



# Flood Risk Products

## Delaware County



**FEMA**

# How Flood Risk Products Help

## ▶ Help local business owners and residents:

- Understand current flood risk
- Make informed decisions about protecting against that risk

## ▶ Aid communities and state officials

- Grant funding application review and selection process
- Identify mitigation actions
- Update risk assessments, strategies, and actions in Hazard Mitigation Plans



# Risk Communications

## ► **Goals:**

- Safer, more sustainable communities
- Increase public awareness
- Enhance local capabilities to communicate with constituents

## ► **Key factor contributing to success:**

- Effective collaboration between local, State, and Federal
- Exchange of information about risk and mitigation
- Local understanding and implementation of mitigation action and strategies



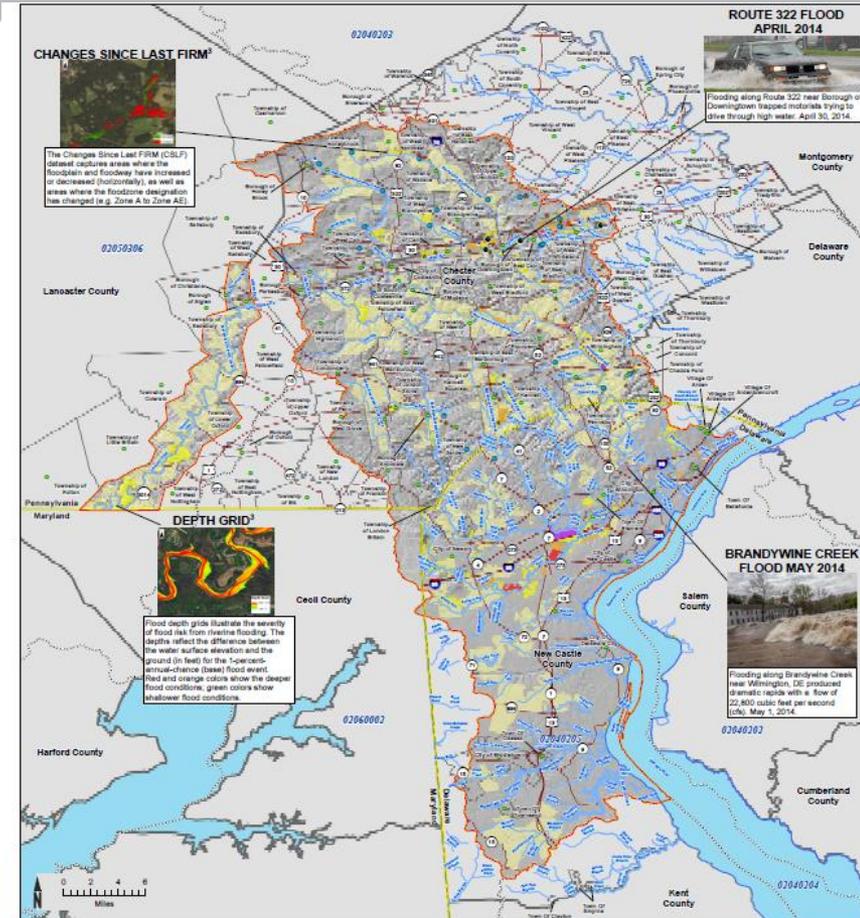
# Flood Risk Coverage

## ▶ Study Extents:

- Brandywine-Christina Watershed
- Chester County, PA

## ▶ Includes portions of:

- Two States: Pennsylvania (PA) & Delaware (DE)
- Four Counties: Chester County, Delaware County, Lancaster County, New Castle County
- 105 Municipalities



### MAP SYMBOLOLOGY

Base Data	Flood Data	Flood Risk	Areas of Mitigation Interest
Corporate Limits	Rivers and Streams	Very Low	Dams
County Boundary	Reactivity Area <sup>1</sup>	Low	At-Risk Essential Facilities
Major Roads		Medium	Other Flood Risk Areas
Municipal Boundary		High	Past Claims Hot Spot
State Line		Very High	Other
		Not Assessed	

### PROJECT LOCATOR



### Risk Mapping, Assessment, and Planning (Risk MAP)

FIRM FLOOD RISK MAP  
BRANDYWINE-CHRISTINA WATERSHED



For more information on how to use this non-regulatory risk, please consult the Brandywine-Christina Flood Risk Database and Flood Risk Report.  
FIRM Code: 02040205  
RELEASE DATE: 8/1/2012

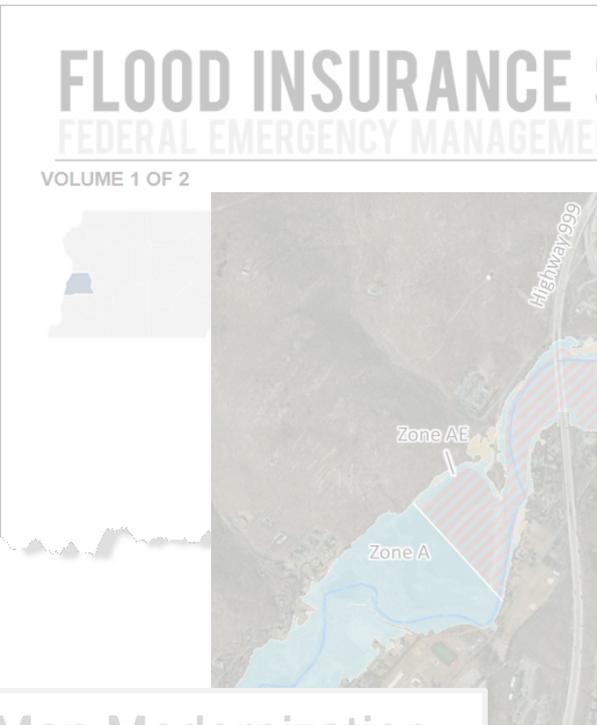


<sup>1</sup>The potential flood risks which only include newly studied areas within Brandywine-Christina Watershed (02040205) and Lower-Susquehanna Watershed (02050205), are shown on this map and do not reflect all flood risks within the watershed.  
<sup>2</sup>The potential flood risks for newly studied areas were determined using hydro analysis and the modeled potential flow estimates are included in the Flood Risk Database.  
<sup>3</sup>Depth Grids, and other digital products are included in the Flood Risk Database and can be obtained from FEMA Map Service Center (<http://www.fema.gov>).



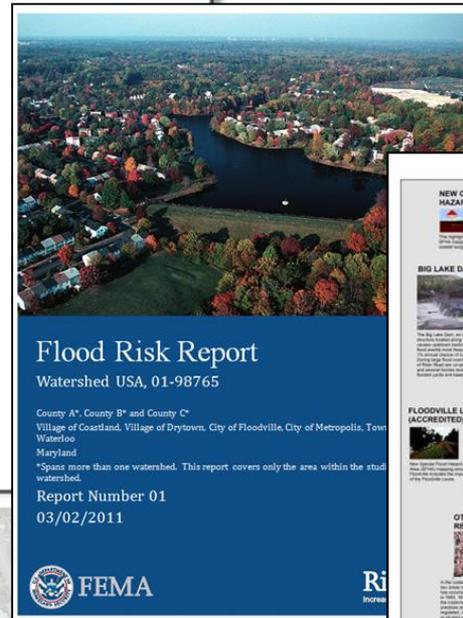
# Program Product Comparisons

## Flood Risk Products



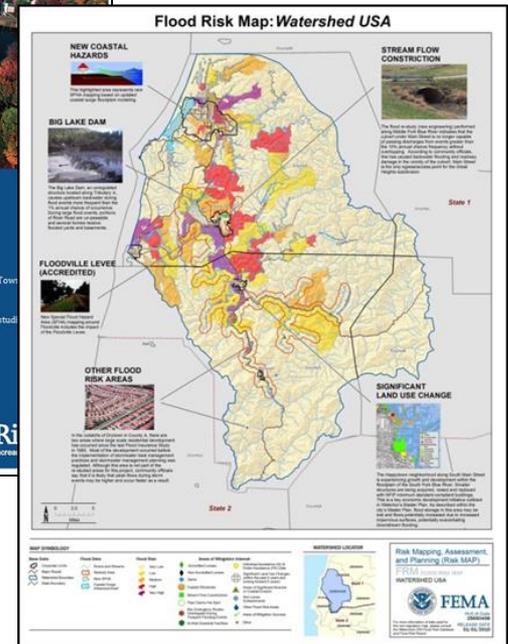
### Flood Risk Database (FRD)

- Community\_Panel\_Info
- L\_Comm\_Info
- L\_MIT\_LOMC
- L\_Pan\_Revis
- L\_Pol\_FHM
- L\_Riv\_Model
- L\_Sen\_Start
- L\_Wtr\_Nm
- S\_Life
- S\_DOQ\_Index
- S\_Firm\_Plan
- S\_Gen\_Struct
- S\_Label\_Ld
- S\_Label\_Pt
- S\_LOMR
- S\_Perm\_Bnk
- S\_Quad
- S\_Riv\_Msk
- S\_Transport\_Ar



## RiskMAP

Use for Flood Risk Mitigation Planning



## Map Modernization



# Hazard Mitigation

## Risk MAP

- Risk MAP Products and Datasets
  - Regulatory
  - Non-regulatory
- Advisory Information
  - Helps to understand flood risk
  - Higher standards decisions



## Hazard Mitigation Plan

- Uses Risk Information
- Identifies Projects/Actions
- Integrated with Other Community Plans



## Other Community Plans

- Comprehensive Plans
- Capital Improvement
- Stormwater Management Plans
- Emergency Operations
- Sustainability / Climate Change Plan

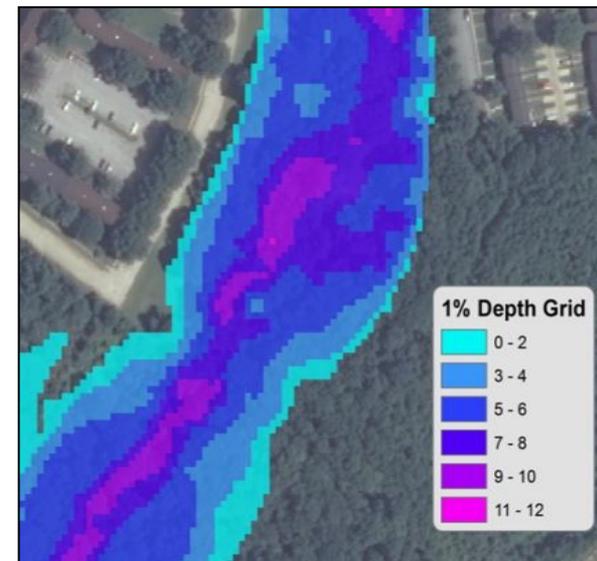
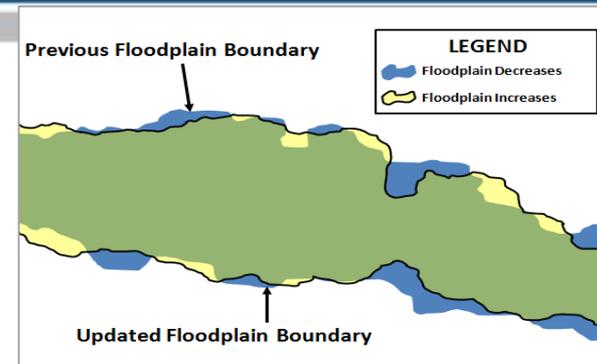
## Mitigation Actions

# Identify/Prioritize Actions

Communities informed by Risk MAP datasets are better prepared to identify and mitigate their risks.

## How does Risk MAP help?

- ▶ Identifies new or expanded flood hazard boundaries (Changes Since Last FIRM)
- Identifies areas where the greatest depth of flooding will occur (Flood Depth Grids)
- Prioritize existing and new mitigation toward areas of greatest risk (Areas of Mitigation Interest and local Hazard Mitigation Plan)



# Flood Risk Products and Datasets

## ▶ Flood Risk Products:

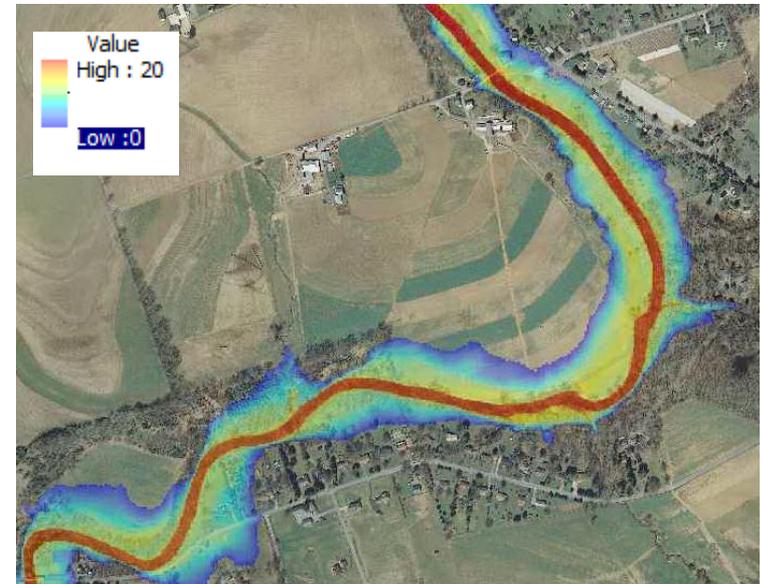
- Flood Risk Report
- Flood Risk Map
- Flood Risk Database

## ▶ Flood Risk Datasets

- Changes Since Last FIRM
- Depth and Analysis Grids
- Flood Risk Assessment (refined Hazus)

## ▶ Flood Risk Products help communities:

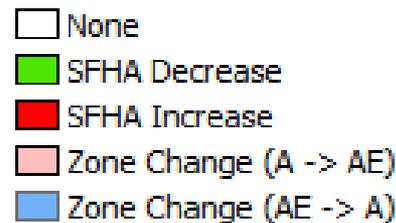
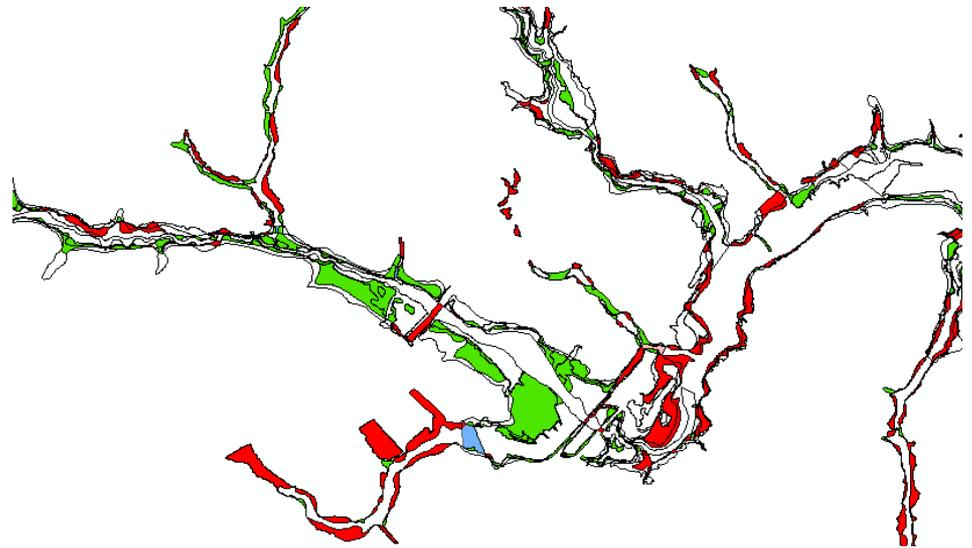
- Gain a better understanding of flood risk and its potential impact on communities and individuals
- Take proper mitigation actions to reduce risk
- Leverage in Mitigation Plans (e.g. Lancaster ongoing update)



# Using Changes Since Last FIRM for Identifying Actions

## ► Changes Since Last FIRM

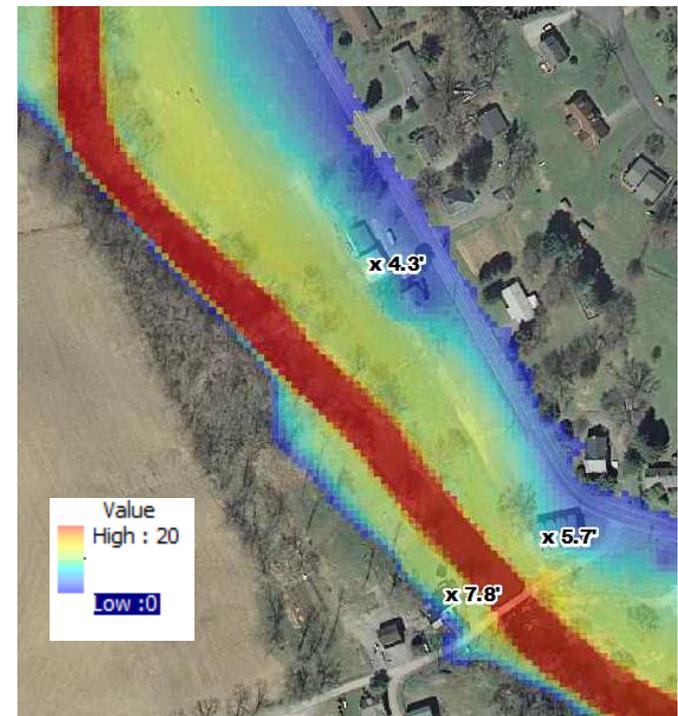
- Communities and homeowners can use this to identify the impacts of new maps on the regulatory Special Flood Hazard Area (SFHA)
- Also reveals new areas that may need mitigation actions
  - Either for existing assets or for future planning



# Using Depth and Analysis Grids for Identifying Actions

## ► Depth and Analysis Grids

- Better information on depth and percent chance of flooding
- More information on multiple frequency (10, 50, 100, 500 year) flood events
- Analysis grids:
  - Probability of flood in one year
  - Probability of flood in 30-year mortgage
- These provide enhanced data to develop a more accurate Benefit Cost Analysis (BCA) for mitigation projects, a big step towards implementation

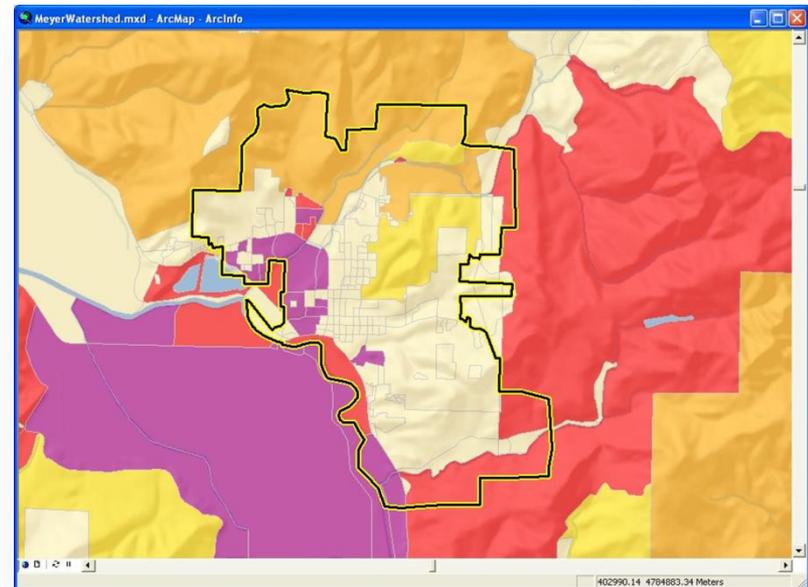


# Using Flood Risk Report for Identifying Actions

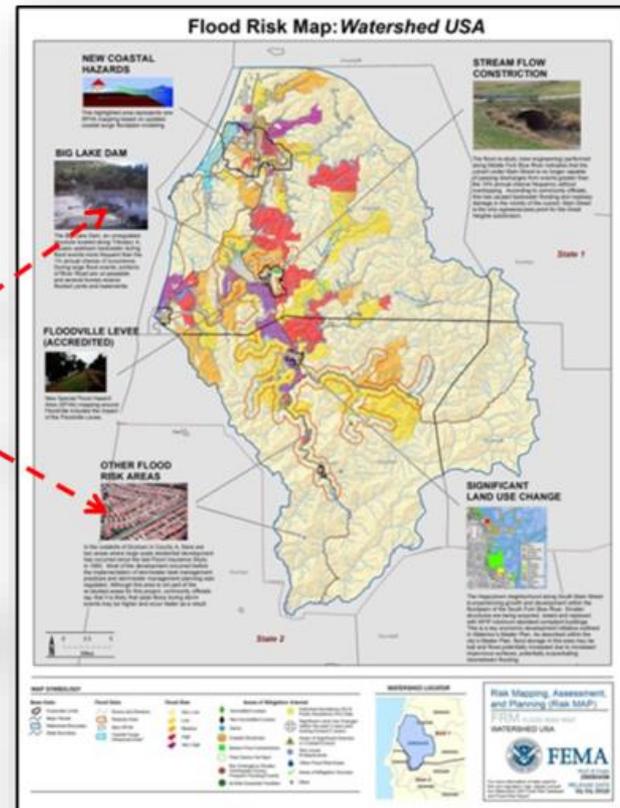
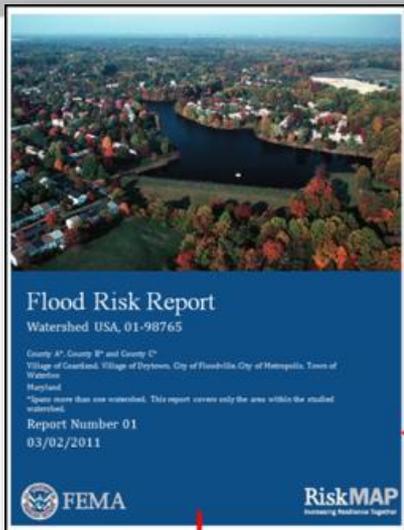
## ► Flood Risk Report

- Identifies areas of higher flood risk by census block
- Quantifies potential future flood losses to existing structures
- Improves ability to identify areas that would benefit from higher building code requirements
- Supports mitigation plan updates and disaster recovery planning through improved risk quantification

## 1% Chance Risk (100-yr)



# Products to Help Identify & Prioritize Potential Mitigation Actions



Type of Mitigation Interest	Number of Areas	Data Source
Dam	1	State CTP
Levee	2	State CTP
Stream Flow Pinch Points	2	Local Pub Works, engineering models
Significant Land Use Changes	1	Local Planning Div
Past Claims Hot Spot	1	State NFIP
Area of Mitigation Success	2	State SHMO

# 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 <small>*BCR numbers in this study have been rounded</small>	Beyond Code Requirements	Federally Funded	This Interim Study quantified a number of benefits from mitigation, including reductions in: <ul style="list-style-type: none"> <li>• Future deaths, nonfatal injuries, and PTSD</li> <li>• Repair costs for damaged buildings and contents</li> <li>• Sheltering costs for displaced households</li> <li>• Loss of revenue and other business interruption costs to businesses whose properties are damaged</li> <li>• Loss of economic activity in the broader community</li> <li>• Loss of service to the community when fire stations, hospitals, or other public buildings are damaged</li> <li>• Insurance costs other than insurance claims</li> <li>• Costs for urban search and rescue</li> </ul>
<b>Overall Hazard Benefit-Cost Ratio</b>	<b>\$4:1</b>	<b>\$6:1</b>	
 <b>Riverine Flood</b>	\$5:1	\$7:1	
 <b>Hurricane Surge</b>	\$7:1	Too few grants	
 <b>Wind</b>	\$5:1	\$5:1	
 <b>Earthquake</b>	\$4:1	\$3:1	
 <b>Wildland-Urban Interface Fire</b>	\$4:1	\$3:1	



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# Mitigation Plans Impact Bond Ratings



SECTOR IN-DEPTH  
28 November 2017

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## Environmental risks

### Evaluating the impact of climate change on US state and local issuers

In coming years, climate change is forecast to result in a higher frequency and severity of extreme weather events, in turn heightening US exposure and vulnerability to economic loss across industries and geographic regions. This piece discusses how we assess the credit impact of these risks on US state and local issuers.

- » **Global climate change is forecast to increase the US' exposure and vulnerability to a range of factors such as severe heat, changes in precipitation patterns and rising sea levels.** These changes are projected to drive an increased frequency of extreme weather occurrences, or climate shocks, including heat waves, droughts, nuisance flooding, wildfire and more damaging coastal storm surges. If federal, state and local governments do not adapt, these risks are forecast to become more frequent and severe over time. However, we anticipate that some level of adaptation and mitigation strategies will be adopted to lessen these impacts.
- » **The negative economic effects of climate change vary by region.** Although climate change is certain to have economic impacts in the future, projections of costs are imprecise. The primary quantifiable impacts are damage to coastal property as a result of floods and rising sea levels, changes in agricultural production, lower labor productivity, health impacts and increased energy use. Changes in environmental policy and adaptive mitigation strategies will likely reduce these costs.
- » **Credit risks resulting from climate change are embedded in our existing approach to analyzing the key credit factors in our methodologies.** Our analysis of economic strength and diversity, which signals the speed with which an economy may recover, captures climate-driven credit risks such as economic disruption, physical damage, health and public safety, and population displacement. Fiscal strength, access to liquidity and levers to raise additional revenue are also key to our assessment of climate risks as is evaluating asset management and governance. This provides the basis for our view of states' credit resiliency to climate change, and is the framework for evaluating the credit risk to local government issuers.
- » **Local, state and federal tools for both immediate response and long-term recovery enhance resilience to the physical and economic impact of extreme weather events.** US municipal issuers benefit from local, state and federal processes to help areas affected by climate shock manage the immediate physical impacts of extreme weather. Issuers also benefit from a variety of resources to expedite the long-term recovery of their economic base.

# Additional Information

- ▶ **Flood Risk Products are available for download**
  - At the Map Service Center (under “Search All Products”)
    - <https://msc.fema.gov/portal>
- ▶ **More detailed materials is available for anyone who is interested**
  - Risk Map Product Workshops can be held for Local Officials
  - Detailed materials available at:
    - <https://www.fema.gov/risk-map-flood-risk-products>



# Federal Programs Segment

Delaware County, PA



**FEMA**

# Hazard Mitigation

**Any sustained action taken to reduce or eliminate long-term risk to life and property from hazards**

- ▶ Reduces loss of life and property in the long-term
- ▶ Enables rapid recovery from disasters
- ▶ Lessens financial burden
- ▶ Protects natural environment
- ▶ Builds resilient communities



**MITIGATION:**  
Elevated home by a river



**MITIGATION:**  
Property acquisition



**PREPAREDNESS AND RESPONSE:** Purchase of police command vehicle

# Mitigation Actions



## PROJECTS

- Acquisition
- Elevation
- Retrofits
- Drainage



## PLANNING MECHANISMS

- Ordinances
- Land Use Plan
- Capital Improvements Plan



## OUTREACH & COORDINATION

- Public Awareness
- State/ Federal Program Coordination



## NATURAL RESOURCE PROTECTION

- Stream and Wetland Restoration
- Erosion Control

# Prioritize Actions

## Prioritize actions based on cost effectiveness:

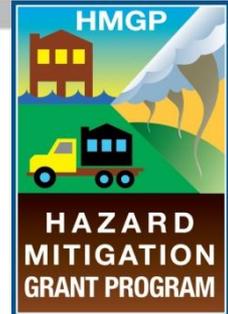
- ▶ Acquisition of repetitive flood loss properties
- ▶ Mitigating homes with first floor elevation below 10-year flood elevation
- ▶ Increasing public awareness or implementing building / zoning codes that do not require a large monetary commitment



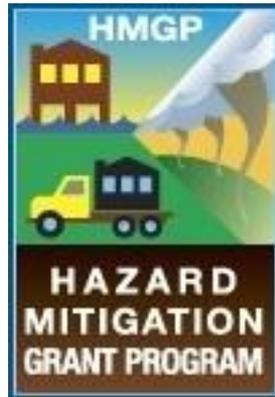
# Action Implementation – Funding

## Hazard Mitigation Assistance (HMA)

- Grants available **AFTER** a disaster
  - Hazard Mitigation Grant Program (HMGP)
- Grants available **BEFORE** a disaster
  - Pre-Disaster Mitigation (PDM) Program
  - Flood Mitigation Assistance (FMA) Program (includes former Repetitive Flood Claims [RFC] and Severe Repetitive Loss [SRL] programs)
- **FEMA awards grants to States, tribes, and territories**
  - Communities contact State Hazard Mitigation Office (SHMO) if interested in applying for HMA



# HMGP



- ▶ Post-disaster grant, designed to reduced future risk for impacted areas. Available statewide.

# HMGP Breakdown

- ▶ State Sets Priorities
- ▶ 15% of total disaster costs (PA and IA)
  - 88% of funds must be structural projects (BCA required)
  - 7% of funds may be used for mitigation planning projects
  - 5% of funds may be used for initiative projects (no BCA required)



# Pre-Disaster Mitigation Grant



- ▶ Annual grant focused on climate resilience, infrastructure, and non-flood related projects.

# PDM Breakdown

## ▶ FEMA Priorities

- Climate Resilient Mitigation Activities
- Wildfire Mitigation Activities
- Non-flood mitigation activities
- Flood mitigation activities
- Generator projects
- Mitigation Planning

## ▶ Funding

- \$232M in FY 2018, \$4M fed share cap on projects
- Each state gets a \$575k set-aside



# Flood Mitigation Assistance Grant



- ▶ Annual grant focused on mitigation structures that are insured through the NFIP and have sustained numerous flood claims.

# FMA Breakdown

## ▶ FEMA Priorities

- Projects that mitigate flood damage for at least 50% of the structures that are Severe Repetitive Loss (SRL)
- Projects that mitigate flood damage for at least 50% of the structures that are Repetitive Loss (RL)
- Projects that will mitigate flood damage to the largest number of NFIP-insured properties at the neighborhood level

## ▶ Funding

- \$160M for FY 2017, up to 100% fed share



# Eligible Activities

Eligible Activities	HMGP	PDM	FMA
<b>1. Mitigation Projects</b>	✓	✓	✓
Property Acquisition and Structure Demolition	✓	✓	✓
Property Acquisition and Structure Relocation	✓	✓	✓
Structure Elevation	✓	✓	✓
Mitigation Reconstruction	✓	✓	✓
Dry Floodproofing of Historic Residential Structures	✓	✓	✓
Dry Floodproofing of Non-Residential Structures	✓	✓	✓
Generators	✓	✓	
Localized Flood Risk Reduction Projects	✓	✓	✓
Non-Localized Flood Risk Reduction Projects	✓	✓	
Structural Retrofitting of Existing Buildings	✓	✓	✓
Non-Structural Retrofitting of Existing Buildings and Facilities	✓	✓	✓
Safe Room Construction	✓	✓	
Wind Retrofit for One- and Two-Family Residences	✓	✓	
Infrastructure Retrofit	✓	✓	✓
Soil Stabilization	✓	✓	✓
Wildfire Mitigation	✓	✓	
Post-Disaster Code Enforcement	✓		
Advance Assistance	✓		✓
5 Percent Initiative Projects*	✓		
Miscellaneous/Other**	✓	✓	✓
<b>2. Hazard Mitigation Planning</b>	✓	✓	✓
Planning-Related Activities	✓		
<b>3. Technical Assistance</b>			✓
<b>4. Management Costs</b>	✓	✓	✓

# Not All Floods Are Disasters.....

## The Benefits of Flood Insurance Versus Disaster Assistance

### Flood Insurance

- You are in control. Flood insurance claims are paid even if a disaster is not declared by the President.
- More than 20 percent of NFIP claims come from outside of mapped Special Flood Hazard Areas.
- There is no payback requirement.
- Flood insurance policies are continuous, and are not non-renewed or canceled for repeat losses.
- Flood insurance reimburses you for all covered building losses up to \$250,000 for residential occupancies and up to \$500,000 for businesses. Contents coverage is also available up to \$100,000 for residential occupancies and up to \$500,000 for businesses.

### Disaster Assistance

- Most forms of Federal disaster assistance require a Presidential declaration.
- Federal disaster assistance declarations are not awarded in all flooding incidents.
- The most typical form of disaster assistance is a loan that must be repaid with interest.
- The duration of a Small Business Administration (SBA) disaster home loan could extend to 30 years.
- The average Individuals and Households Program award for Presidential disaster declarations related to flooding in 2008 was less than \$4,000.

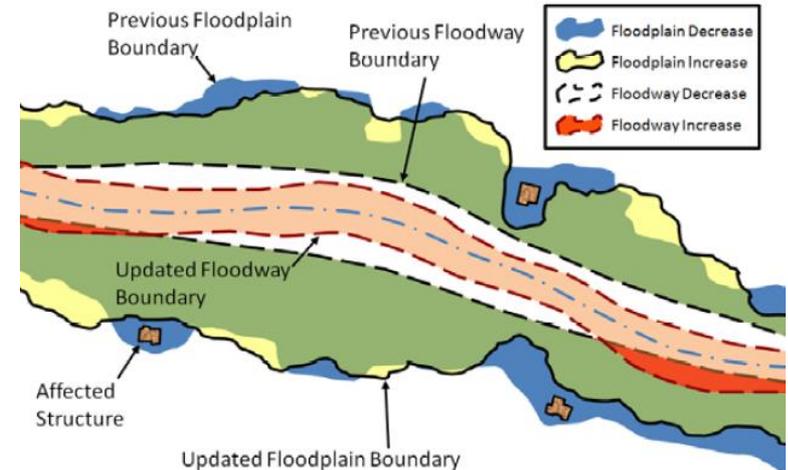
# Flood Insurance

- ▶ **Flood Insurance Reform Act of 2012** (Biggert-Waters 2012)
- ▶ **Homeowner Flood Insurance Affordability Act of 2014** (HFIAA 2014)
- ▶ **Goal:** To make the NFIP more financially stable by gradually eliminating subsidized rates on certain classes of property to reflect true flood risk
- ▶ **Mechanism:** Rate changes for some subsidized policies to accurately reflect the flood risk

For more information and updates as they become available, visit: <http://www.fema.gov/flood-insurance-reform>.

# How Will These Changes Affect Me?

- ▶ **Flood insurance rates will reflect mapping changes:** With new maps, rates on some properties may rise
- ▶ Structures newly mapped from low- to moderate-risk flood zone to high-risk flood zone are eligible to receive **reduced policy premium rates, but only if the policy's first effective date is within one year of the FIRM Revision effective date**
- ▶ Reduced policy premium rates expected to **increase 5 to 15%** annually until full-risk rates are achieved



# Community Rating System (CRS)

CRS is part of the NFIP.

Participation is **voluntary**

Flood **insurance premium rates discounted** to reward communities

## Benefits of participation

- ▶ Aligns with mitigation action and projects
- ▶ Comprehensive approach to floodplain management
- ▶ Activities build resilience



# Important Resources



Current effective and Pending FIRMs, FISs and digital FIRM Databases are available at FEMA's Map Service Center at: <https://msc.fema.gov/>

Final FIRM databases for Chester and Delaware Counties are available for viewing on FEMA's National Flood Hazard Layer (NFHL) at:

<https://www.fema.gov/national-flood-hazard-layer-nfhl>

FEMA Floodplain Management Publications are available at:

[www.fema.gov/floodplain-management-publications](http://www.fema.gov/floodplain-management-publications)

FEMA Financial Preparedness site is at: <https://www.ready.gov/financial-preparedness>

FEMA Region 3 Coffee Breaks and Resilience Report Newsletter:

# Questions?



# FEMA