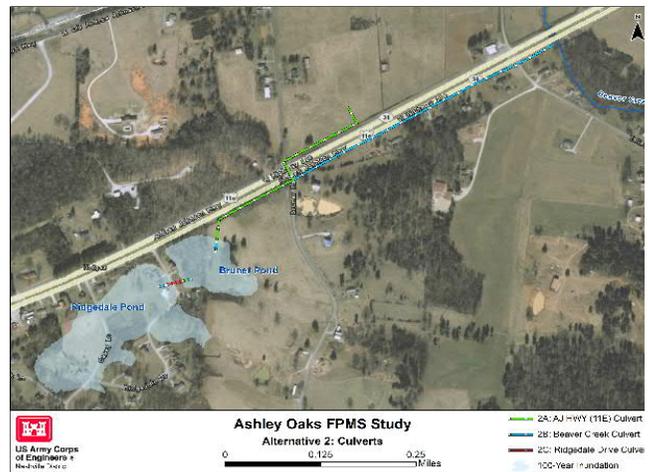


Figure 3. Alternative 2 map.

## **Have you ever wondered what planning considerations a local community should use in regulating development within flood-prone areas?**

The basic role of government is to defend people against common threats. In the State of Tennessee, flooding is the most common local hazard. FEMA has listed in the Code of Federal Regulations Section 60.22 a list of planning considerations for flood-prone areas. The actions listed below can help local governments meet the challenge of defending their communities from flood risk and give communities cost-effective measures to prevent flood damage.

### 44 CFR §60.22 Planning considerations for flood-prone areas.

(a) The flood plain management regulations adopted by a community for flood-prone areas should:

(1) Permit only that development of flood-prone areas which (i) is appropriate in light of the probability of flood damage and the need to reduce flood losses, (ii) is an acceptable social and economic use of the land in relation to the hazards involved, and (iii) does not increase the danger to human life;

(2) Prohibit nonessential or improper installation of public utilities and public facilities in flood-prone areas.

(b) In formulating community development goals after the occurrence of a flood disaster, each community shall consider—

(1) Preservation of the flood-prone areas for open space purposes;

(2) Relocation of occupants away from flood-prone areas;

(3) Acquisition of land or land development rights for public purposes consistent with a policy of minimization of future property losses;

(4) Acquisition of frequently flood-damaged structures;

(c) In formulating community development goals and in adopting flood plain management regulations, each community shall consider at least the following factors—

(1) Human safety;

(2) Diversion of development to areas safe from flooding in light of the need to reduce flood damages and in light of the need to prevent environmentally incompatible flood plain use;

(3) Full disclosure to all prospective and interested parties (including but not limited to purchasers and renters) that (i) certain structures are located within flood-prone areas, (ii) variances have been granted for certain structures located within flood-prone areas, and (iii) premium rates applied to new structures built at elevations below the base flood substantially increase as the elevation decreases;

(4) Adverse effects of flood plain development on existing development;

(5) Encouragement of floodproofing to reduce flood damage;

(6) Flood warning and emergency preparedness plans;

(7) Provision for alternative vehicular access and escape routes when normal routes are blocked or destroyed by flooding;

(8) Establishment of minimum floodproofing and access requirements for schools, hospitals, nursing homes, orphanages, penal institutions, fire stations, police stations, communications centers, water and sewage pumping stations, and other public or quasi-public facilities already located in the flood-prone area, to enable them to withstand flood damage, and to facilitate emergency operations;

(9) Improvement of local drainage to control increased runoff that might increase the danger of flooding to other properties;

(10) Coordination of plans with neighboring community's flood plain management programs;

(11) The requirement that all new construction and substantial improvements in areas subject to subsidence be elevated above the base flood level equal to expected subsidence for at least a ten year period;

(12) For riverine areas, requiring subdividers to furnish delineations for floodways before approving a subdivision;

(13) Prohibition of any alteration or relocation of a watercourse, except as part of an overall drainage basin plan. In the event of an overall drainage basin plan, provide that the flood carrying capacity within the altered or relocated portion of the watercourse is maintained;

(14) Requirement of setbacks for new construction within Zones V1-30, VE, and V on a community's FIRM;

(15) Requirement of additional elevation above the base flood level for all new construction and substantial improvements within Zones A1-30, AE, V1-30, and VE on the community's FIRM to protect against such occurrences as wave wash and floating debris, to provide an added margin of safety against floods having a magnitude greater than the base flood, or to compensate for future urban development;

(16) Requirement of consistency between state, regional and local comprehensive plans and flood plain management programs;

(17) Requirement of pilings or columns rather than fill, for the elevation of structures within flood-prone areas, in order to maintain the storage capacity of the flood plain and to minimize the potential for negative impacts to sensitive ecological areas;

(18) Prohibition, within any floodway or coastal high hazard area, of plants or facilities in which hazardous substances are manufactured.

(19) Requirement that a plan for evacuating residents of all manufactured home parks or subdivisions located within flood prone areas be developed and filed with and approved by appropriate community



## “Actions You Can Take to Protect a Flood-Prone House or Business with a Crawlspace”

The ASFPM Nonstructural Flood Proofing Committee recently prepared and released a guide for reducing flood damage and flood risk to homes and businesses containing a crawlspace. This guide provides a step-by-step decision-making process for home owners and business owners who want to reduce their exposure to flood damage and potentially lower their flood insurance premiums.

While it is advisable to consult with your local floodplain management administrator on regulatory and flood insurance requirements, this guide is intended to provide basic flood risk reduction advice for structures containing a crawlspace.

This guide can be found and downloaded from the ASFPM Nonstructural Flood Proofing Committee webpage by [clicking here](#).