Creating Resilient and Sustainable Communities for the 21st Century - Infusing nature-based solutions into Hazard Mitigation Plans

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Agenda

✓ Flooding hazards and risks in Kentucky
✓ Kentucky’s NFIP and Hazard Mitigation programs
✓ Nature based solutions
✓ Kentucky’s efforts to incorporate nature based solutions for mitigation into the Commonwealth’s Hazard Mitigation Plan
✓ Best practices for more resilient communities
Flooding in Kentucky

✓ Flooding is KY’s #1 natural hazard
✓ High flows resulting from heavy rains, especially in urban areas can:
  ➢ Cause or increase erosion
  ➢ Damage habitat, infrastructure, and property
  ➢ Cause water pollution
✓ Stormwater runoff often contains:
  ➢ Trash
  ➢ Contaminants like bacteria and heavy metals
Urban Flooding is an Issue


➢ Most urban floods are too small to trigger federal resources
   ❑ Mainly managed at local level

➢ Stronger vertical and horizontal coordination is needed
   ❑ Vertical (federal, state, and local)
   ❑ Horizontal
     ▪ Local agencies responsible for storm water systems, flood control, and removal of damaged property
     ▪ Federal agencies responsible for severe storm warnings, evacuation, community redevelopment, and flood mitigation
     ▪ State agencies to help coordinate and prioritize planning and funding
NFIP in Kentucky

✓ 360 participating NFIP communities
✓ Approximately 21,000 flood insurance policies
✓ Kentucky Division of Water is an active Cooperating Technical Partner (CTP)
  ➢ Representation on TMAC
  ➢ All counties in KY (120) have Special Flood Hazard Areas (SFHAs) identified digitally
✓ 33 CRS communities
✓ 19 open disasters
Kentucky’s Enhanced HMP

✓ **GOAL I**: Increase awareness and support of, training toward and about, and education and proficiency in hazard mitigation

✓ **GOAL II**: Maximize hazard mitigation activity throughout the Commonwealth of Kentucky to reduce vulnerabilities to jurisdictions and to commonwealth-owned and commonwealth-operated buildings, infrastructure, and critical facilities and improve the direction and coordination and prioritization of the mitigation activity undertaken by the Commonwealth of Kentucky’s local jurisdictions.

✓ **GOAL III**: Provide to/develop for its local jurisdictions the tools and data-based research that will aid in facilitating, maximizing, and promoting hazard mitigation activity throughout the Commonwealth of Kentucky.

✓ **GOAL IV**: Increase integration of commonwealth and federal agencies’ policies, programs, funding sources, projects, and planning.

✓ **GOAL V**: Decrease the number of properties commonwealth-wide designated as Repetitive-Loss (RL) or Severe Repetitive-Loss (SRL).
The Commonwealth of Kentucky’s Enhanced State Hazard Mitigation Plan references a specific strategy for RL/SRL.

References green infrastructure as a mitigation strategy.
- Doesn’t identify specific nature-based mitigation actions.

Need to update HMP to include specific nature-based mitigation actions.
Kentucky’s Mitigation-related Collaborative Efforts

- State Hazard Mitigation Council
  - Includes a quorum of the KAMM Board
- Ohio River Basin Alliance
- DLG State Flood Control Match Fund
- State-owned Dam Repair Fund
- Kentucky Nature Preserves

- HMA
  - HMGP
  - PDM > BRIC
  - FMA
- Risk MAP
- Silver Jackets
- Public Assistance 406 mitigation
- CWA Section 319(h) watershed planning
Section 502 of the Clean Water Act defines green infrastructure as:

"...the range of measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and reuse, or landscaping to store, infiltrate, or evapotranspirate stormwater and reduce flows to sewer systems or to surface waters."

A one acre wetland can hold about 3 acre-feet of water (~1 million gallons)
Nature based solutions

✓ EPA’s Green Infrastructure Resources:
   ➢ https://www.epa.gov/green-infrastructure

✓ Best practices on how to:
   ➢ Build
   ➢ Learn
   ➢ Partner

✓ Significant efforts for EPA and FEMA to collaborate on flood-related mitigation efforts using nature based solutions
Green Infrastructure Examples

✓ Downspout disconnection
✓ Rainwater harvesting
✓ Rain gardens
✓ Bioswales
✓ Permeable Pavement
✓ Green roofs
✓ Urban tree canopy
✓ Land conservation/Open space
Green Infrastructure isn’t New

✓ Communities have been implementing nature based solutions for years
  ➢ Generally as a result of MS4 (Municipal Separate Stormwater Sewer System) programs or EPA consent decrees

✓ But...leveraging best practices from local stormwater programs with statewide planning and mitigation efforts in a systematic manner is a fairly new concept...at least in Kentucky.
Kentucky’s Efforts

✓ Incorporate Green Infrastructure (GI) and Low Impact Development (LID) concepts as nature based mitigation actions in the Commonwealth of Kentucky Enhanced State Hazard Mitigation Plan in partnership with:

- EPA Region 4
- FEMA Region IV
- US Army Corps of Engineers
- University of Kentucky Martin School
- Kentucky Emergency Management
- Kentucky Division of Water
- Kentucky Association of Mitigation Managers (KAMM)
Kentucky’s Efforts

✓ EPA Region 4
   - GIS assessment to identify suitable areas for potential GI/LID nature-based mitigation actions

✓ US Army Corps of Engineers - Huntington District
   - Best practices from GI/LID assessment in City of Huntington, WV
     - Silver Jackets project

✓ FEMA Region IV
Kentucky’s Efforts

✓ Kentucky Emergency Management/University of Kentucky Martin School
  ➢ Authoring addendum to state hazard mitigation plan and conducting stakeholder engagement for the planning process
  ➢ Meeting with ADDs to begin incorporating nature based concepts into local HMPs

✓ Kentucky Division of Water
  ➢ Risk MAP data - flood hazards and Areas of Mitigation Interest (AOMIs)
  ➢ Identification of mitigation actions aligning with flood hazard risk assessment in state hazard mitigation plan
Kentucky’s Efforts

✓ Kentucky Association of Mitigation Managers (KAMM)
- ASFPM state chapter
- Expansive network
- Outreach and Education
- Nature-based mitigation action training at priority areas
- Coordinating efforts from stakeholders from all participating agencies, including Area Development Districts (ADDs) for local hazard mitigation plan development

❑ EPA Grant with KAMM began October 2019
Potential Future Resources

✓ Source Water Assessment and Protection Plans
  ➢ Protect riparian areas; keep hazardous materials from source water areas

✓ Clean Water and Drinking Water State Revolving Fund (SRF) funds
  ➢ Leverage loan funds with other funds
  ➢ Repayment of loan funds

✓ CDBG
  ➢ CDBG-MIT
  ➢ CDBG-DR
  ➢ Opportunity Zones

✓ Community Rating System (CRS)
  ➢ Activity 420 - Open space preservation
  ➢ Activity 450 - Stormwater management
Best Practices

✓ The Nature Conservancy - Floodplain by Design program
✓ EPA Smart Growth
✓ MS4 communities - programs, activities, and funding
  ➢ 106 MS4 communities in 32 counties in KY
  ➢ Louisville MSD
    ❑ Public opinion steered solutions to green vs. grey
    ❑ https://louisvillemsd.org/Green
Keep in Touch

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