



Engaging with Your Community's Hazard Mitigation Planning Process

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Key Topics

Hazard Mitigation Planning 101

Flood Risk Identification

Improving Floodplain Manager Engagement

Local Floodplain Program Report Out



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Key Sub-Topics

Level of Interaction with Plan Developer

Risk Data Engagement/Improvement Opportunities

Improving the Understanding of At-Risk Structures

NFIP Community Assessment

Substantial Damage Process



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Defining Hazard Mitigation Planning

Hazard mitigation planning **reduces loss of life and property by minimizing the impact of disasters.** It begins with state, tribal and local governments identifying natural disaster risks and vulnerabilities that are common in their area. After identifying these risks, they develop long-term strategies for protecting people and property from similar events. **Mitigation plans are key to breaking the cycle of disaster damage and reconstruction.**

Defining Hazard Mitigation Planning



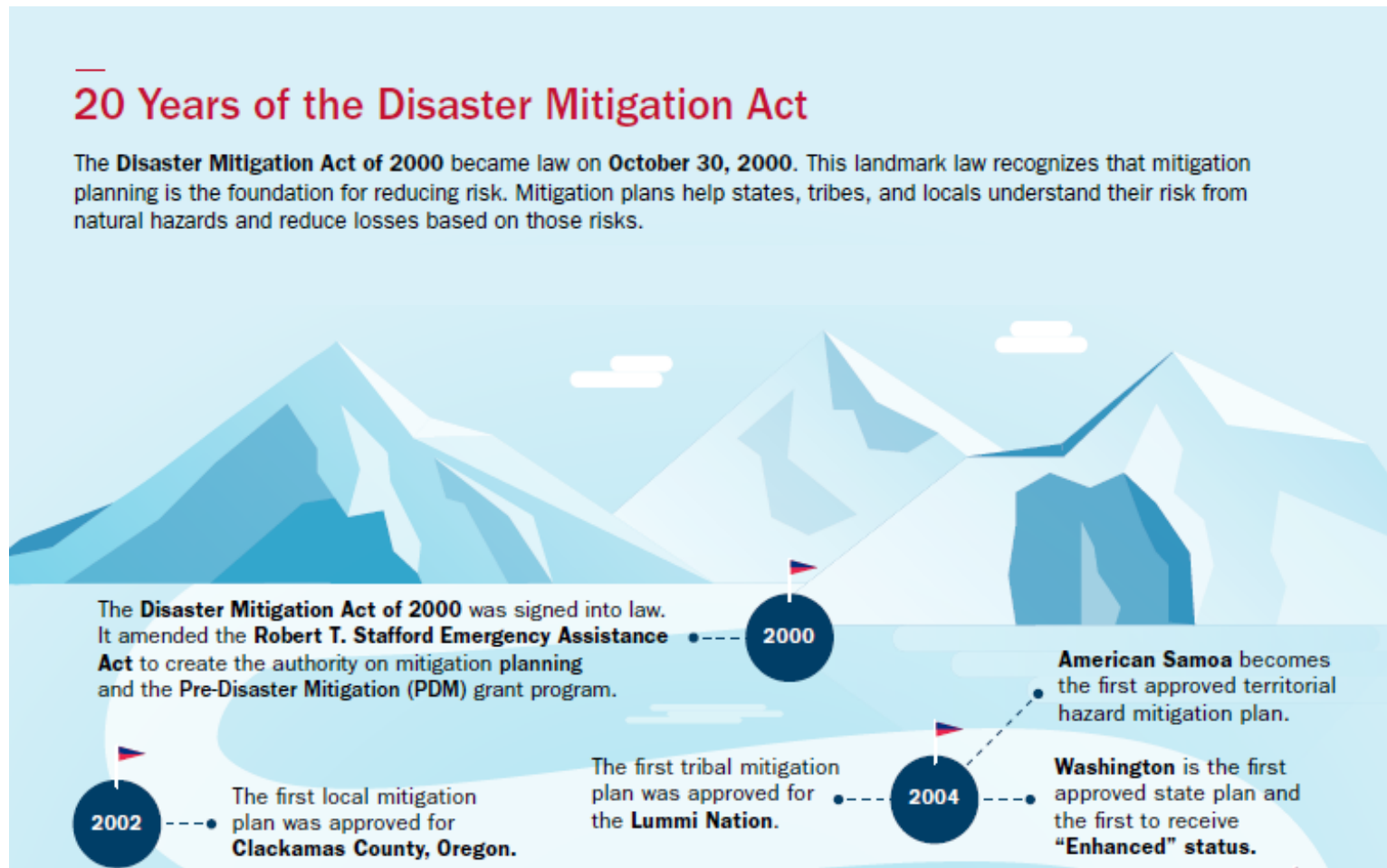
Defining Hazard Mitigation Planning



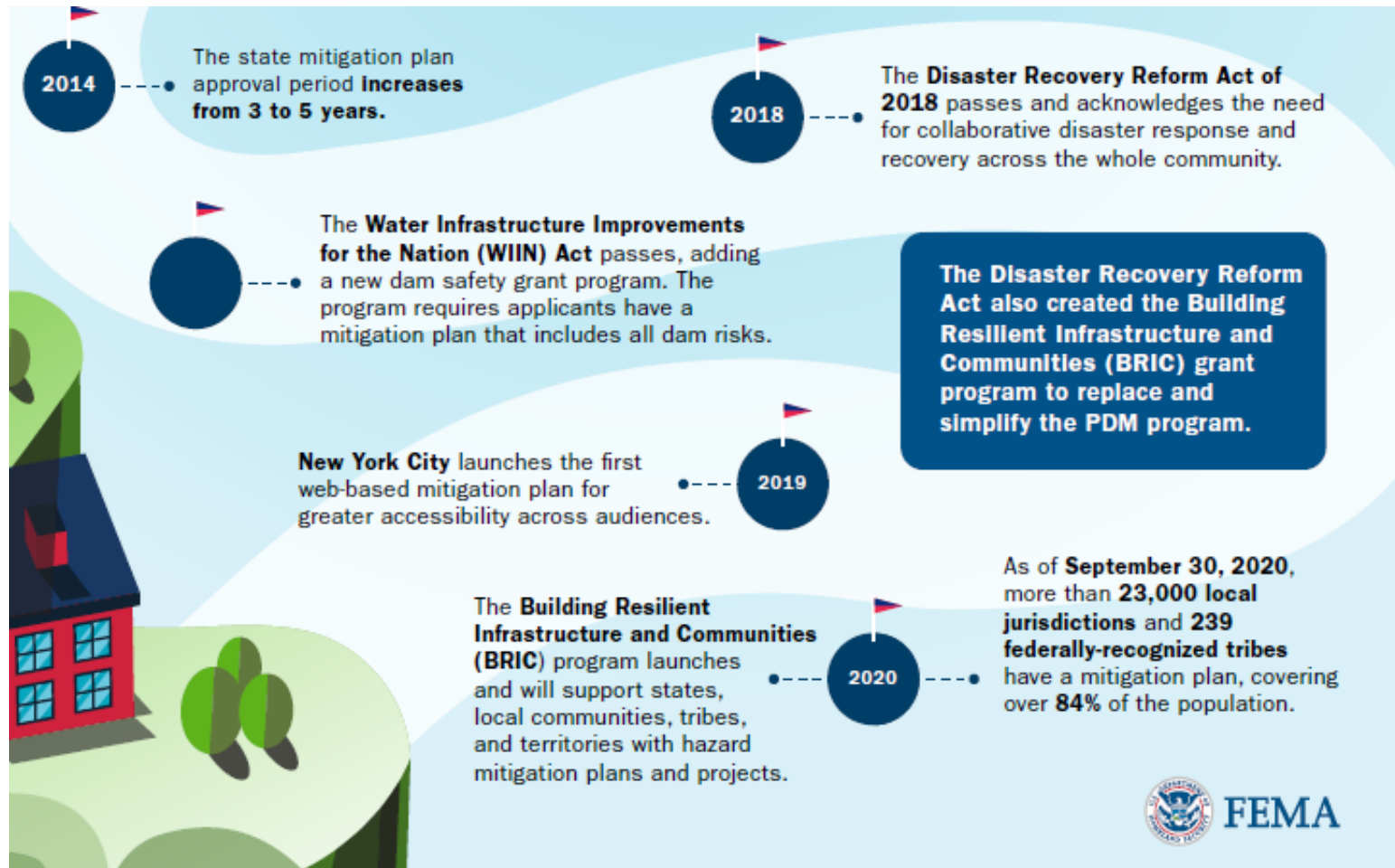
A Brief History of Hazard Mitigation Planning

20 Years of the Disaster Mitigation Act

The **Disaster Mitigation Act of 2000** became law on **October 30, 2000**. This landmark law recognizes that mitigation planning is the foundation for reducing risk. Mitigation plans help states, tribes, and locals understand their risk from natural hazards and reduce losses based on those risks.

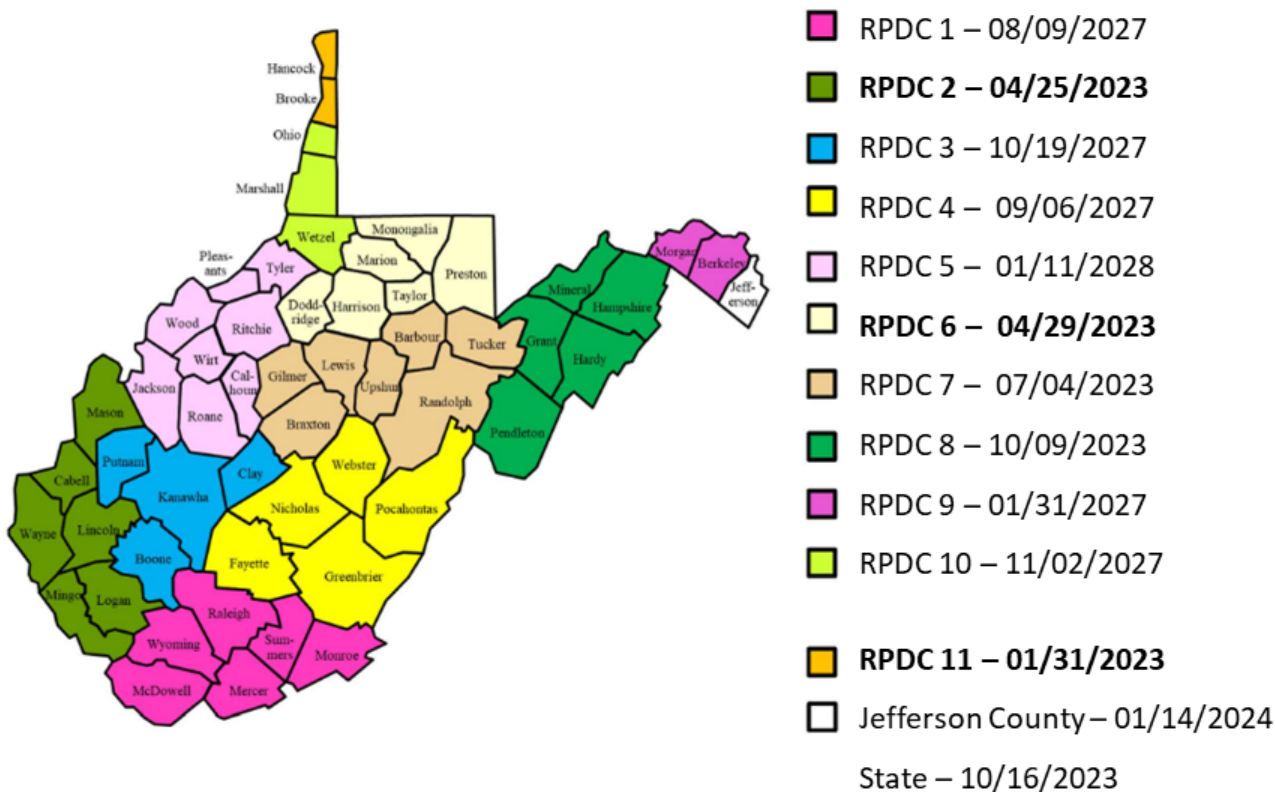


A Brief History of Hazard Mitigation Planning



WV Local Hazard Mitigation Plan Status

West Virginia Regional Planning and Development Councils



Connecting to the Hazard Mitigation Planning Cycle

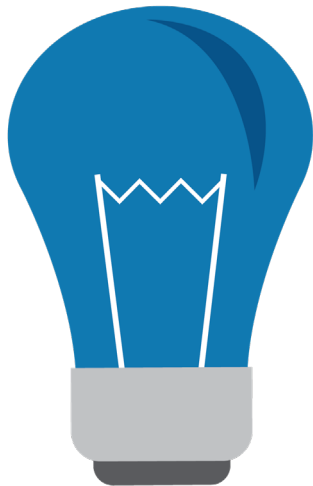


Hazard Mitigation Plan Elements

Common Elements of a Good Mitigation Plan:

- **A community-driven, living document** that allows for updates
- **A comprehensive risk assessment** that provides the factual basis for activities in the strategy
- **A hazard vulnerability analysis** that anticipates geographic risks and conditions
- **A hazard mitigation strategy** that includes a description of mitigation goals
- **Incorporates periodic monitoring and evaluation mechanisms** to allow for review of successes and failures or even just simple updates

Engaging Floodplain Managers in HMPs



Floodplain Managers possess expertise and local knowledge essential to the development of robust Local Hazard Mitigation Plans.

1. Understanding of local floodplain ordinances
2. Familiarity with local building codes
3. Permitting process expertise
4. Understanding of local geography, topography, and hydrology

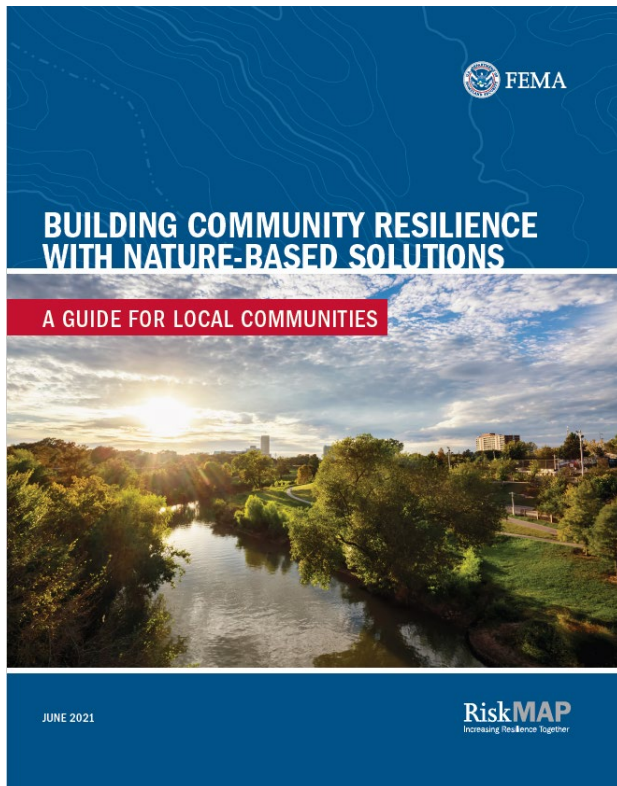
Benefits of Floodplain Manager Engagement (Part 1)



The Local HMP Capability Assessment can be expanded to include Floodplain Management gaps or updates.

1. Substantial Damage/Substantial Improvement
- Including plans, procedures, and enforcement challenges
2. Permitting challenges
3. Development within the SFHA

Mitigation Ideas



Nature-based solutions are sustainable planning, design, environmental management, and engineering practices that **weave natural features or processes into the built environment to promote adaptation and resilience.**

Mitigation Ideas

WATERSHED SCALE



LAND CONSERVATION

Land conservation is one way of preserving interconnected systems of open space that sustain healthy communities.

Land conservation projects begin by prioritizing areas of land for acquisition. Land or conservation easements can be bought or acquired through donation.



GREENWAYS

Greenways are corridors of protected open space managed for both conservation and recreation.

Greenways often follow rivers or other natural features. They link habitats and provide networks of open space for people to explore and enjoy.



WETLAND RESTORATION AND PROTECTION

Restoring and protecting wetlands can improve water quality and reduce flooding. Healthy wetlands filter, absorb, and slow runoff.

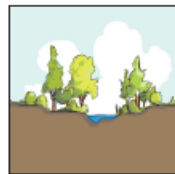
Wetlands also sustain healthy ecosystems by recharging groundwater and providing habitat for fish and wildlife.



STORMWATER PARKS

Stormwater parks are recreational spaces that are designed to flood during extreme events and to withstand flooding.

By storing and treating floodwaters, stormwater parks can reduce flooding elsewhere and improve water quality.



FLOODPLAIN RESTORATION

Undisturbed floodplains help keep waterways healthy by storing floodwaters, reducing erosion, filtering water pollution, and providing habitat.

Floodplain restoration rebuilds some of these natural functions by reconnecting the floodplain to its waterway.

Mitigation Ideas

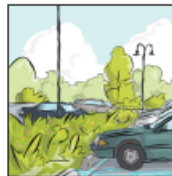
NEIGHBORHOOD OR SITE SCALE



RAIN GARDENS

A rain garden is a shallow, vegetated basin that collects and absorbs runoff from rooftops, sidewalks, and streets.

Rain gardens can be added around homes and businesses to reduce and treat stormwater runoff.



VEGETATED SWALES

A vegetated swale is a channel holding plants or mulch that treats and absorbs stormwater as it flows down a slope.

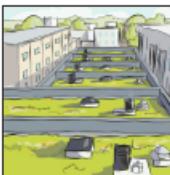
Vegetated swales can be placed along streets and in parking lots to soak up and treat their runoff, improving water quality.



PERMEABLE PAVEMENT

Permeable pavements allow more rainfall to soak into the ground. Common types include pervious concrete, porous asphalt, and interlocking pavers.

Permeable pavements are most commonly used for parking lots and roadway shoulders.



GREEN ROOFS

A green roof is fitted with a planting medium and vegetation. A green roof reduces runoff by soaking up rainfall. It can also reduce energy costs for cooling the building.

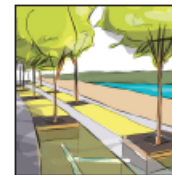
Extensive green roofs, which have deeper soil, are more common on commercial buildings. Intensive green roofs, which have shallower soil, are more common on residential buildings.



RAINWATER HARVESTING

Rainwater harvesting systems collect and store rainfall for later use. They slow runoff and can reduce the demand for potable water.

Rainwater systems include rain barrels that store tens of gallons and rainwater cisterns that store hundreds or thousands of gallons.



TREE TRENCHES

A stormwater tree trench is a row of trees planted in an underground infiltration structure made to store and filter stormwater.

Tree trenches can be added to streets and parking lots with limited space to manage stormwater.



TREE CANOPY

Tree canopy can reduce stormwater runoff by catching rainfall on branches and leaves and increasing evapotranspiration. By keeping neighborhoods cooler in the summer, tree canopy can also reduce the "urban heat island effect."

Because of trees' many benefits, many cities have set urban tree canopy goals.



GREEN STREETS

Green streets use a suite of green infrastructure practices to manage stormwater runoff and improve water quality.

Adding green infrastructure features to a street corridor can also contribute to a safer and more attractive environment for walking and biking.

Mitigation Saves

Natural Hazard Mitigation Saves



Natural Hazard Mitigation Provides the Nation \$6 in Benefit for Every \$1 Invested

National Benefit-Cost Ratio (BCR) Per Peril
**BCR numbers in this study have been rounded*





Overall Hazard Benefit-Cost Ratio

Beyond Code Requirements

\$4:1

Federally Funded

\$6:1

	Beyond Code Requirements	Federally Funded
 Riverine Flood	\$5:1	\$7:1
 Hurricane Surge	\$7:1	Too few grants
 Wind	\$5:1	\$5:1
 Earthquake	\$4:1	\$3:1
 Wildland-Urban Interface Fire	\$4:1	\$3:1

This Interim Study quantified a number of benefits from mitigation, including reductions in:

- Future deaths, nonfatal injuries, and PTSD
- Repair costs for damaged buildings and contents
- Sheltering costs for displaced households
- Loss of revenue and other business interruption costs to businesses whose properties are damaged
- Loss of economic activity in the broader community
- Loss of service to the community when fire stations, hospitals, or other public buildings are damaged
- Insurance costs other than insurance claims
- Costs for urban search and rescue



Tools for Improvement

WV Flood Tool

Development of Your Substantial Damage
Process

NFIP Community Assessment Worksheet



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Flood Risk Identification: WV Flood Tool

WV Flood Tool
Remember: When In Doubt, It's Not Out!

Views: Public, Expert, Risk MAP, Flood, Reference, Basemaps

Search: Address e.g., 123 street name, city, state, zip

Tools: [Icons for various map functions]

Click on each tab to view information: Address, Parcel, Risk

Property Class Type	C - Commercial
Land Use	373 - Retail-Single Occupancy
Year Built	1977
Story Height	1
Exterior Wall	Frame
Construction Type	Wood frame/Joist/Beam
Basement Type	First Basement
Business Living Area	7588
Cubic Feet	98252
Use Type	34-Retail Store, 45-Warehouse, 81-Multi-Use -Apartment
# of Units	1
# of main BLDGs (cards)	3
COST VALUES	
APPRAISED VALUES	

Flood Hazard Area: Location is WITHIN the FEMA 100-year floodplain.
Flood Zone: AE
Stream: Monongahela River
Watershed (HUC8): Upper Monongahela (5020003)

FEMA's Flood Map: 54061C0113F | NFHL
Map Effective Date: 4/5/2019
Contacts: Monongalia

Flood Height: 812.3 ft (BFE - Restudy) NAVD88
Water Depth: About 0.3 ft (Source: HEC-RAS)
HEC-RAS Model: N/A | All Models

Flood Profile: 54061_024
Community: Town of Granville
Freeboard: 2 ft **CRS Class:** 10 **CID:** 540272

Location (lat, long): (39.647183, -79.987722) WGS84
Location (UTM 17N): (4389088, 586852) WGS84

External Viewers: [Social media icons]

Elevation: 810.7 ft (Source: FEMA 2018-20) NAVD88

Address: multiple addresses

Parcel: 31-06-0002-0024-0000 | Assessment

Flood Risk Information: Related Resources
Flood Risk Assessment
3D Flood Visualization

Flood Risk Identification



1. Where does the comprehensive list of at-risk flood structures exist for your community?
2. How much do you know about those structures?
3. Can you provide additional detail to improve risk awareness and consequences?

Flood Risk Identification



WV Flood Tool - Data Usage

Key Data Points:

- County (M)
- Community (L)
- Floodway (Y/N) (R)
- FIRM Status (Pre or Post) (T)
- Flood Depth (U)
- Property Class Description (AE)
- Land Use Description (AH)
- General Occupancy Code (AJ)
- Building Appraisal (AU)
- Critical Infrastructure (AZ)
- Bldg Loss USD (CJ)

Flood Risk Identification

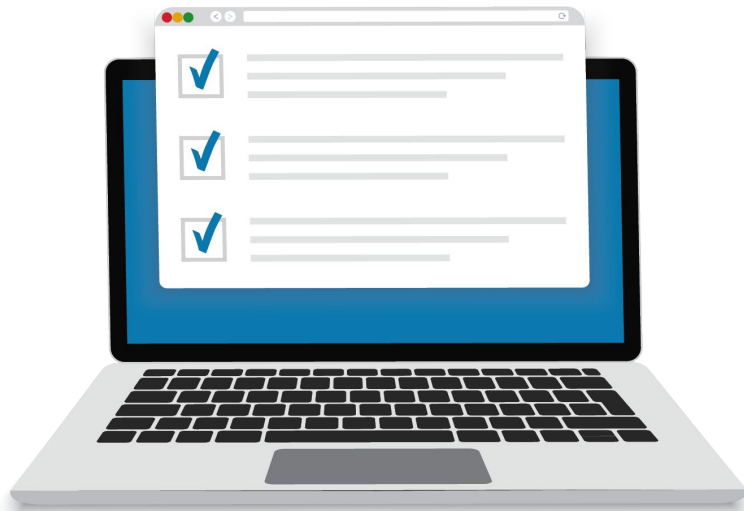


Risk Refinement

Key Data Points:

- County (M)
- Community (L)
- Floodway (Y/N) (R)
- FIRM Status (Pre or Post) (T)
- Flood Depth (U)
- **Property Class Description (AE)**
- **Land Use Description (AH)**
- **General Occupancy Code (AJ)**
- Building Appraisal (AU)
- Critical Infrastructure (AZ)
- Bldg Loss USD (CJ)

Flood Risk Identification



Turning Data Points into Analysis

What are the functions of the at-risk flood structures in your community?

What services do they provide to your community?

What are the numbers of people who would be impacted if those services were to stop working?

Benefits of Floodplain Manager Engagement (Part 2)

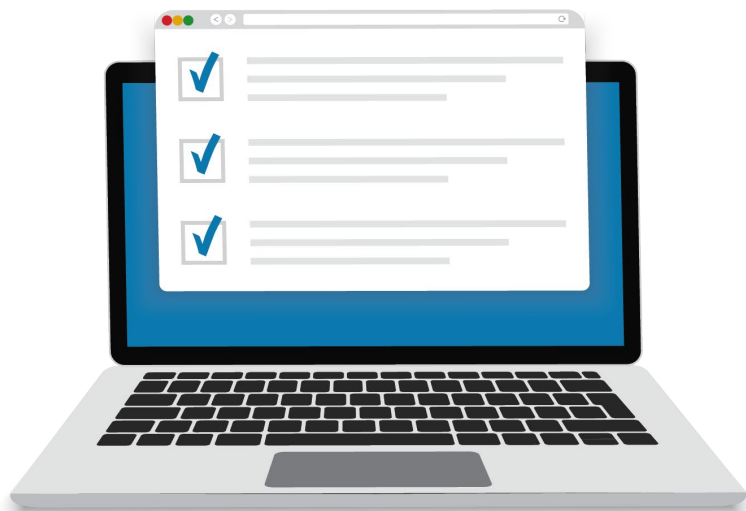


Priorities

What is at-risk to flooding?

Does your community have a ranking of which structures should be mitigated, and why?

Flood Risk Identification



Data Improvement Opportunities

Key Data Points:

- County (M)
- Community (L)
- Floodway (Y/N) (R)
- FIRM Status (Pre or Post) (T)
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- Critical Infrastructure (AZ)
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Flood Risk Identification

Structures

- Location, type, age, and tax-assessed value
- Use and functionality
- Unusual attributes (e.g. properties with iconic, historic, or cultural significance)
- Location and type of planned future development/ redevelopment
- Structures that flood repetitively

Natural Resources

Areas where conservation of environmental functions:

- Reduce the magnitude of hazards
- Help achieve other community objectives
- Protect critical habitat areas

Economy

- Major employers
- Primary economic sectors
- Commercial centers
- Dependencies between economy and infrastructure (e.g. transportation corridors)

Critical Facilities and Infrastructure

- Location, types, age, and value
- Interdependencies
- Planned critical facilities and capital improvements
- Infrastructure for new development

People

- Locations and concentrations of residents
- Locations and concentrations of special needs and vulnerable populations
- Types and locations of visiting populations





Floodplain Program Report Out

Telling the Story of How Your Program is Functioning



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Local Floodplain Program Report Out

Management

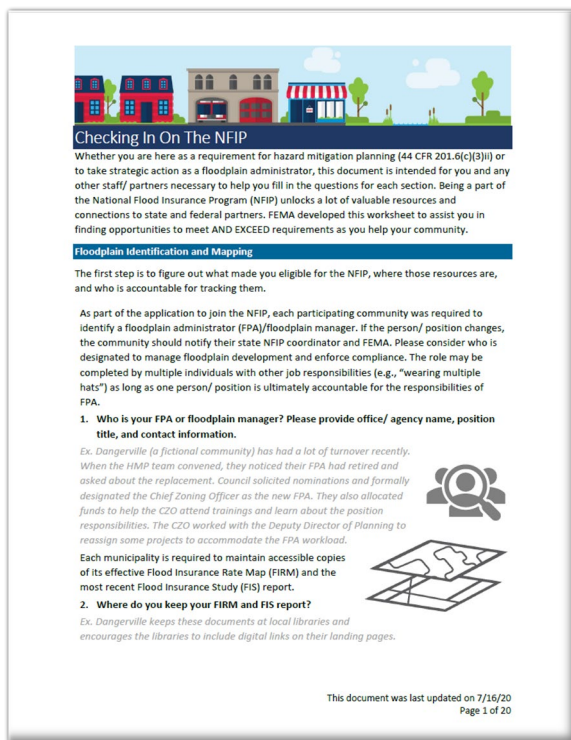
- Floodplain Mapping
- Floodplain Enforcement
- Flood Insurance

Evaluation

Do you have the training, materials, skillsets, etc. to implement your program?



The Region III NFIP Guide




This document provides NFIP community self assessment questions, worksheets, resources, and best practices to help communities meet and **exceed** National Flood Insurance Program (NFIP) requirements.

Guide Contents:

- Floodplain Identification and Mapping
- Floodplain Management
- Flood Insurance
 - Helpful Tips and Connections
 - Action Opportunities

The Region III NFIP Guide




The image shows a worksheet titled "Community Worksheet Floodplain Management". At the top, there is a colorful illustration of a town with houses, a fire station, and a store. Below the illustration, the title "Community Worksheet" is written in a blue box, with "Floodplain Management" written below it in a smaller blue box. The main body of the worksheet is a table with six rows, each containing a numbered question and an empty column for an answer.

Question	Answer
1. Does your municipality issue permits for all proposed development in the SFHA? What office/ position is responsible?	
2. Does your municipality require BFE data for subdivision proposals and other development proposals larger than 50 lots or 5 acres? If so, what department or office is responsible?	
3. How does your community identify substantially improved structures? When do they intervene?	
4. Does your community have a coordinated process to determine substantial damage and to permit repair and improvement? Does the municipality conduct substantial damage assessments in the SFHA? Does your community have a plan for who will conduct substantial damage assessments and a procedure for assessment?	
5. Does your municipality require Elevation Certificates for new or substantially improved structures? If yes, how is it documented and which office/agency/department is responsible?	
6. How does the municipality enforce the floodplain ordinance sections? How does the municipality address SI/SD violations?	

Floodplain Management Self-Assessment Questions

1. Does your municipality **issue permits** for all proposed development in the SFHA? What office/position is responsible?
2. Does your municipality **obtain, review, and utilize BFE and floodway data** or require BFE data for subdivision proposals an other development proposals larger than 50 lots or 5 acres? If so, **what department or office is responsible?**
3. How does your community **identify substantially improved structures?** When do they intervene?

The Region III NFIP Guide



Community Worksheet
Floodplain Management

1. Does your municipality issue permits for all proposed development in the SFHA? What office/ position is responsible?	
2. Does your municipality require BFE data for subdivision proposals and other development proposals larger than 50 lots or 5 acres? If so, what department or office is responsible?	
3. How does your community identify substantially improved structures? When do they intervene?	
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Floodplain Management Self-Assessment Questions

4. Does your community have a coordinated **process to determine substantial damage and to permit repair and improvement**? Does the municipality conduct **substantial damage assessments** in the SFHA?
5. Does your municipality require **Elevation Certificates for new or substantially improved structures**? If yes, how is it documented and which office/agency/department is responsible?
6. Does your community have a plan for **who will conduct substantial damage assessments** and a **procedures** for assessment?

The Region III NFIP Guide

Resources, Tips, Community Connections, and Action Opportunities

- Model Floodplain Ordinances
- L273 Training | Introduction to Floodplain Management
- Working with City Councils to establish higher floodplain management standards, such as 40% substantial damage thresholds or additional freeboard requirements.



Resource Alert!

All Region 3 states have a "model floodplain ordinance" that communities can (and are encouraged to) use. These ordinances are regularly reviewed for clarity and compliance with NFIP and state requirements. If your regulations have not been updated in recent years, it might be time to review for needed improvements.

To track the impact of development and land changes on the water surface elevations (WSEs), communities are expected to obtain, review, and use BFE and floodway data for subdivision proposals, development greater than 50 lots or 5 acres, and otherwise as documented in the community's floodplain ordinance.

10. Does your municipality obtain, review, and utilize BFE and floodway data, or require BFE data for subdivision proposals and other development proposals larger than 50 lots

Did you know...?

Substantial improvement only applies to structures in the SFHA (unless the community has adopted a higher standard that says all properties are tracked this way), BUT the modification can be a home improvement project (e.g., bathroom remodel) or damage caused by any disaster – not just flooding.

After a disaster, FPAs or their designees conduct substantial damage assessments to determine if any properties are more than 50-percent damaged. The disaster may be individual, such as a house fire, or communal—widespread flooding after a hurricane.

Community Connection

Floodplain Administrators often work with their town and city councils to set standards higher than required by the NFIP. This helps their communities to be more resilient over time—for instance with a 2-foot freeboard requirement, 40-percent damaged triggers substantial damage, etc. Often when one community finds a method that works, their neighbors want to try something similar.

12. Does your community have a coordinated process to determine substantial damage and to permit repair and improvement? This is an area where communities can prepare in advance to implement a well-coordinated process to tag substantially damaged

17. Are any local officials/departments in your community interested in a training? What topics relate most to your community?

Ex. Riskburg hired three new code enforcement officers. To help them get up to speed on floodplain management, the county sent the officers to the L273 Introduction to Floodplain Management course. The officers were then asked to review Riskburg's documentation to make sure everything was still in compliance.

Action Opportunity!

How you manage development in or near the floodplain directly impacts your community's level of risk. How are you using your floodplain management activities to reduce risk in your community?

Benefits of Floodplain Manager Engagement (Part 2)



Best Practice Opportunity

Floodplain Managers possess the subject matter expertise essential to developing and including substantial damage plans within local Hazard Mitigation Plans.

Substantial Damage (SD) Plan

Frameworks/plans that address communication, training, SD data, coordination with recovery staff, ensuring enforcement, and Mitigation coordination.



Evaluation: Scenario

Late afternoon on Friday, June 2nd a fast-moving thunderstorm pushed northeastern from Kentucky. Throughout the night, 911 calls have been coming in from residents who are being flooded out. Rescue operations continue the next morning. As flood waters recede on Saturday, reports of 6-8 inches of rain an hour have been verified in Princeton and Beckley. According to the 911 call information, an estimate of 30% of all structures in your community's special flood hazard area have 1-2 feet of water, or more, in their first floor. Additional rainfall totals are still being calculated for your area.

Sunday, June 4th- All residents displaced from the flood have been accounted for and are currently in shelters.

At this time, how well-positioned (staff numbers, damage documentation ability, lines of communication to residents) is your community to begin assessing damages and relaying information to your residents?

Evaluation: Scenario Discussion

Post-Disaster Damage Assessment

Taking the scenario mentioned during the **DRRA 1206** presentation yesterday, how well-positioned is your community to perform post-disaster damage inspections, and the administrative requirements that go into that process?



Mitigation Strategy Development



Risk Assessment Findings

Which structures have you prioritized? What are the solutions for reducing risk to those structures?

Program Evaluation

What gaps or opportunities did you find in the review of your program? What measures should you take to close those gaps or take advantage of those opportunities?

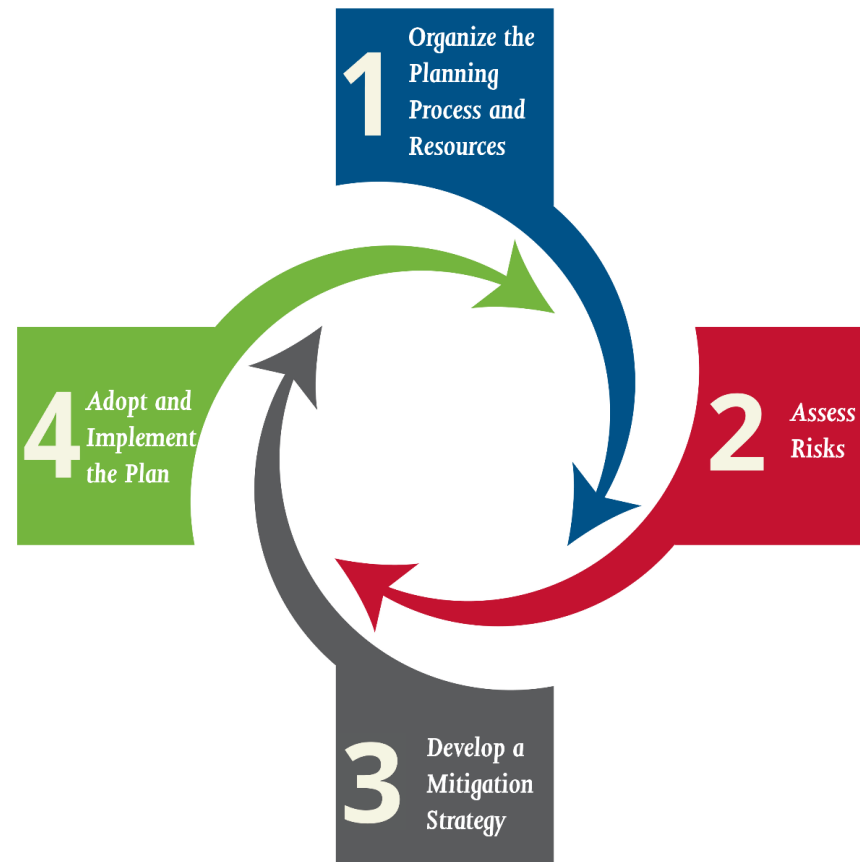


Hazard Mitigation Plan Elements

Common Elements of a Good Mitigation Plan:

- **A community-driven, living document** that allows for updates
- **A comprehensive risk assessment** that provides the factual basis for activities in the strategy
- **A hazard vulnerability analysis** that anticipates geographic risks and conditions
- **A hazard mitigation strategy** that includes a description of mitigation goals
- **Incorporates periodic monitoring and evaluation mechanisms** to allow for review of successes and failures or even just simple updates

Onboarding for the Risk Assessment & HMP Process



Recommended Actions

Early Coordination

Floodplain Managers should be involved at the outset of the local hazard mitigation planning process. Include FMs as a member of the Local Mitigation Planning Team, or ensure that FM input is solicited throughout the process.

Sustain Involvement Through Follow-Up

Floodplain Managers should be involved throughout the local hazard mitigation planning process. Consider using annual plan reviews as a forum for integrating floodplain management updates, data, and alignment with community-wide planning efforts.

Getting Involved in Your Local Hazard Mitigation Plan



Checking In On The NFIP

Whether you are here as a requirement for hazard mitigation planning (44 CFR 201.60.32(c)) or to take strategic action as a floodplain administrator, this document is intended for you and any other staff/partners necessary to help you fill in the questions for each section. Being a part of the National Flood Insurance Program (NFIP) unlocks a lot of valuable resources and connections to state and federal partners. FEMA developed this worksheet to assist you in finding opportunities to meet AND EXCEED requirements as you help your community.

Floodplain Identification and Mapping

The first step is to figure out what made you eligible for the NFIP, where those resources are, and who is accountable for tracking them.

As part of the application to join the NFIP, each participating community was required to identify a floodplain administrator (FPA)/floodplain manager. If the person/position changes, the community should notify their state NFIP coordinator and FEMA. Please consider who is designated to manage floodplain development and enforce compliance. The role may be completed by multiple individuals with other job responsibilities (e.g., "wearing multiple hats") as long as one person/position is ultimately accountable for the responsibilities of FPA.

1. Who is your FPA or floodplain manager? Please provide office/agency name, position title, and contact information.

Ex. Dungenessville (a fictional community) has had a lot of turnover recently. When the NFIP team contacted them, they noticed their FPA had retired and asked about the replacement. Council solicited nominations and formally designated the Chief Zoning Officer as the new FPA. They also allocated funds to help the CO attend trainings and learn about the position responsibilities. The CO worked with the deputy director of planning to manage some projects to accommodate the FPA workload.



Each municipality is required to maintain accessible copies of its effective Flood Insurance Rate Map (FIRM) and the most recent Flood Insurance Study (FIS) report.

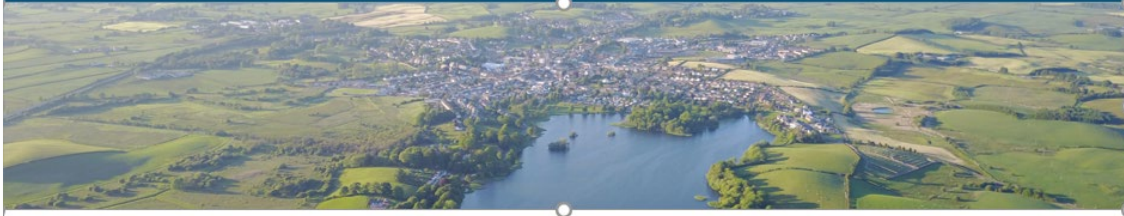
2. Where do you keep your FIRM and FIS report?

Ex. Dungenessville keeps these documents at local libraries and encourages the libraries to include digital links on their landing pages.



This document was last updated on 1/24/20
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Involving Floodplain Managers in Hazard Mitigation Planning



Floodplain Managers possess expertise and local knowledge essential to the development of robust Local Hazard Mitigation Plans.

- Understanding of local floodplain ordinances
- Familiarity with local building codes
- Permitting process expertise
- Understanding of local geography, topography, and hydrology
- Possess information on Letters of Map Amendment [LOMA], Letters of Map Change [LOMCs], and Letters of Map Revision [LOMR]



Thank you!

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