

# Flood Mitigation in the Delaware River Watershed: Opportunities and Resources

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**Delaware River Basin Commission**

DELAWARE • NEW JERSEY  
PENNSYLVANIA • NEW YORK  
UNITED STATES OF AMERICA





## DRBC's Role in Water Resource Management



## Hazard Mitigation Funding Opportunities, Presented by PEMA



## Case Study: Brandywine Flood Study



## Case Study: Perkiomen Project



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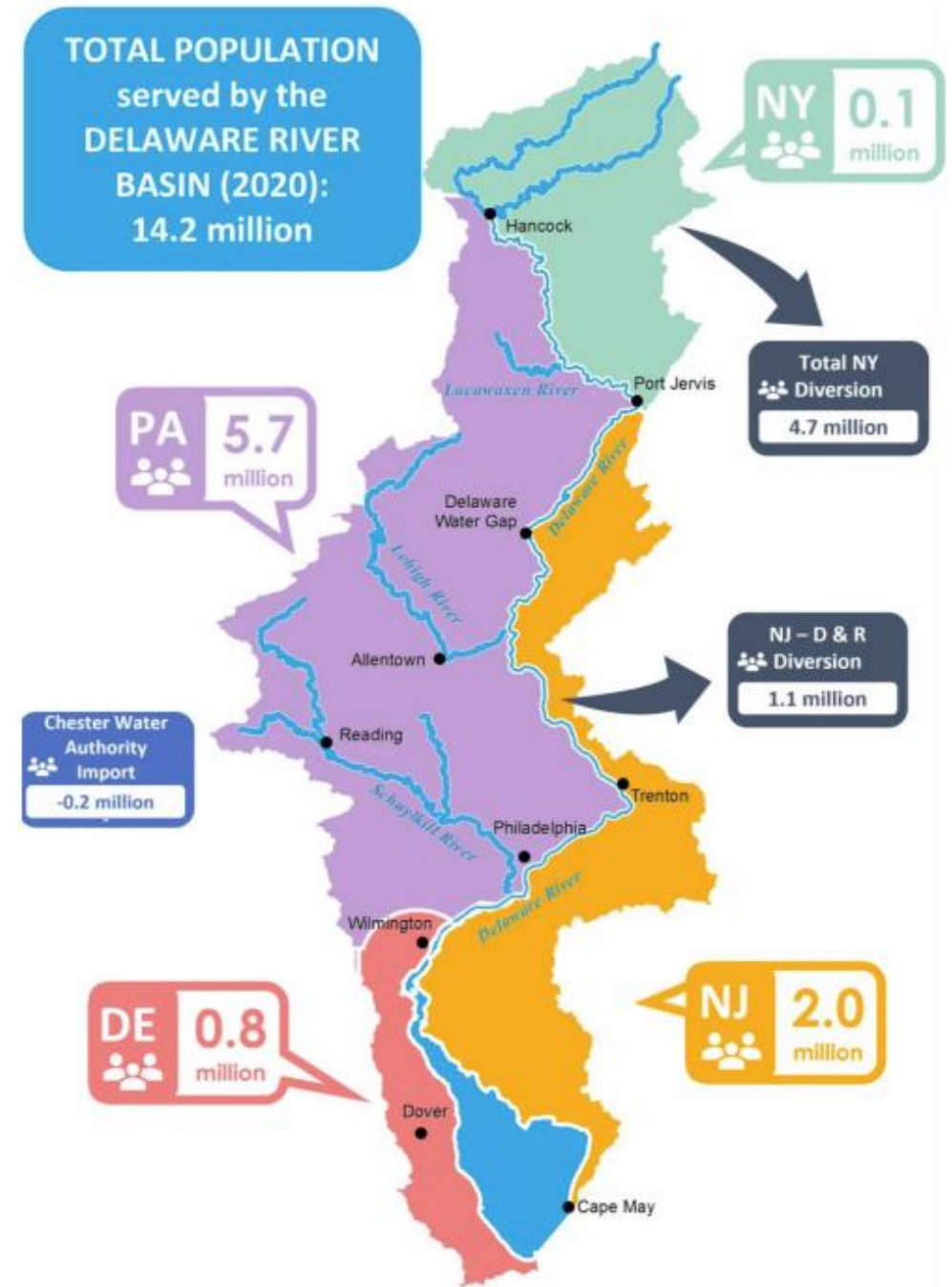
# The Delaware River

- 330 miles
- 13,500 sq. mi. watershed
- Free-flowing mainstem
- Schuylkill is largest tributary
- Tidal from ocean to Trenton
- Unique habitats & communities



# The Delaware River meets our needs.

- >14 million people in four states
- Half of NYC drinking water
- Four states
- 6.1 billion gallons withdrawn daily
- >\$21 billion in economic value
- Interstate boundary





# The DRBC's authority and jurisdiction are defined by the Delaware River Basin Compact.

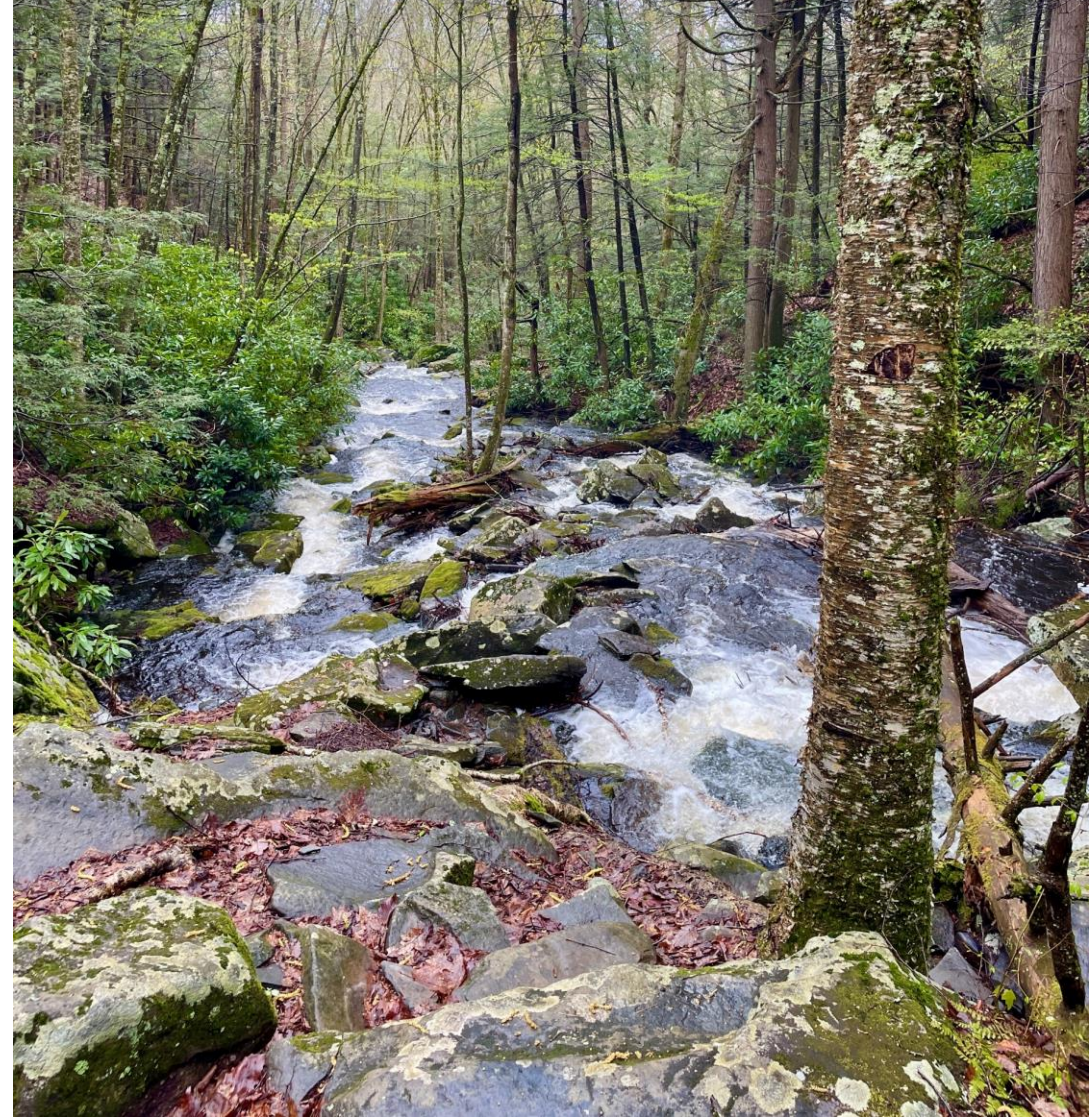
- U.S. Constitution, Compact Clause, Article 1, Section 10, Clause 3.
- Pub. L. 87-328, 75 Stat. Ann. 688 (1961).
- Recognized as a regional asset with local, state and national interests.





# The DRB Compact includes broad authority for planning and regulation.

- Abatement and control of pollution
- Development of ground and surface water supply
- Development of recreational facilities
- Protection and aid to fisheries
- Promotion of watershed projects
- Development of hydroelectric power
- Control of movement salt water
- Flood damage reduction



DRBC's programs typically fall under two categories.

## FLOW

1

**An adequate  
and sustainable  
supply of water**

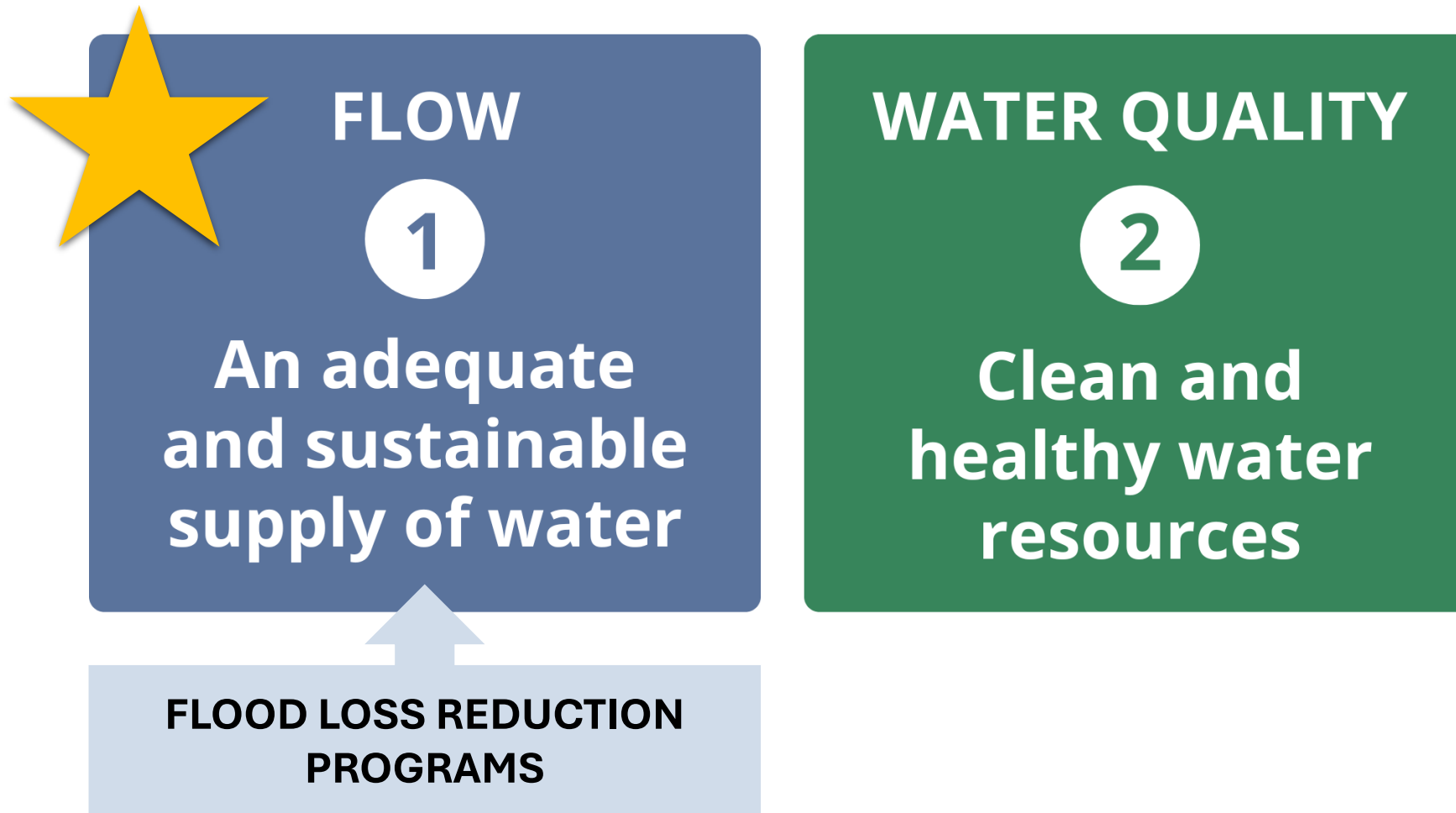
## WATER QUALITY

2

**Clean and  
healthy water  
resources**



The DRBC has a mandate to ensure an adequate and sustainable water supply in the Delaware River Basin.



# DRBC connects the public with science-based data to inform decisions.

- Flood loss reduction is a key mission in DRBC's water resource management.
- Communities face barriers in planning for and implementing climate and hazard reduction projects.
- Considering latest science in DRBC's engagement and planning.



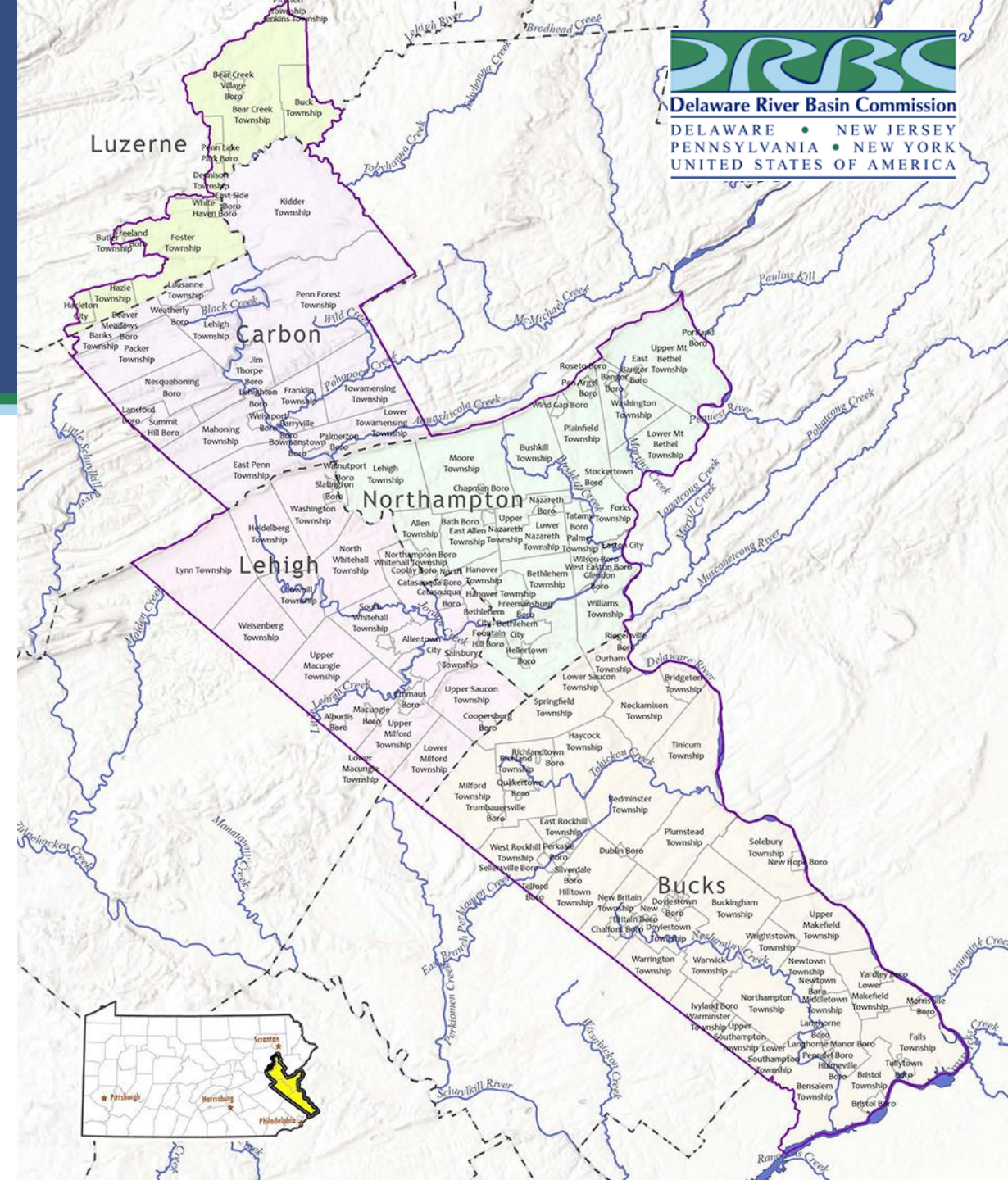
Hazard reduction planning begins at the local level and has basin-wide impacts.



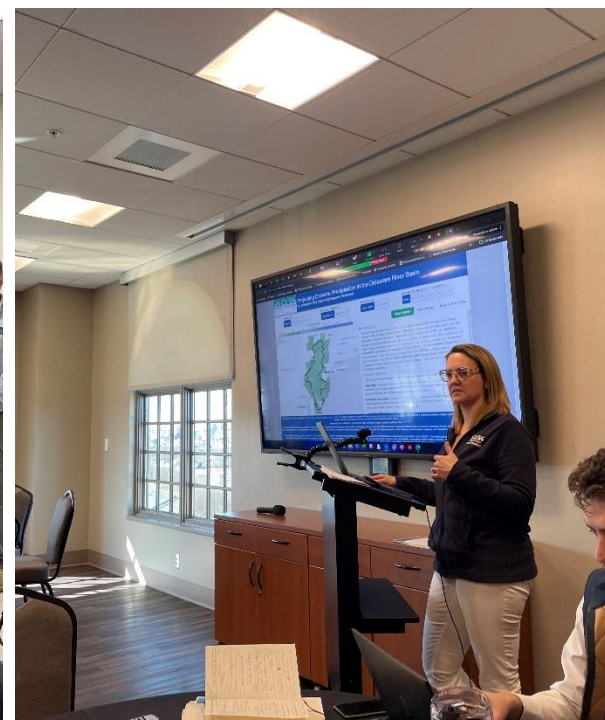


# DRBC Partners with the Pennsylvania Emergency Management Agency (PEMA)

- Middle Delaware Flood Mitigation Assistance Workshops
- Project focus: Bucks, Carbon, Northampton, Lehigh, and part of Luzerne counties
- Goal: increase capacity of local municipalities to apply for grants and access state and federal resources






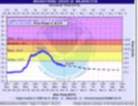





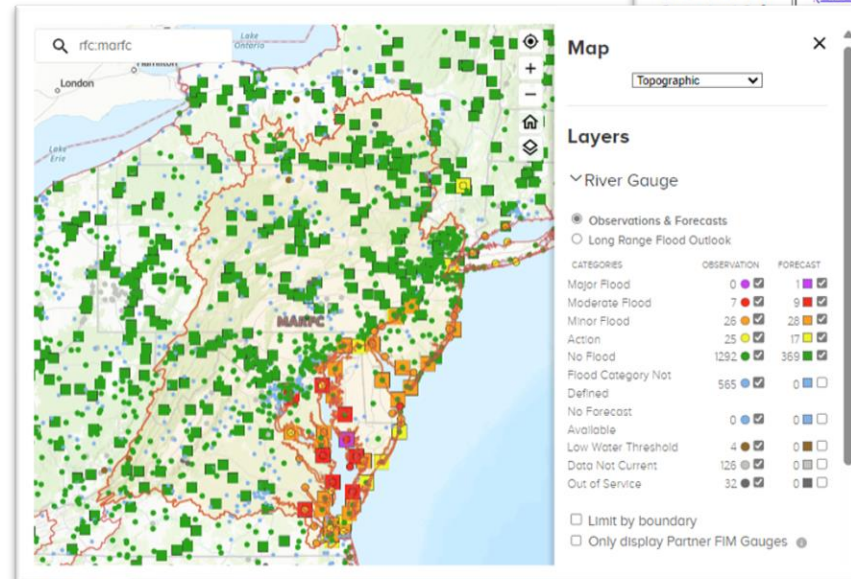


# DRBC's website links to public tools for planning and awareness

- [Middle Atlantic River Forecast Center \(MARFC\)](#)
- [Flood Resources Portal](#)
- [Silver Jacket](#) guides
- And more!



Flood Alerts	Flood Forecasts	Flood Zones	Flood Preparedness	Flood History
				
Sign Up For: <ul style="list-style-type: none"><li>• <a href="#">USGS Water Alert</a></li><li>• <a href="#">iNWS Mobile Alerts</a></li><li>• <a href="#">Wireless Emergency Alerts (WEA)</a></li></ul> Links with	NWS Flood Forecast Maps (Incl. Several Tributary Locations): <ul style="list-style-type: none"><li>• <a href="#">Upper Basin</a></li><li>• <a href="#">Lower Basin</a></li></ul> <a href="#">National Water Prediction Service</a> <a href="#">River Flood Stage Dashboard (DRBC Map of USGS a)</a>	<a href="#">Do You Live in One?</a> <a href="#">Flood Insurance</a> <a href="#">Flood Insurance Claims in the DRB</a> <a href="#">What is a 100-Year Flood?</a> <a href="#">More FEMA Products and Resources</a>	<a href="#">Know Your Risk</a> <a href="#">Make a Plan</a> <a href="#">Vehicle Safety</a> <a href="#">Federal &amp; State Resources/Links</a> <a href="#">Floods: The Awesome Power (pdf)</a> <a href="#">Focus on Floods</a>	<a href="#">A Look Back</a> <a href="#">Remembering 1955</a> <a href="#">DRBC Flood Loss Reduction Activities</a>







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Pennsylvania  
Emergency Management Agency

# PEMA Hazard Mitigation

Rick Deal  
State Hazard Mitigation Officer





# PEMA: Mission

**The Pennsylvania Emergency Management Agency (PEMA) helps communities and citizens mitigate against, prepare for, respond to, and recover from emergencies including natural disasters, acts of terrorism, or other human-made disasters.**

**PEMA supports county emergency management agencies by coordinating and engaging the whole community including:**

**Federal and state partners; volunteer organizations involved in disasters; private sector business communities; citizens.**



Pennsylvania  
Emergency Management Agency



# PEMA: Overview

## *FAST* Facts



4 Locations  
3 Regional  
Offices &  
Headquarters



**182**  
Employees



**2479**  
Appointed County and  
Municipal EMCs



**\$993M**  
Federal Grant Funds  
Administered FY 2022



Pennsylvania Emergency Management Agency  
Headquarters, Harrisburg, PA

# PEMA: Overview

## Area Offices



Western Area

24 Counties



Central Area

23 Counties



Eastern Area

20 Counties



# PEMA: Overview

## Before, During and After: Phases of Emergency Management

### ALL DISASTERS ARE LOCAL

Communities prioritize the threats and decide how best to prepare and mitigate. Resilient communities engage the whole community including the private sector and voluntary organizations when recovering.



Every dollar a community invests in mitigation can save 6 dollars in recovery costs.



### Prevent

Prevent or stop a threatened or actual incident intended to harm people or damage infrastructure.



### Prepare

Planning, training and exercising before a disaster. Includes making sure community members are prepared for disasters that may come their way.



### Respond

Saving lives, stabilizing the event, protecting property and the environment and meeting basic human needs after an incident has occurred.



### Recover

Returning homes, businesses and communities to normal, or a safer situation following a disaster. Includes estimating damages for reimbursement.



### Mitigate

Reducing loss of life and property by lessening the impact of disasters before they occur. Includes flood proofing, power line protection and planning for road and clearing debris from roadways.







# Emergency Preparedness

**Be Prepared: Build a Kit (For Home or Grab and Go)**

- **In-home survival or grab-and-go**
- **Bottled water**
- **Non-perishable foods and manual can opener**
- **First aid kit**
- **Flashlight & Radio**
- **Medication**
- **Important Paperwork**
- **Pet supplies**



# Ongoing Mitigation Activity

## Delaware

1. **Brandywine Conservancy (Flood Study & ELV) - HMGP**
2. **DRBC Scoping – BRIC**
3. **Haverford Twp Scoping – FMA**
4. **Ridley Twp ACQ - HMGP**
5. **Upper Chester Twp ACQ – HMGP**
6. **Upper Darby Borough ACQ – HMGP**
7. **Upland Borough ACQ - HMGP**

## Montgomery

1. **Collegeville Borough ACQ – HMGP**
2. **Cheltenham Twp SWM – HMGP**
3. **Green Lane Borough ACQ – HMGP**
4. **Lower Providence Twp - HMGP**
5. **Perkiomen Twp ACQ – HMGP**
6. **Schwenksville Borough SWM – HMGP**
7. **Skippack Twp ACQ – HMGP**
8. **Upper Moreland Twp ACQ HMGP**
9. **Upper Providence Twp ACQ – HMGP/FMA/SCI**
10. **Whitemarsh Twp ACQ - HMGP**

# HMA Programs

- 1. Hazard Mitigation Grant Program (HMGP)**
- 2. Community Development Block Grant – Disaster Recovery (CDBG-DR)**
- 3. Building Resilient Infrastructures & Communities (BRIC)**
- 4. Flood Mitigation Assistance (FMA)**
- 5. Flood Mitigation Assistance Swift Current Initiative (SCI)**





# Hazard Mitigation Grant Program

## HMGP

1. Activated with a Federal Disaster Declaration
2. 20% of Public and Individual Assistance funds
3. Cost Share: 75% federal / 25% non-federal (State)
4. Award timing: 18-30 months from disaster

# Community Development Block Grant – Disaster Recovery

## CDBG-DR

1. Activated by Housing and Urban Development (HUD)
2. Census-tract driven
3. Program through DCED, Acquisitions administered through PEMA
4. Cost share: 100% federal

# Non-Disaster Programs

## Annual Cycle

1. Commonwealth has Letter of Intent (LOI) period open all year long, but closes for each program one (1) month after the Notice of Funding Opportunity (NOFO)
2. Application period is usually 4-6 weeks
3. Award timing: 12-24 months from application start



# Building Resilient Infrastructures & Communities

## BRIC

1. Plans, Codes & Standards, Nature-Based solutions, and infrastructure projects
2. State allotment is typically \$2 million
3. After \$2 million projects move to competitive round
4. Cost Share: 75% federal / 25% non-federal (local)

# Flood Mitigation Assistance

## FMA

1. Must be a participating community in NFIP
2. Property must have valid/current NFIP flood insurance
3. Competitive program
4. Cost Share: 75% federal / 25% non-federal (local)
5. Repetitive Loss: 90% federal / 10% non-federal
6. Severe Repetitive Loss: 100% federal

# Commonwealth Priority List

1. Plans
2. 5% Initiative Projects
3. Acquisition/Demolitions
4. Elevations
5. Mitigation Reconstruction
6. Advance Assistance (Project Scoping)
7. Grey Infrastructure (Flood Control, Flood gate, stormwater management, etc)
8. Green Infrastructure (Flood Restoration)





Pennsylvania  
**Emergency Management Agency**

## Contact Me

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[pema.pa.gov](http://pema.pa.gov)



Find us on social: @pemahq





**Delaware River Basin Commission**

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PENNSYLVANIA • NEW YORK  
UNITED STATES OF AMERICA



Pennsylvania  
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## Q&A

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