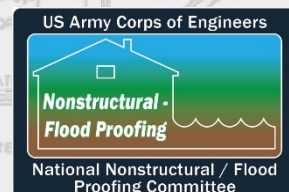


FMP-101: FLOODPLAIN MANAGEMENT PLANS, A SHORT COURSE PCoP WEBINAR SERIES

Brian Rast, PE, CFM, PMP
Institute for Water Resources
06 April 2017



**US Army Corps
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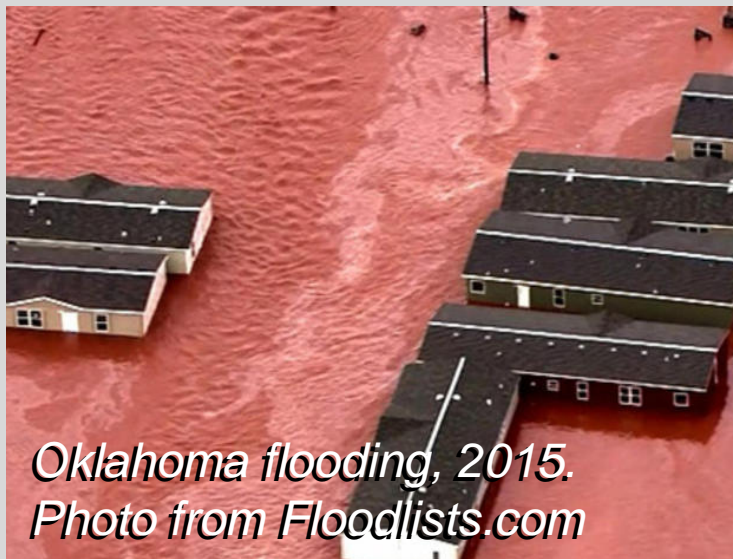
WE NEED TO BE SURE WE'RE USING ALL THE TOOLS IN THE CORPS' TOOLBOX. SENATOR OBERSTAR, 2008



*Winter flood, Missouri, 2016.
Photo from Governor's Office, MO.*



*1000-year "rain bombs" in Louisiana,
2016. Photo from Civil Air Patrol.*



*Oklahoma flooding, 2015.
Photo from Floodlists.com*



*Millennium Flood Event, South Carolina, 2015.
Photo from Sean Rayford.*

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LIFE-CYCLE OF FLOOD RISK MANAGEMENT

“Getting Ready”

Actions taken **BEFORE** the event, including planning, training, and preparations

- Flood Risk Management system assessment / inspections
- Monitoring / forecasting threats
- State and Local Coordination
- Reservoir operations
- Flood Fight Preparation

“The Flood Fight”

Actions taken **DURING** the initial impact of a disaster, including those to save lives and prevent further property damage

- Emergency system strengthening
- Monitor and report flood impact
- Monitor system performance
- Support State / Local Flood Fight

“Driving Down the Risks”

Measures that **PREVENT** a disaster, reduce its chance of happening, or reduce its damaging effects.

- Modify mitigation plans
- Identify future mitigation opportunities
- Develop system improvements

“Getting back on our feet”

Actions taken **AFTER** the initial impact, including those directed toward returning to normalcy.

- Repair damaged systems
- Assess and document system performance
- Implement mitigation measures / system improvements

Preparation / Training

Response

Mitigation

Recovery

Event

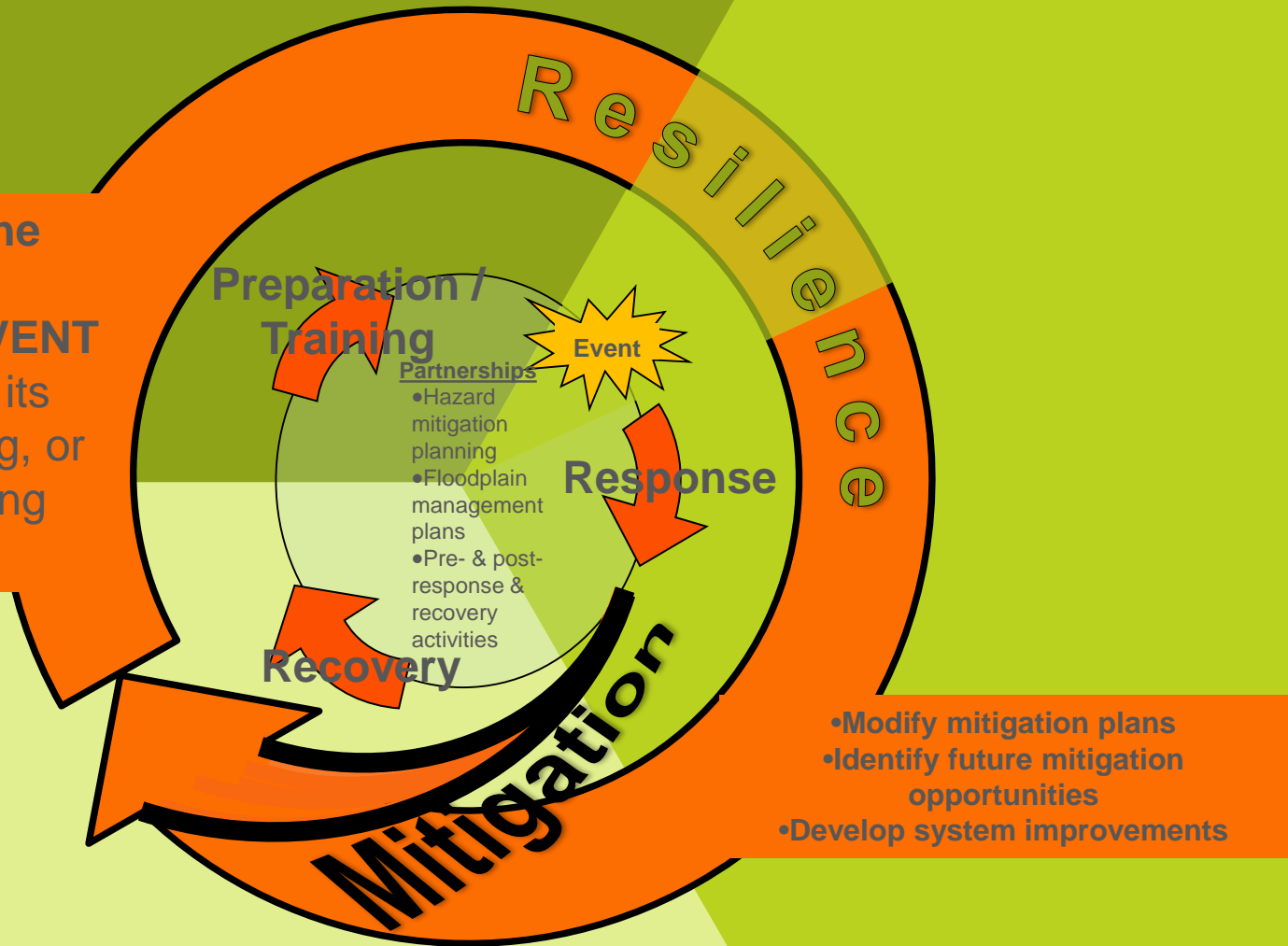
Partnerships

- Hazard mitigation planning
- Floodplain management plans
- Pre- & post-response & recovery activities

FLOOD RISK MANAGEMENT GOES BEYOND ANY SINGLE DISCIPLINE

“Driving Down the Risks”

Measures that **PREVENT**
a disaster, reduce its
chance of happening, or
reduce its damaging
effects.



Elected official
can justify local
funding requests

A playbook for
how to beat
flooding

Integrates across
departments,
communities,
borders

The process
avoids pitfalls
of flood hazard
unawareness

MAIN BENEFITS

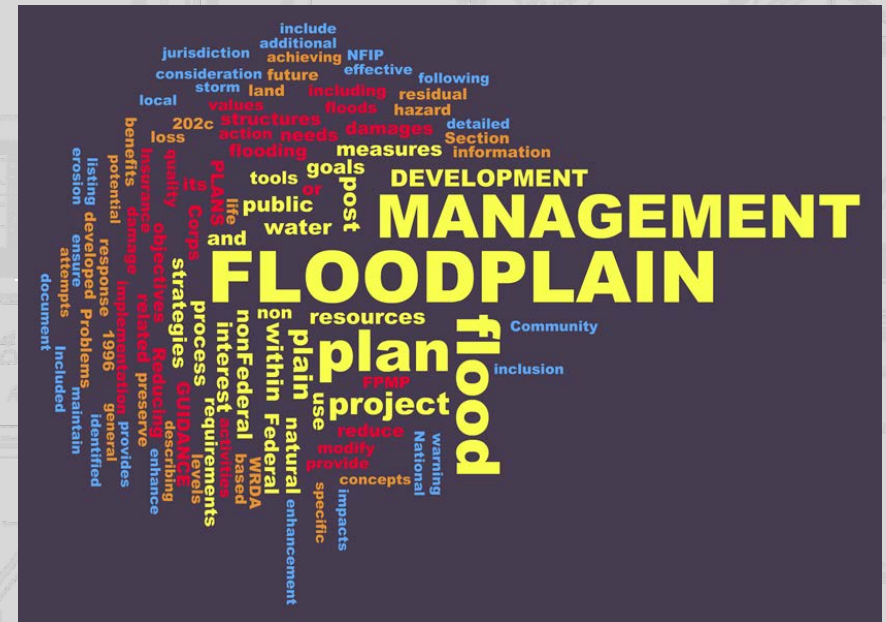


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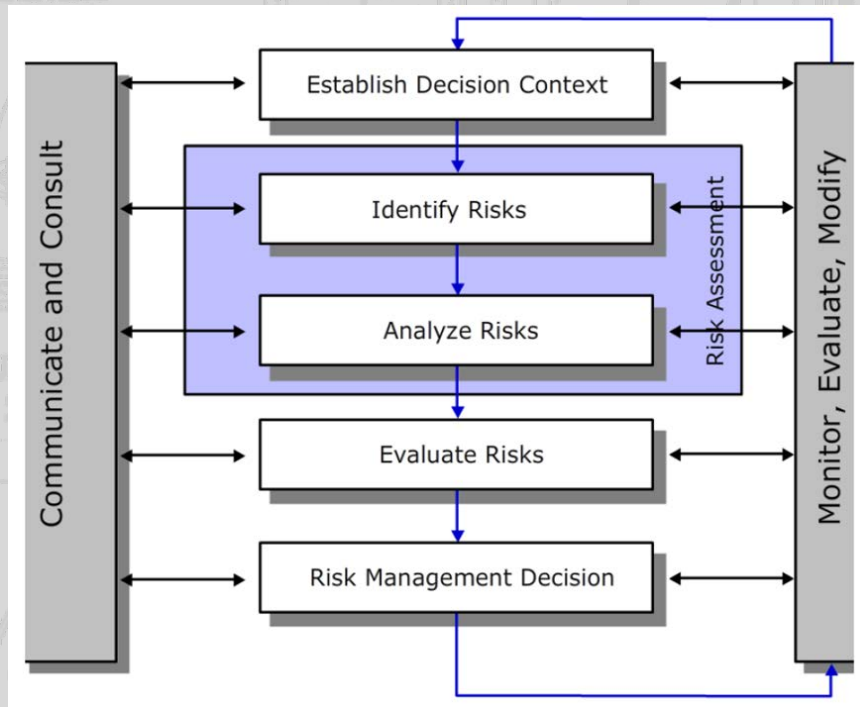
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A **floodplain management plan (FMP)** is a written description of the flood risks and actions a community has taken and will take to address how to mitigate those flood hazards.



A PROCESS IN RISK MANAGEMENT



USACE uses the ISO Risk Management Model at the right as a main principle of flood mitigation within the Civil Works Program.

When a community applies this as a flood risk management program, that establishes floodplain management planning.

Documenting the process is what a **floodplain management plan** does.



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COMMON GUIDANCE FOR FLOOD RISK MANAGEMENT

11

A Unified Program for Floodplain Management began in 1994 and the concepts for FMPs are similar across federal programs.

- FEMA

- Along with the regulation of floodplains for flood insurance, an incentive program is available and guides floodplain management planning (NFIP CRS).
- Communities may be eligible for grants when documenting hazard mitigation plans for all natural hazards, including flooding.

- USACE

- Communities are required to do FMPs when partnering in construction with USACE (law and guidance).
- The FPMS program can provide technical expertise in setting up FMPs.



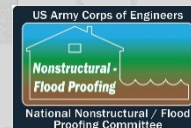
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DETAILS ON FLOODPLAIN MANAGEMENT PLANS

- FMPs are a tool that helps a community move toward resilience.
- FMPs attempt to lessen the damaging effects of floods and/or storm surges, maintain and enhance natural floodplain values, and balance and make effective use of water and related land resources within the floodplain.
- FMPs stress consideration of the full range of structural and nonstructural measures potentially useful in achieving its objectives.
- FMPs are about the ongoing activity of risk management and are, in themselves, a measure for driving down flood risks.
- Multiple plans about actions or risk management measures can be combined into one plan, which can reduce the communities' frustration, improve efficiency, enhance actions, and improve coordination.

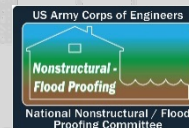
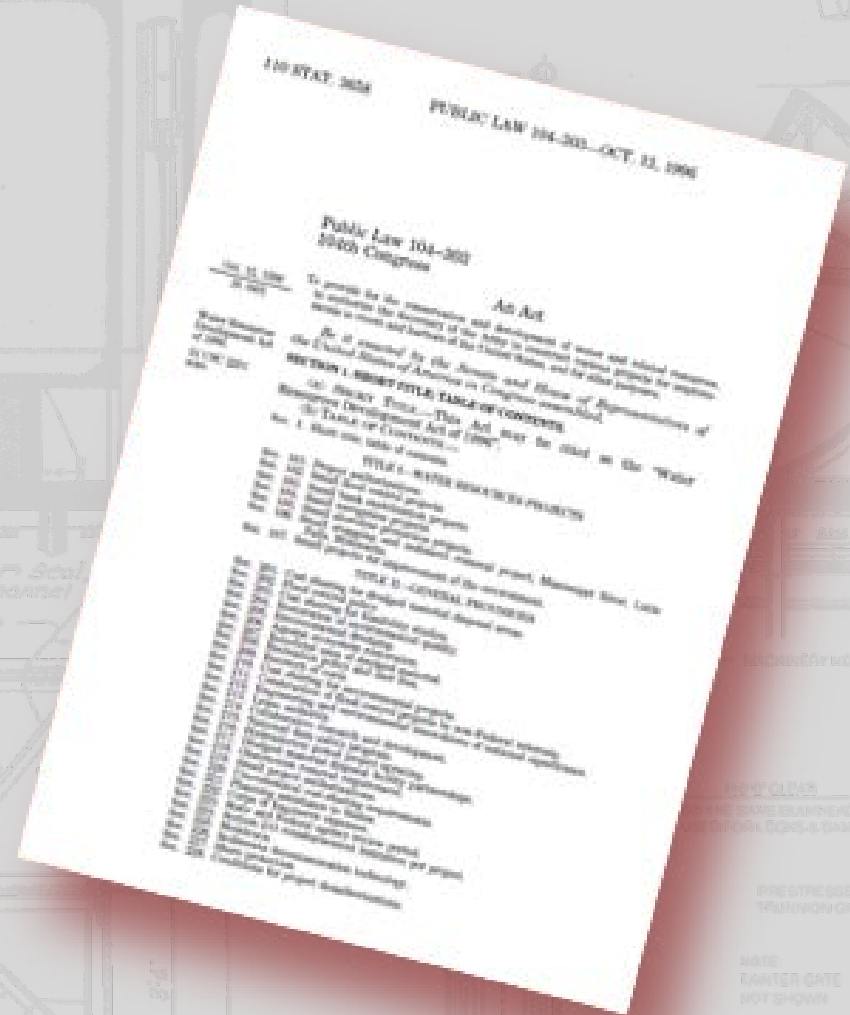


USACE REQUIREMENT FOR PARTNERING

Section 402 of WRDA
1986 as amended by
Section 202 (c) of
WRDA 1996...
or Public Law 104-303.

Any community signing an
agreement for construction
of a cost shared project

**Goal: Protect the Federal
Project!**



Step 1 - Specify Problems and Opportunities

Step 2 - Inventory and Forecast Conditions

Step 3 - Formulate Alternative Plans

Step 4 - Evaluate Alternative Plans

Step 5 - Compare Alternative Plans

Step 6 - Select Recommended Plan

End of study.
Report goes to Congress.

Assign a Local Champion

Conduct a Risk Assessment

Make Public
Aware of Flood Risks

Consider Full Menu of
Measures to Reduce Risk

Develop Actions
(near-term and long-term)

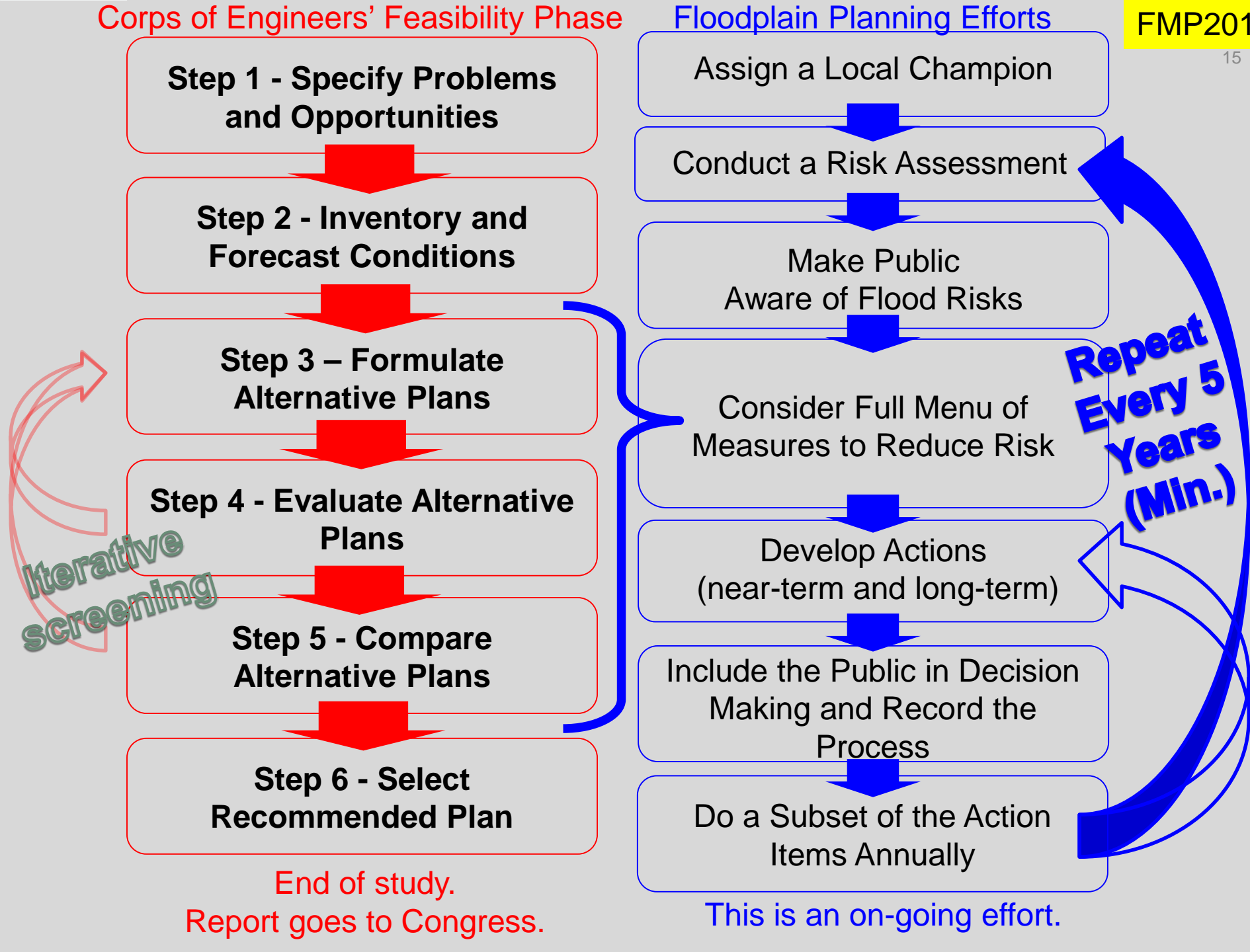
Include the Public in Decision
Making and Record the
Process

Do a Subset of the Action
Items Annually

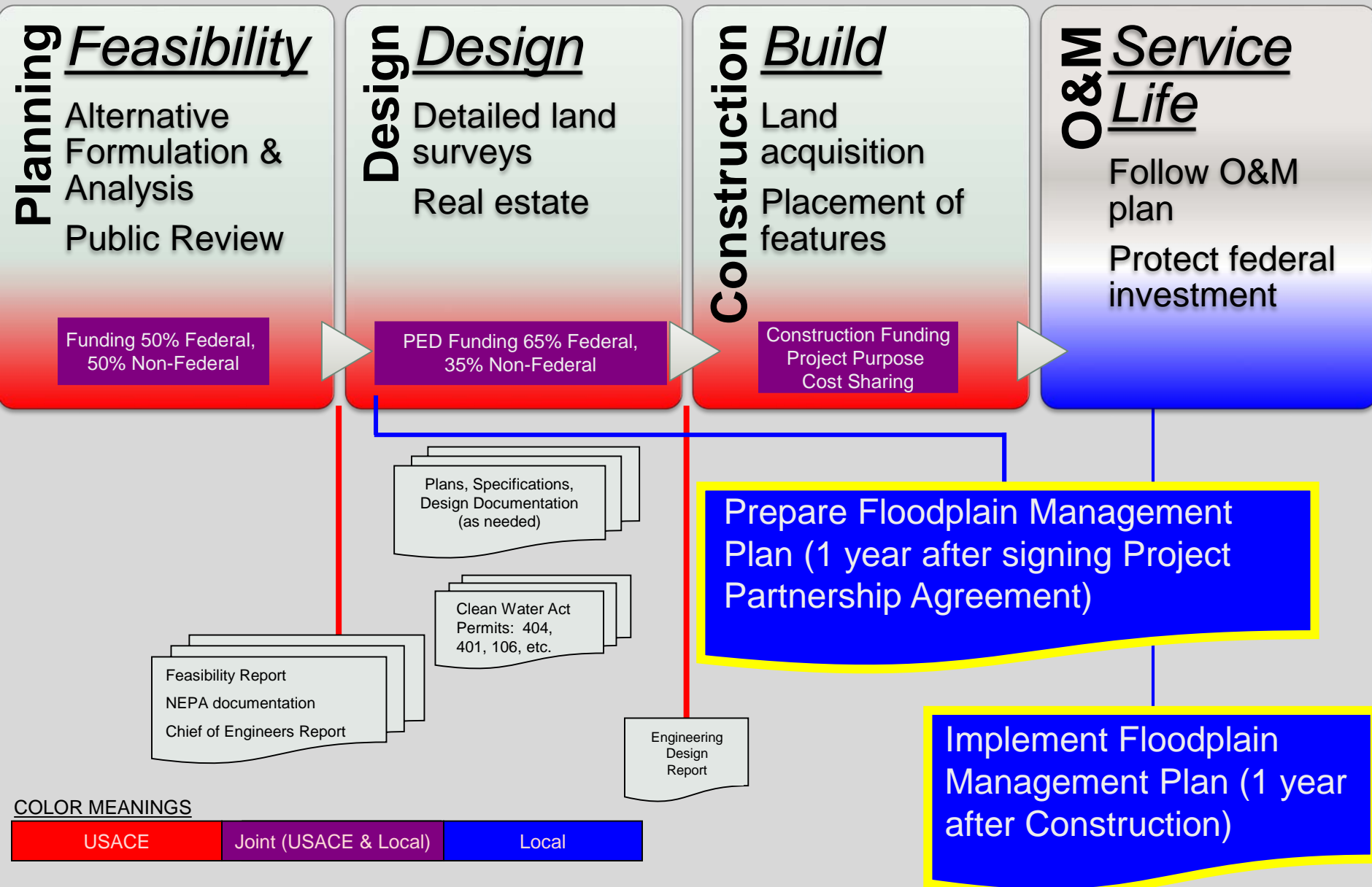
This is an on-going effort.

**Repeat
Every 5
Years
(Min.)**

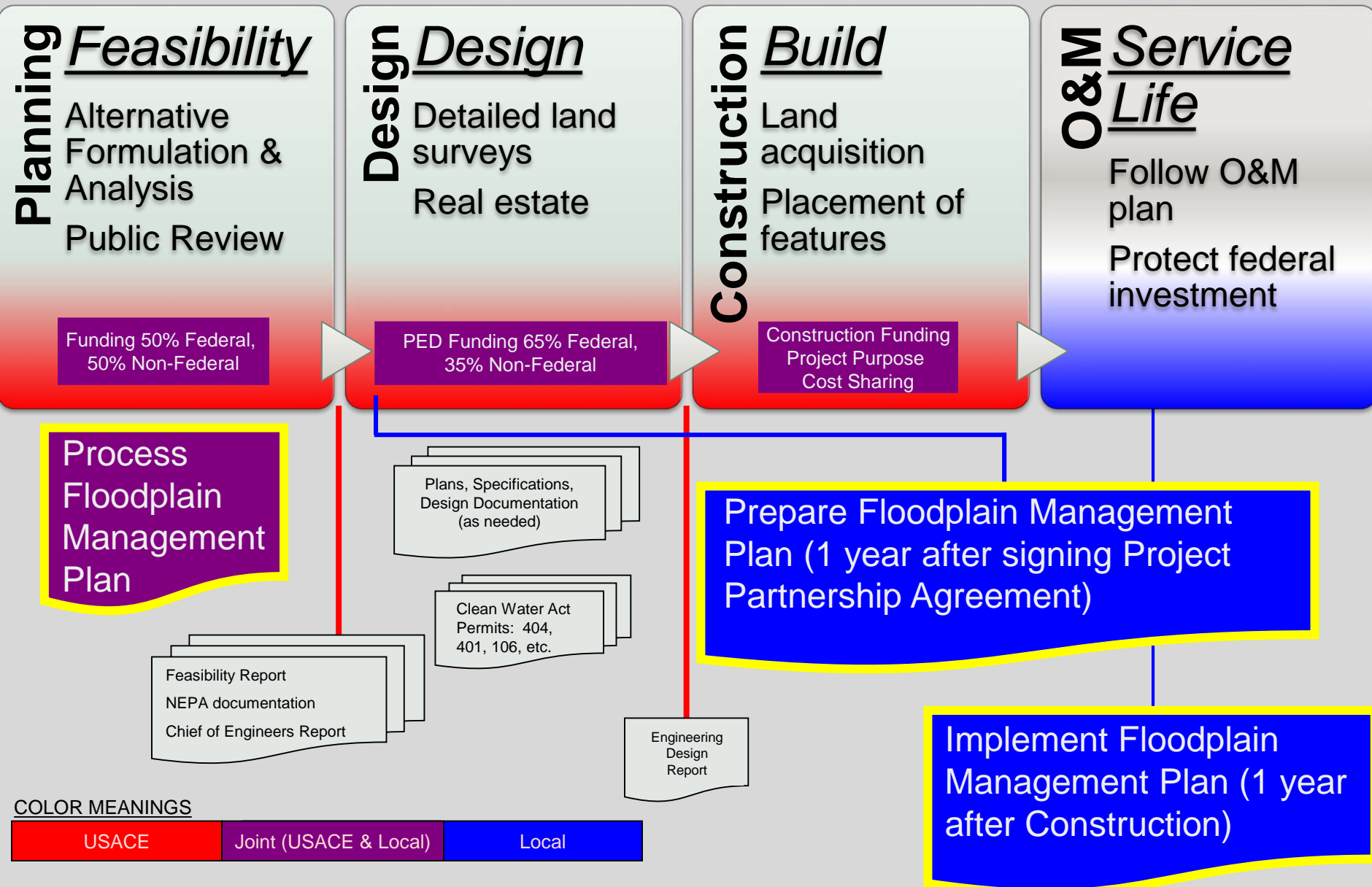
*Iterative
screening*



THE PLAN & CORPS' PROJECT PHASES



THE PLAN & CORPS' PROJECT PHASES



FEMA REQUIREMENTS



FEMA Hazard Mitigation

- Stafford Act requires states to have hazard mitigation plan
- All hazards
- Grant programs requiring this (44 CFR 201.6):
 - Hazard Mitigation Grant Program (HMGP)
 - Flood Mitigation Assistance (FMA)
 - Pre-Disaster Mitigation (PDM)

FEMA NFIP Community Rating System

- Incentives doing wise floodplain management
- FMP guidance
- Revised CRS Coordinator's Manual

DETAILS ON FMPS

Multiple plans about actions or risk management measures can be combined into one plan, which can reduce the communities' frustration, improve efficiency, enhance actions, and improve coordination.

- Capital Improvement Plan
- Master Plans
- Watershed Planning
- Stormwater Management Plan
- Interim Risk Reduction Measures Plan
- System-Wide Improvement Framework Plan
- Flood Risk Management Program Plan
- Local Hazard Mitigation Plan



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WHAT THEY ARE...AND AREN'T

Floodplain management plans (FMPs)...

...are not floodplain ordinances,

...are not emergency action plans,

...do not replace all hazard mitigation plans,

...enhanced flood hazard mitigation planning for the local hazard mitigation plan, and

...are not the tool, but *rather the toolbox!*



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A SHARED RESPONSIBILITY

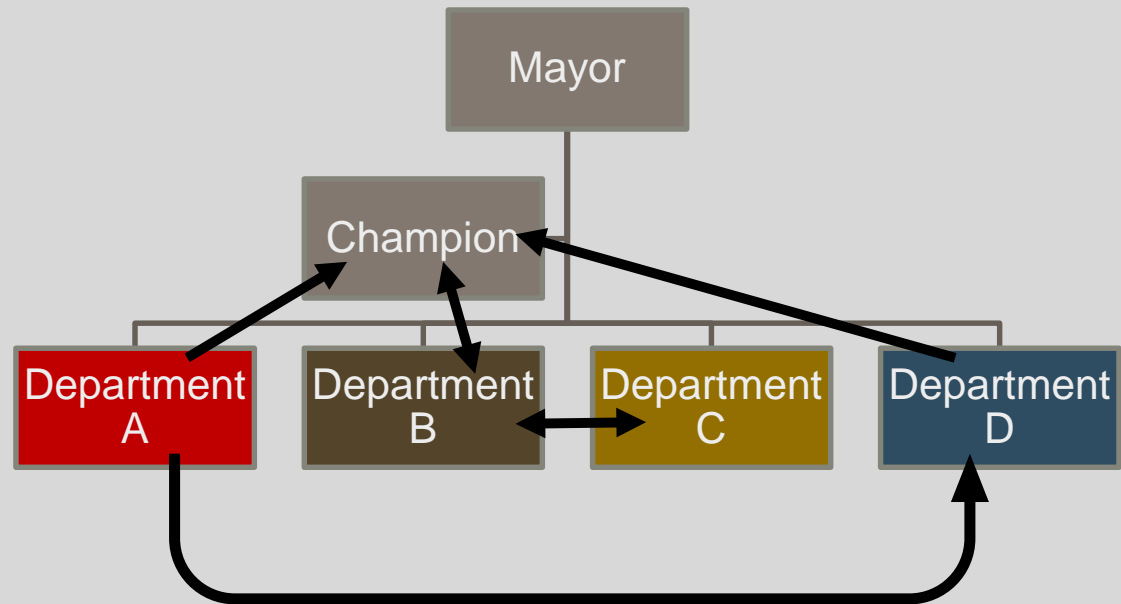
22

Floodplain management planning, and risk management in general, is a responsibility shared by many entities including federal, state, local, and individuals.



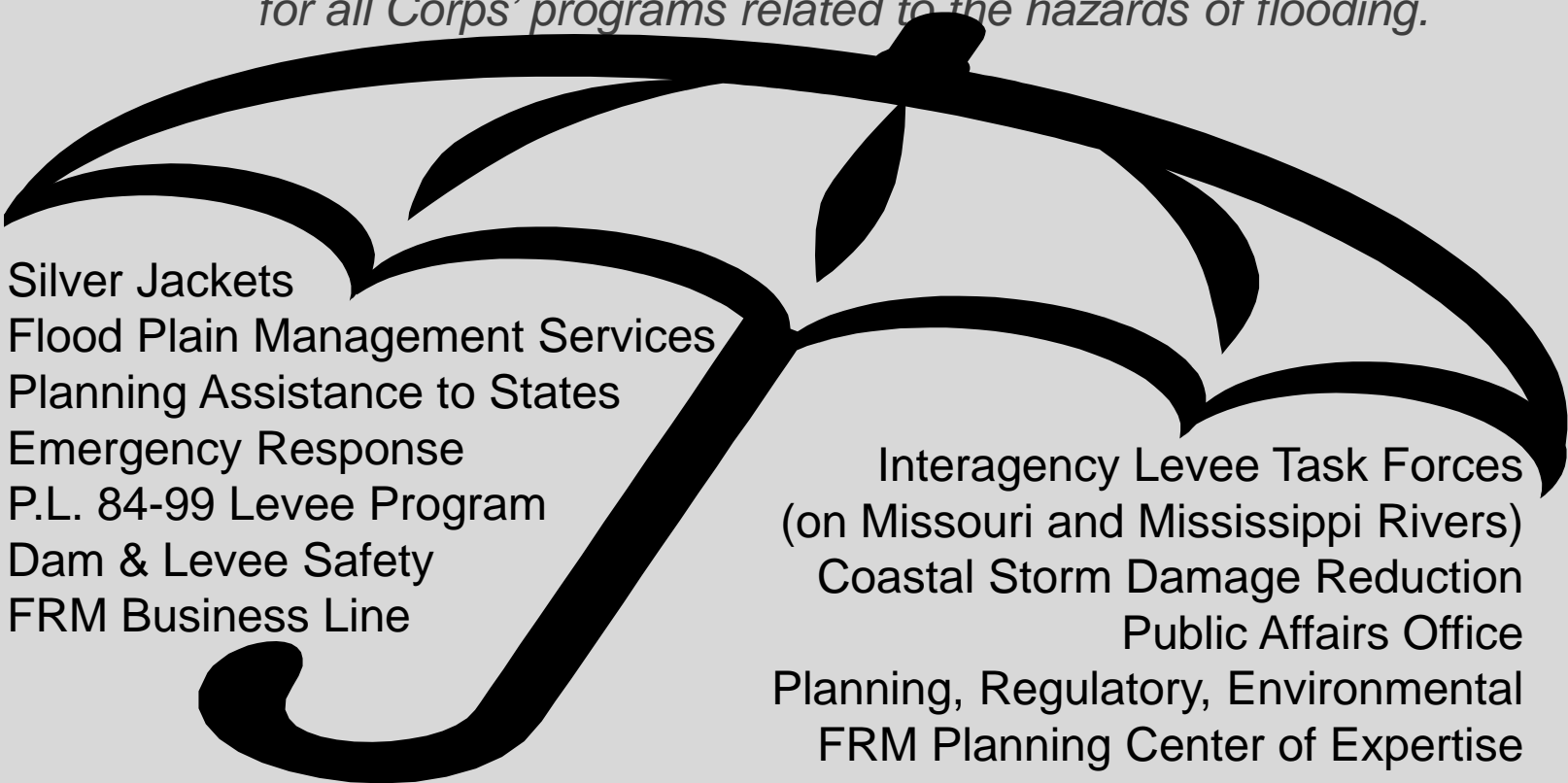
COORDINATING - INTERNALLY

Within a community, multiple departments have a role in risk management, especially those in public works and emergency management, and the departments can more effectively reduce flood risks when working together when these roles are documented.



USACE FLOOD RISK MANAGEMENT PROGRAM

*The USACE Flood Risk Management Program is the
umbrella program
for all Corps' programs related to the hazards of flooding.*



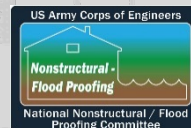
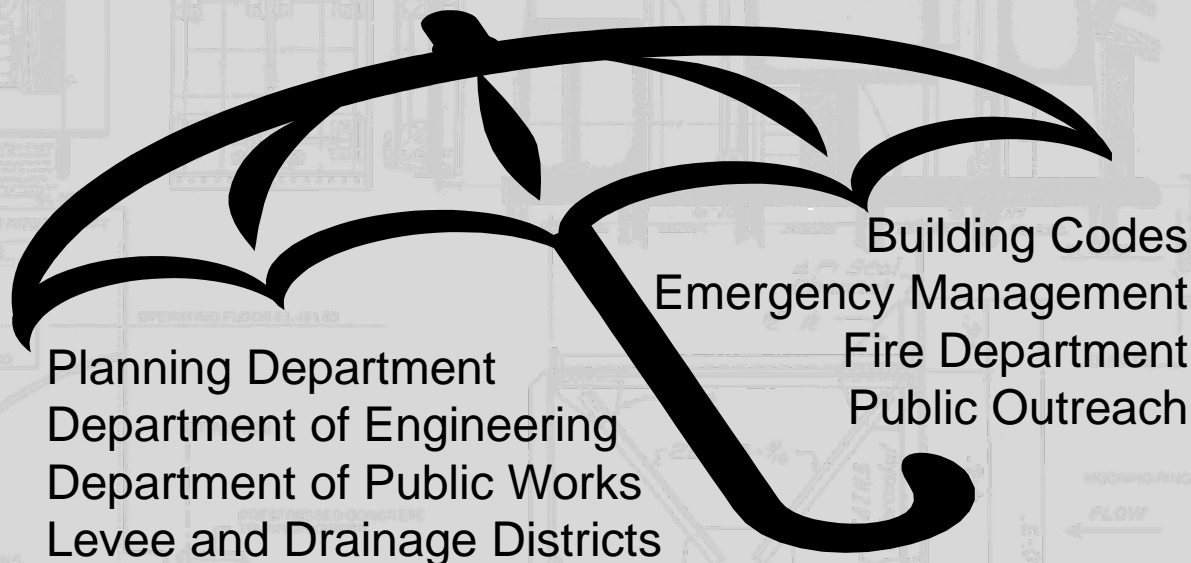
Silver Jackets
Flood Plain Management Services
Planning Assistance to States
Emergency Response
P.L. 84-99 Levee Program
Dam & Levee Safety
FRM Business Line

Interagency Levee Task Forces
(on Missouri and Mississippi Rivers)
Coastal Storm Damage Reduction
Public Affairs Office
Planning, Regulatory, Environmental
FRM Planning Center of Expertise
Federal Task Force, E011988, Unified National Plan
R&D, Critical Infrastructure, CERB, IWR International
Interagency Flood Risk Management Committee

AGENCIES AND COMMUNITIES AND TRIBES NEED THIS FLOOD RISK MANAGEMENT UMBRELLA

*The levee sponsor, communities, counties and tribes also need a **umbrella program***

for all community's programs related to the hazards of flooding.

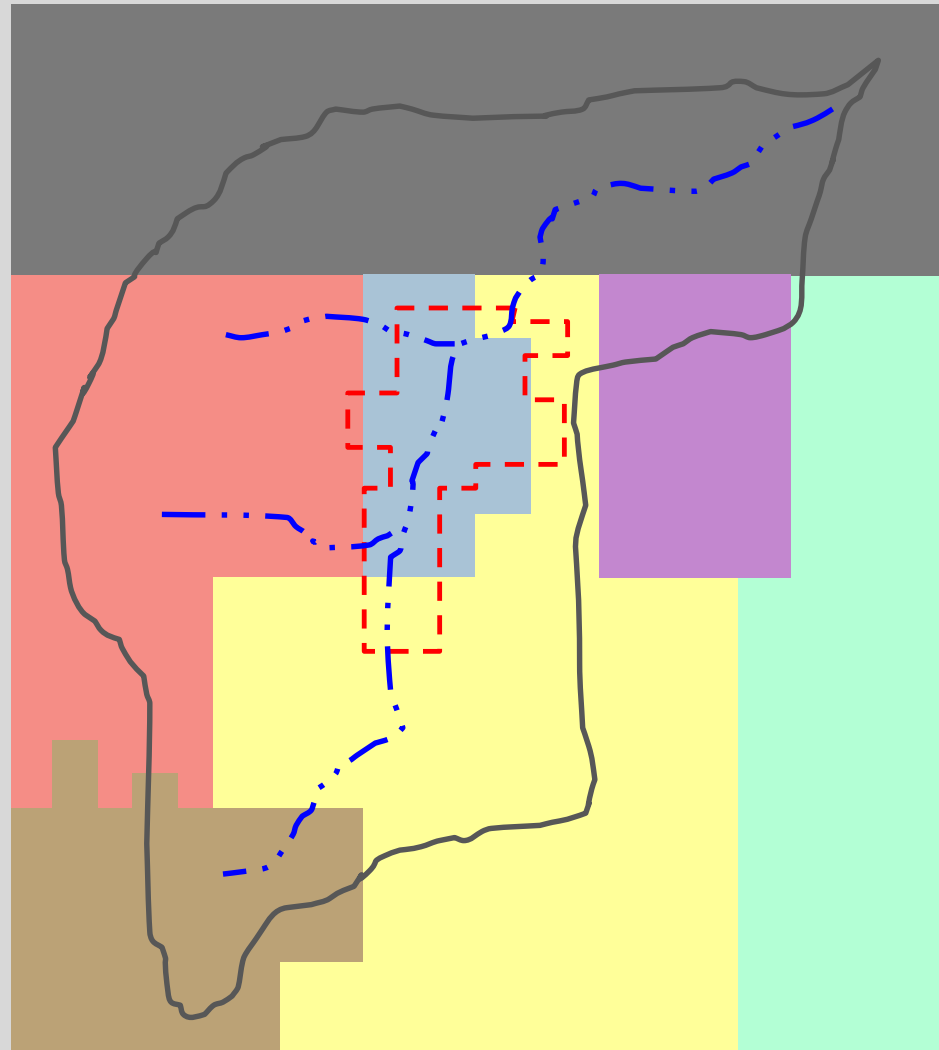
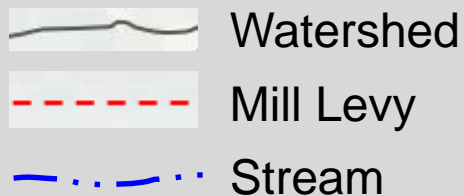


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COORDINATING - EXTERNALLY

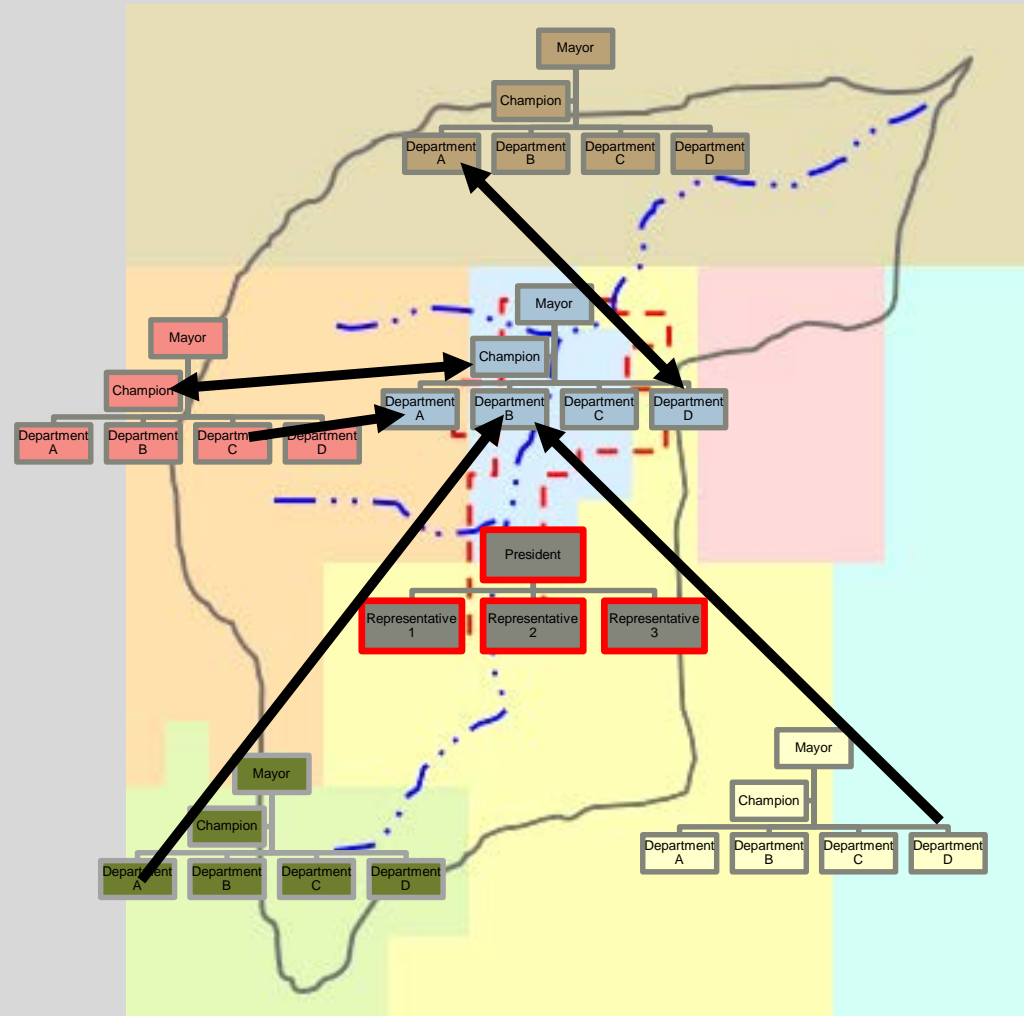
Sound floodplain management planning depends on communities coordinating across multiple entities (cities, counties, levee sponsors, drainage districts) and can clarify overlapping responsibilities to more effectively manage risks.



COORDINATING - EXTERNALLY

Should there be one way communication?

Should there be two way communications in some cases?



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FEDERAL ASSISTANCE WITH FLOOD RISK MANAGEMENT

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Some federal programs can address mitigation and do it through the processes defined for FMPs.

FEMA has assistance in several forms.

- FEMA provides annual grants to state hazard mitigation teams.
- FEMA assistance encourages local hazard mitigation plans that include flood hazards.
- FEMA regions have hazard mitigation planners on staff to provide guidance.

USACE provides technical assistance in many ways.

- USACE expertise is not limited to doing risk assessments, such as hydraulic modeling to determine flood risks, but also can be used to develop and do planning work about flood risk management measures.
- USACE has emergency management expertise can aid communities in mitigating flood risks.
- USACE planners can help communities develop FMPs through studies and design work, including public involvement efforts.



CORPS OF ENGINEERS HELP

Flood Risk Management (FRM)

- <http://www.iwr.usace.army.mil/Missions/Flood-Risk-Management/Flood-Risk-Management-Program/>

Silver Jackets Program, **Interagency Program Guide**

- http://silverjackets.nfrmp.us/Portals/0/doc/Pennsylvania/PA_SJ_Program_Guide_Revised_2015.pdf?ver=2015-10-23-223334-177

National Nonstructural / Flood Proofing Committee

- www.usace.army.mil/missions/civilworks/projectplanning/nfpc.aspx

FloodPlain Management Services Program, **FPMS Factsheet**

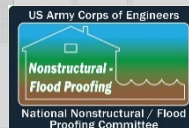
- www.usace.army.mil/missions/civilworks/projectplanning/nfpc.aspx

Planning Assistance to States, **PAS Factsheet**

- http://www.iwr.usace.army.mil/Portals/70/docs/frmp/PAS_Factsheet_13SEP12.pdf

Continuing Authorities Program, **FRM FAQ and CAP details**

- <http://www.iwr.usace.army.mil/Missions/Flood-Risk-Management/Flood-Risk-Management-Program/Frequently-Asked-Questions/FAQ-USACE-FRM-Authorities/>



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OTHER FEDERAL PARTNERS' PROGRAMS

DOT Emergency Relief

- <http://www.fhwa.dot.gov/programadmin/erelief.cfm>

EPA Water Infrastructure and Finance Innovation Act Program

- <https://www.epa.gov/wifia/learn-about-wifia-program>

EPA Green Infrastructure Program

- <https://www.epa.gov/green-infrastructure>

EPA Clean Water Act Section 319 Grants

- <https://www.epa.gov/polluted-runoff-nonpoint-source-pollution/319-grant-current-guidance>

FEMA National Flood Insurance Program

- <https://www.fema.gov/national-flood-insurance-program>

FEMA NFIP, the Community Rating System

- <https://www.fema.gov/national-flood-insurance-program-community-rating-system>

OTHER FEDERAL PARTNERS' PROGRAMS

FEMA Flood Mitigation Assistance Grant Program

- <https://www.fema.gov/flood-mitigation-assistance-grant-program>

FEMA Hazard Mitigation Grant Program

- <https://www.fema.gov/hazard-mitigation-grant-program>

FEMA Public Assistance Grants

- <https://www.fema.gov/public-assistance-local-state-tribal-and-non-profit>

HUD Community Development Block Grants

- <https://www.hudexchange.info/programs/cdbg-dr/>

NOAA Storm Surge and Coastal Inundation Modeling, Forecasting, and Prediction

- http://www.stormsurge.noaa.gov/models_obs_modeling.html

NRCS Agricultural Conservation Easement Program

- <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/easements/acep/>

NRCS Emergency Watershed Protection Program

- <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/ewp/>

NRCS Watershed and Flood Prevention Operations Program

- <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/landscape/wfpo/?cid=nrcs143008271>

OTHER FEDERAL PARTNERS' PROGRAMS

NWS Advanced Hydrologic Prediction Services and River and Flood Forecasts

- <http://water.weather.gov/ahps2/>

SBA Disaster Loan Program

- <https://www.sba.gov/loans-grants/see-what-sba-offers/sba-loan-programs/disaster-loans>

USGS National Streamflow Information Program

- <http://water.usgs.gov/nsip/>

USGS Assessing Societal Vulnerability to Natural Hazards Program helps identify members of community particularly vulnerable to the impacts of flooding.

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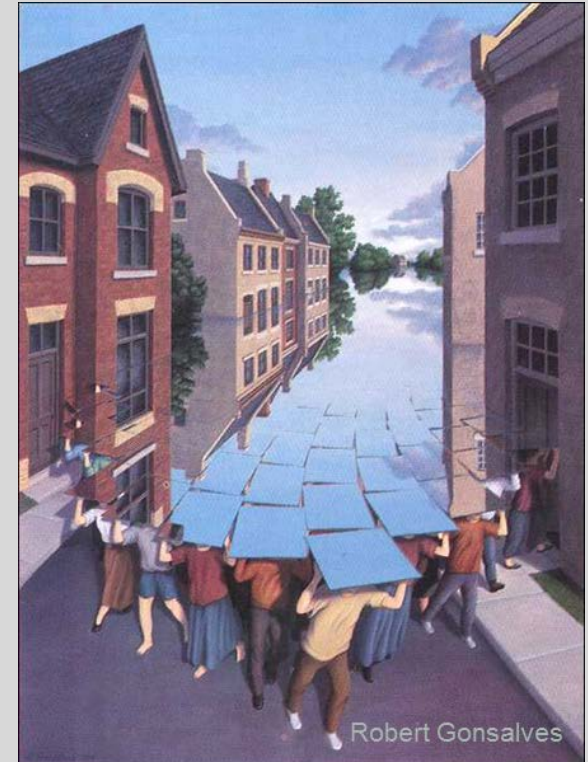
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FOLLOW THESE STEPS AND MAKE YOUR PLAYBOOK

A good floodplain management plan is a product of an interactive **process** with the stakeholders, the public, and the community elected officials or decision makers.

- Understand of the flood **risk**
- Document the process' **decision history**
- Get **public participation**, list the **goals**, workout the best measures
- **Evaluate** every measures
- List your **actions** about the right measures
 - ▶ What will be done
 - ▶ Who will be doing it
 - ▶ When

Use the plan to define your communities communication processes, including roles & responsibilities, and a charter of commitment



FLOOD RISKS DEFINED

Flood hazards that need to be discussed in your floodplain management plan:

- Inundation and Depth
- Velocity
- Proximity of the Population / Consequences
- Rate of Rise

Consider amount of warning time.

Know where **critical structures** are and what your critical infrastructure is.



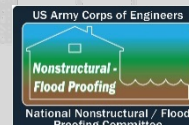
GOALS – THE DESTINATION

Agreement is needed on the general goal or goals.

Is the goal to...

- Prevent loss of life?
- Reduce flood damage?
- Restore environmental areas?
- Preserve cultural resources?

These are some possible examples, but they do not include specifics, which would help.



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EVALUATING MEASURES

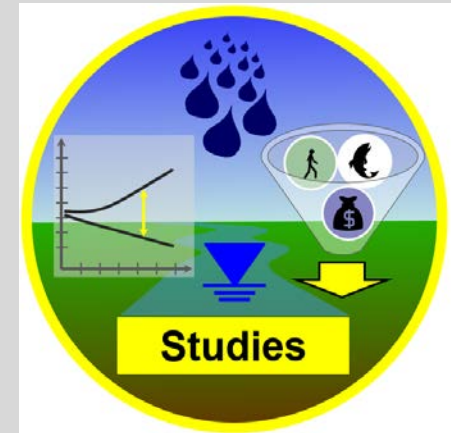
Each measure needs a community-level decision and evaluated with public input. One of these four **terms** should be tagged to each measure in order to adequately complete an FMP and effectively include the public in the risk informed decision making process:

“Not Recommended”

“Further Study Needed”

“Recommended”

“Effective”



All these terms are needed, as their definitions helped the community to identify the action items in their hazard mitigation efforts.

“Not Recommended” The tool was evaluated and not found to be appropriate for the community.

A feature like Dams may simply not be possible due to lack of real estate

An activity like Building Codes may not be useful in entirely undeveloped farm land

“Further Evaluation Needed” The tool is appropriate, but funds needed to study more.

Freeboard Ordinance might need to be compared to potential Zoning

Channel Widening may need further hydraulic study to address bridges

“Recommended” The tool has been studied and is known to work in the community, although has yet to be done.

A feature like a Levee awaiting construction funds, design, real estate

An activity like a land regulation needs time to develop before adoption

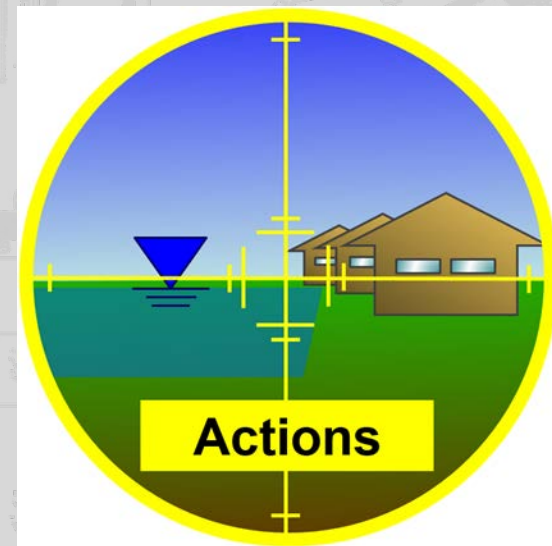
“Effective” (or **“Highly Effective”**) These are the tools that have been chosen and implemented, and has proven reduce flood risk.

A Stream Setback Distance that has proven to prevent flood damage

Channel Deepening feature still requires maintenance and scour repair

ACTION PLAN

- This is the most important essential element of the FMP.
- The list of actions depends on the decisions about the measures.
- These actions will be prioritized.
- The action list is the basis for the next steps

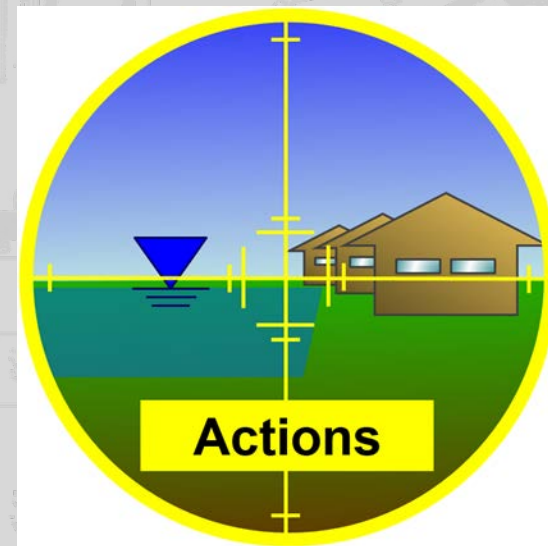


ACTIONS - PRIORITY

The FMP becomes a playbook as the **terms** help the leader that is champion for the FMP translates each measure's evaluation into an **action**.

The final step will be **prioritizing** the actions.

- This is informed by the risk portfolio that comes from the risk assessment.
- Identified actions that will get first budget priority.
- Dates should be generally expressed, where at least short-term and long-term items are defined.



PITFALLS

Pitfalls regarding these Essential Elements:

- A detailed risk assessment can unnecessarily delay an FMP. A detailed risk assessments: can be a future action item.
- Not including the public will significantly undermine the success of an FMP, because they need to be aware of the risks and involved in narrowing the list of measures.
- Decisions made without integrated process across departments can waste funding or miss opportunities



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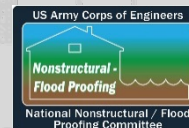
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DEVELOPMENT PROCESS

FMPs should use the following process:

- First, a planner should be identified that will have **responsibility** for the accomplishment and long-term stewardship of the **FMP** and the outcomes noted below.
- Organize **public involvement**, including between technical experts and then at the level for those unfamiliar with solutions to flood hazards.
- Gain public understanding of the flood risks including a risk assessment that identifies and analyzes the risks.
- Have the public involved in the goals for addressing the floodplain management planning effort, because floodplains can be used many ways and the goals will determine how each measure is evaluated.
- Get public engagement in reviewing measures to increase agreement about the needed actions and document these meetings, including the stakeholders' views on whether each and every measure is evaluated as Not Recommended, Further Evaluation Needed, Recommended, or Effective.
- Be mindful that one communities developed FMP will be unique and that no standard FMP exists



FLOODPLAIN MANAGEMENT PLANS ARE A VEHICLE FOR THE PUBLIC SUCCESS

Good floodplain management planning helps us move from...

**Informing and
listening to
the public**

**Engage in
problem
solving**

**Develop
agreements
on actions
needed**

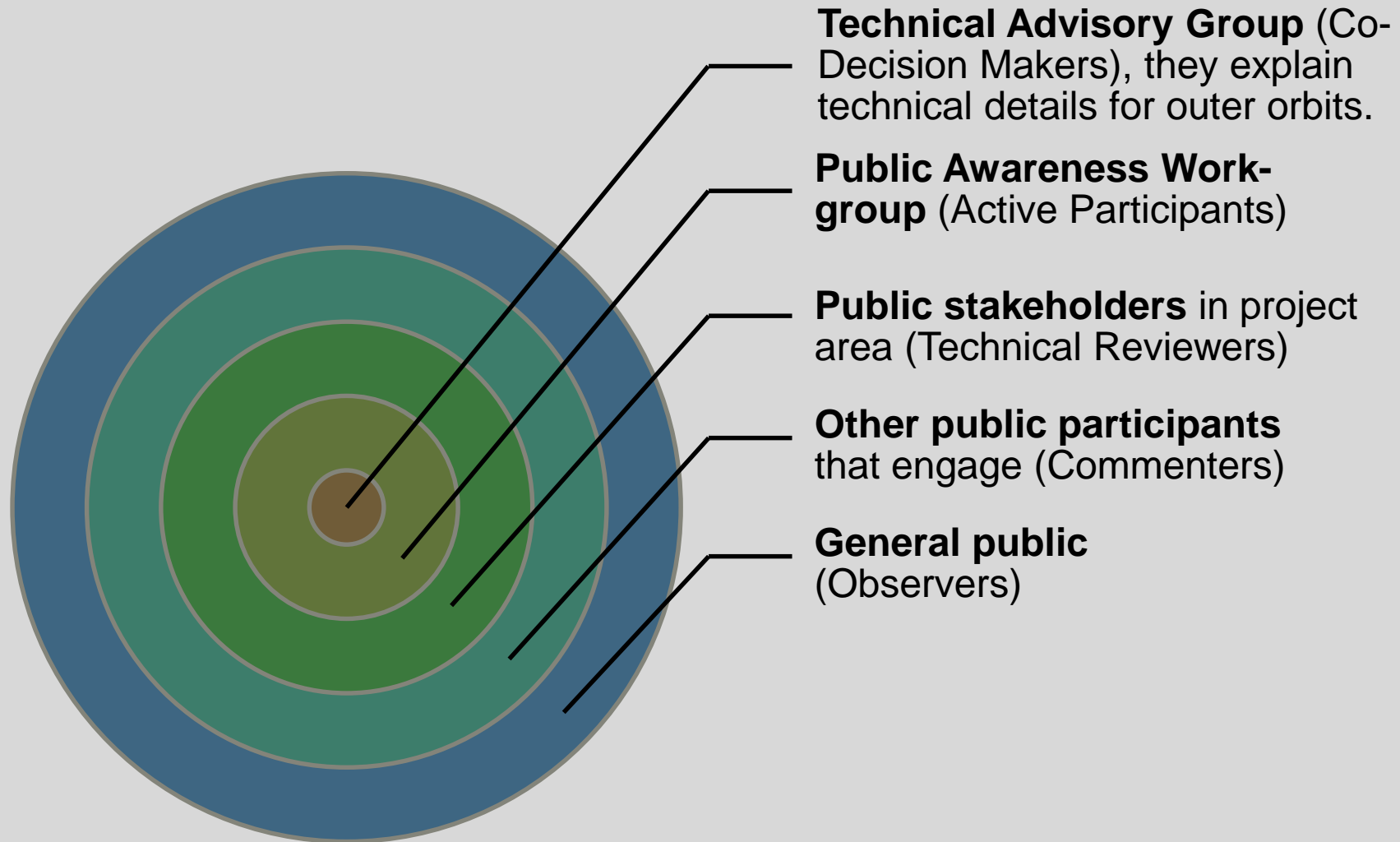


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PUBLIC INVOLVEMENT

Orbits of Participation



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THE MEASURES – HOW YOU GET THERE

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The Menu of Measures may be put in two sets. Many of these items are activities, while some are features that can be built.

FLOODWATERS

Physical or structural measures include constructible features such as

- Detention Basins
 - Dams
 - Floodwalls
 - Levees and Berms
 - Channel
 - ♦ Straightening
 - ♦ Widening
 - ♦ Deepening
 - ♦ Diversions
 - Bridge Enlargements
 - Conveyance Modifications
- And these activities
- Clearing and Snagging Debris
 - Pumping
 - Land Treatment And Infiltration



FLOODPLAINS

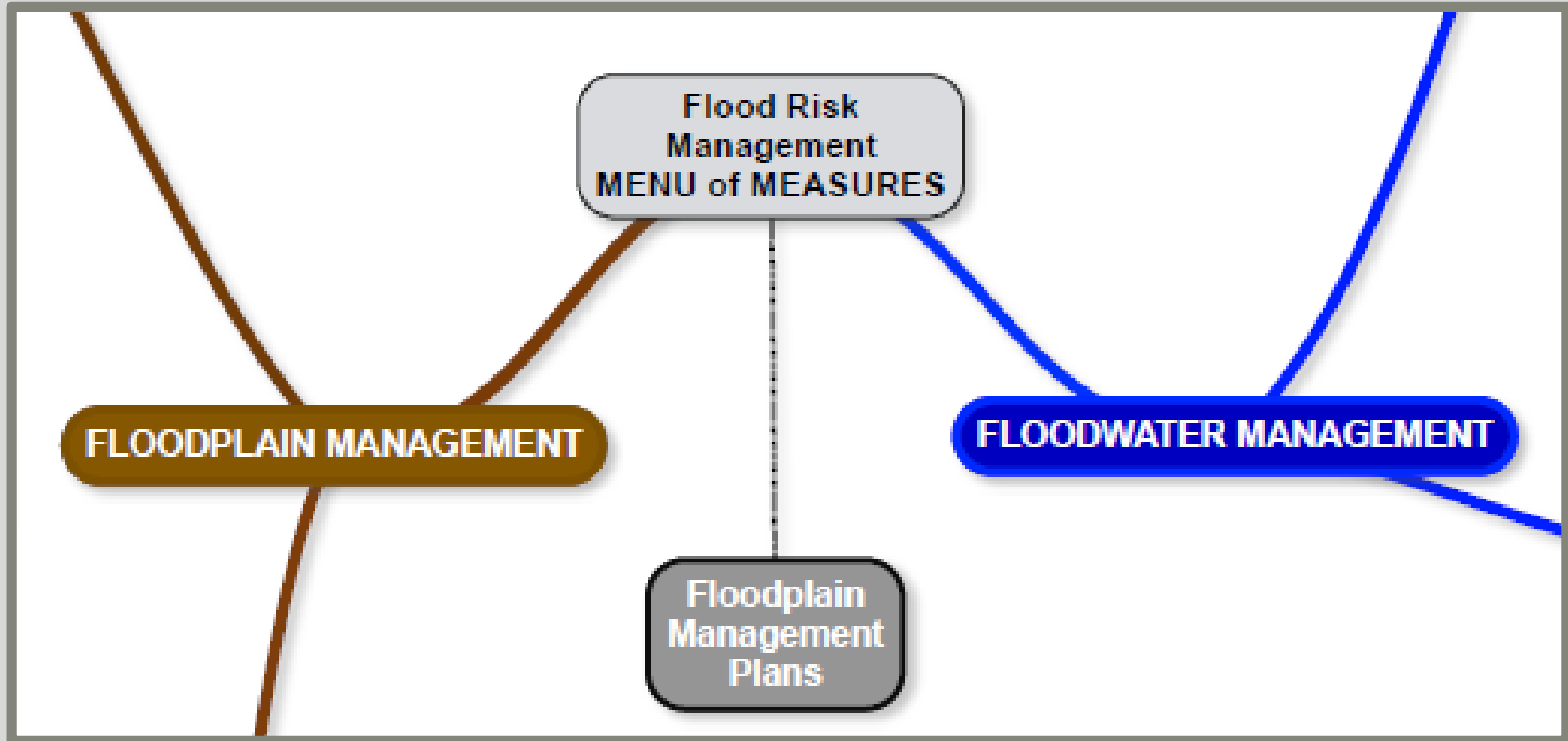
Nonstructural flood proofing measures include

- Elevation
- Relocation
- Buyout / Acquisition
- Dry Flood Proofing
- Wet Flood Proofing

Nonphysical nonstructural measures include:

- Flood Warning Systems
- Flood Insurance
- Floodplain Mapping
- Flood Emergency Preparedness Plans
- Land Use Regulation
- Zoning
- Evacuation Plans
- Risk Communication

CATEGORIES OF FLOOD RISK MANAGEMENT MEASURES



- FEATURES
- ACTIVITIES

- FEATURES
- ACTIVITIES

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1. Benefits of Implementing a Floodplain Management Plan
2. Background
3. Floodplain Management Plans
4. Coordination and Floodplain Management Planning
5. Federal Programs on Floodplain Management
6. Essential Elements of a Floodplain Management Plan
How To Develop a Floodplain Management Plan
7. The Menu of Measures for Flood Risk Management
8. [What a Floodplain Management Plan Looks Like](#)
9. Integration and Coordination Across Departments and Communities
10. Conclusion

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WHAT THE PLAYBOOK LOOKS LIKE...

The typical FMP includes

- a simple picture of the risks,
- the list of solutions, and
- prioritized next steps,

This is like a playbook that says who does what and when they will do it.

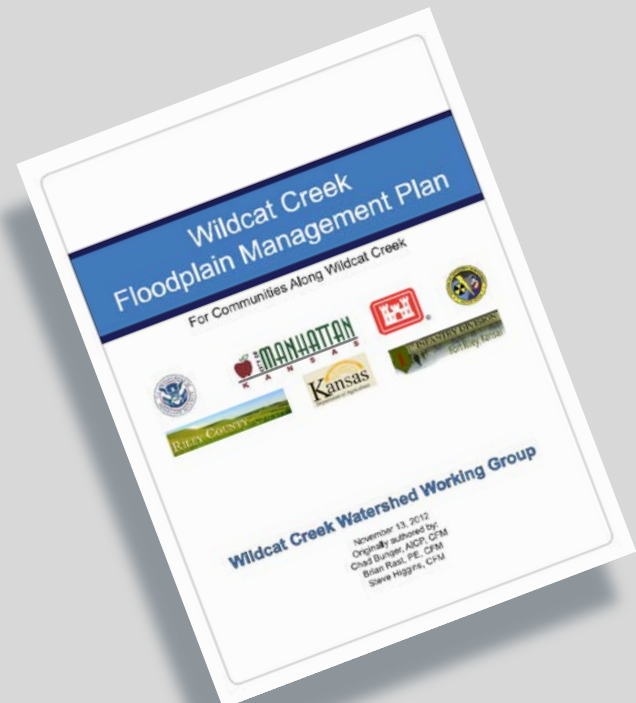
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What
It
Looks
Like



LATER VERSIONS LOOK LIKE...

- More detailed risk assessments may be done with periodic revisions.
- Specific goals can be listed, which is frequently unique in each community, thus making no two FMPs the same (because of next item, c.)
- The full menu of measures must listed and include reasons for inclusion or exclusion.
- Public involvement efforts can be documented, which adds value to the decision history documented.



LATER VERSIONS LOOK LIKE...

- Provide an example table of contents of an actual adopted FMP.
- A FMP is a living plan that is successful when the action plan is periodically revised, and FMPs will eventually need a revision to the risk assessment, as well.



GOALS AND OBJECTIVES



Brush Creek Basin

Vision, Mission, Goals & Objectives

...developed cumulatively to guide watershed management planning and feasibility study activities

THEME: INTEGRATED, COLLABORATIVE MANAGEMENT

Goal: Create opportunities for all communities and special interests in the watershed.

Our Vision: A healthy and

Objectives

- Develop a development
- Create a

Goal: Create an economic

Objectives

- Respect, project plan
- Generate opportunity
- Support n
- Create ec development
- Provide n

Goal: Establish

Objectives

- Establish
- Establish
- Develop o
- Identify/c
- Coordinat
- Provide to
- Create an implemen
- Establish

Goal: Manage flood risk along Brush Creek and its tributaries.

- Compile known flood risks in the watershed from local stakeholders and characterize the flood risks in terms of public safety (depth, velocity, population-at-risk, warning time and rate-of-rise).
- Evaluate and improve existing flood warning systems and response plans.
- Use a multipurpose stream corridor approach to manage flood risks (floodproofing, building elevation, buyouts, etc.).
- Evaluate basin-wide greenworks (BMPs, LIDs, native species, rain gardens, etc.) with specific focus on 20%-chance to 50%-chance flood events.
- Develop and implement land use planning tools (i.e. green solutions, buffer zones, buyouts) focused on flood risk management.
- Assess the performance of the basin's combined stormwater infrastructure as a system (specifically detention basins and design standards).
- Establish a process for consistent and transparent technical review of no-rise certifications and watershed impact issues for stronger watershed management (and develop required organizational structure).

THEME: ENVIRONMENTAL PLANNING, DESIGN, AND CONSTRUCTION

Goal: Coordinate, integrate and balance flood management activities, water quality improvement strategies, recreational improvements, sediment management, and ecological restoration activities.

Objectives

- Create/empower watershed protection oversight body.
- Develop policies and practices that support sustainable neighborhoods, economic development, and redevelopment throughout the watershed.

Goal: Manage flood risk along Brush Creek and its tributaries.

Objectives

- Compile known flood risks in the watershed from local stakeholders and characterize the flood risks in terms of public safety (depth, velocity, population-at-risk, warning time and rate-of-rise).
- Evaluate and improve existing flood warning systems and response plans.
- Use a multipurpose stream corridor approach to manage flood risks (floodproofing, building elevation, buyouts, etc.).
- Evaluate basin-wide greenworks (BMPs, LIDs, native species, rain gardens, etc.) with specific focus on 20%-chance to 50%-chance flood events.
- Develop and implement land use planning tools (i.e. green solutions, buffer zones, buyouts) focused on flood risk management.
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What
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EXAMPLE: MEASURE EVALUATIONS

Strategies and their tools	Name of Reach	Name of Reach	Name of Reach	Name of Reach	Name of Reach	Name of Reach
<u>Reach #:</u>	Reach1	Reach2	Reach3	Reach4	Reach5	Reach6
Strategy: Modifying The Impact Of Flooding						
Tool: Information And Education						
Tool: Flood Insurance						
Tool: Tax Adjustments						
Tool: Emergency Relief						
Tool: Post-Flood Recovery Processes						

EXAMPLE: MEASURE EVALUATIONS

Evaluation Definitions NR Not Recommended FEN Further Evaluation Needed R Recommended E Effective HE Highly Effective		Konza River (Unprotected Side of Levee)	Blue Township	Reaches A-D, Urban Elastique, Various Sub-Watersheds	Rural Willet County, Wylde Blue River	Rural Tribe County, Wylde Blue River	River Pond State Park Vicinity
Strategies and their tools		Reach1	Reach2	Reach3	Reach4	Reach5	Reach6
Strategy: Modifying The Impact Of Flooding							
Tool: Information And Education		E	E	R	E	E	E
Tool: Flood Insurance		E	E	E	HE	HE	E
Tool: Tax Adjustments		FEN	FEN	FEN	FEN	FEN	FEN
Tool: Emergency Relief		R	R	R	R	R	R
Tool: Post-Flood Recovery Processes		E	E	E	E	E	E

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TABLE 9. ACTION ITEMS, GOALS, AND RECOMMENDATIONS.

Action Item	Goal: Collaborative Approach	Goal: Manage & Reduce Flood Risks	Goal: Protect & Preserve Riparian Corridor	Goal: Balance Development Needs & Floodplain Functions	Goal: Improve Public Understanding of Flood Risks	City	County	Timeline
Adopt the Wildcat Creek Floodplain Management Plan (FMP)	X					X	X	3 months
Create a City/County Development Coordination Process	X	X	X	X		X	X	3 months
Amend the Mult-Jurisdictional Hazard Mitigation Plan to include the FMP	X	X		X			X	6 - 12 months
Research and, if acceptable, form a Wildcat Creek Watershed District	X	X	X	X			X	2+ years
Develop a comprehensive flood hazard mitigation plan	X	X	X	X		X	X	2+ years
Adopt Future Conditions model and Flood Insurance Rate Maps		X	X	X		X	X	1 year
Research and adopt higher standard flood plain regulations		X	X	X		X	X	1 year
Develop a Wildcat Creek recreation plan	X	X	X		X	X	X	12 - 18 months
Develop a comprehensive public outreach plan	X	X			X	X	X	12 months
Research and update, where needed development policies and regulations		X	X	X		X	X	12 months
Adopt stormwater detention/retention policies							X	12 - 18 months
Join the Community Rating System		X	X	X	X	X	X	12 - 18 months
Maintain and expand the existing flood warning systems		X			X	X	X	On-going

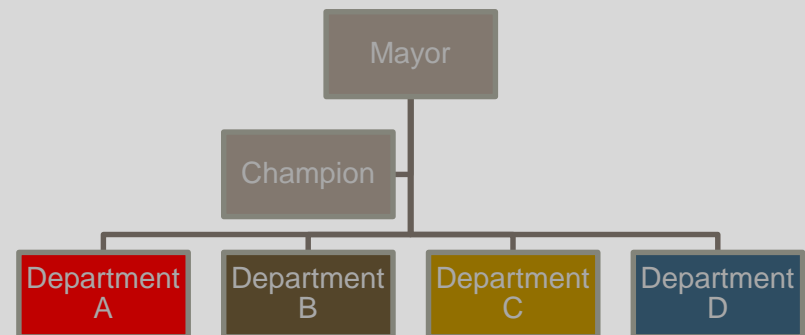
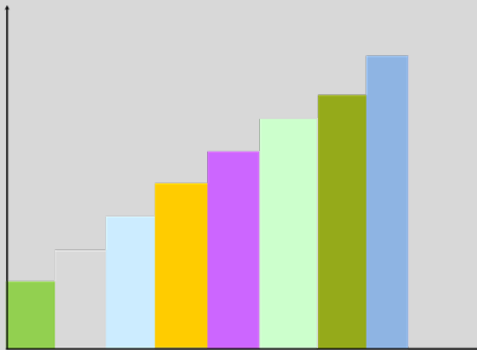
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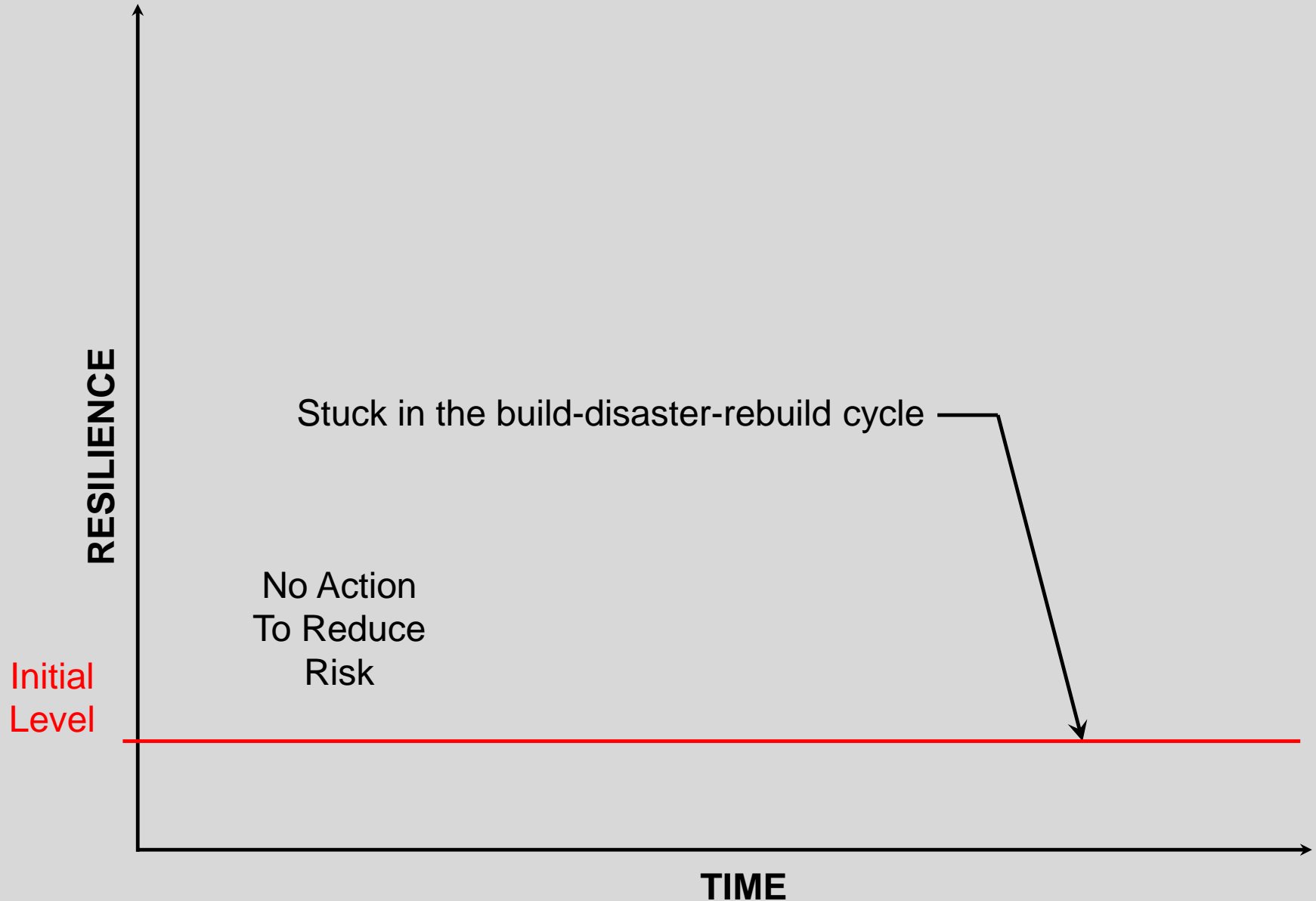
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INTEGRATION AND COORDINATION

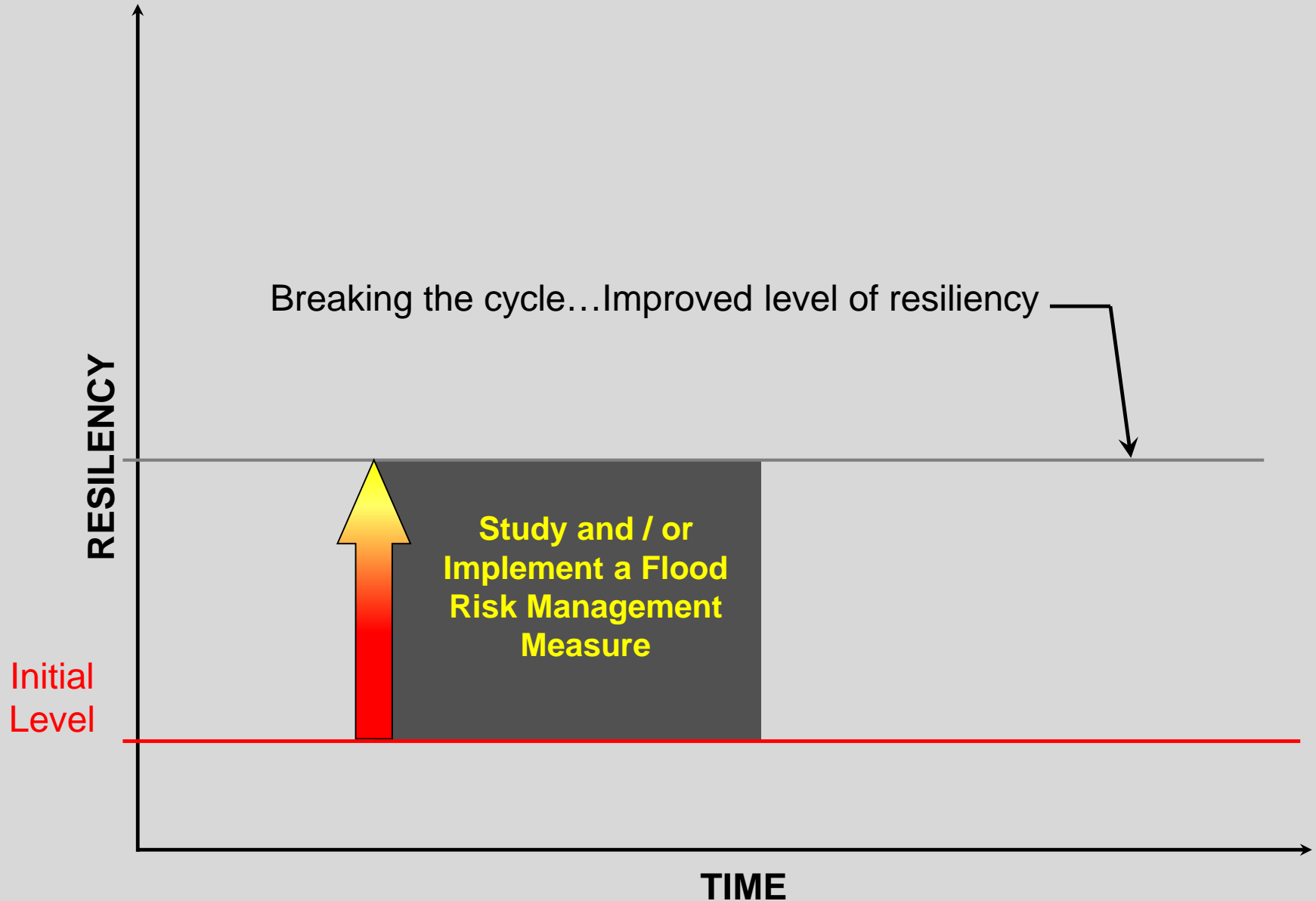
- The reality is mitigation efforts overlap with other activities in the flood risk management life-cycle, and when departments or various disciplines do not coordinate, we frequently miss opportunities.
- People in specific roles and departments are proponents for various measures.



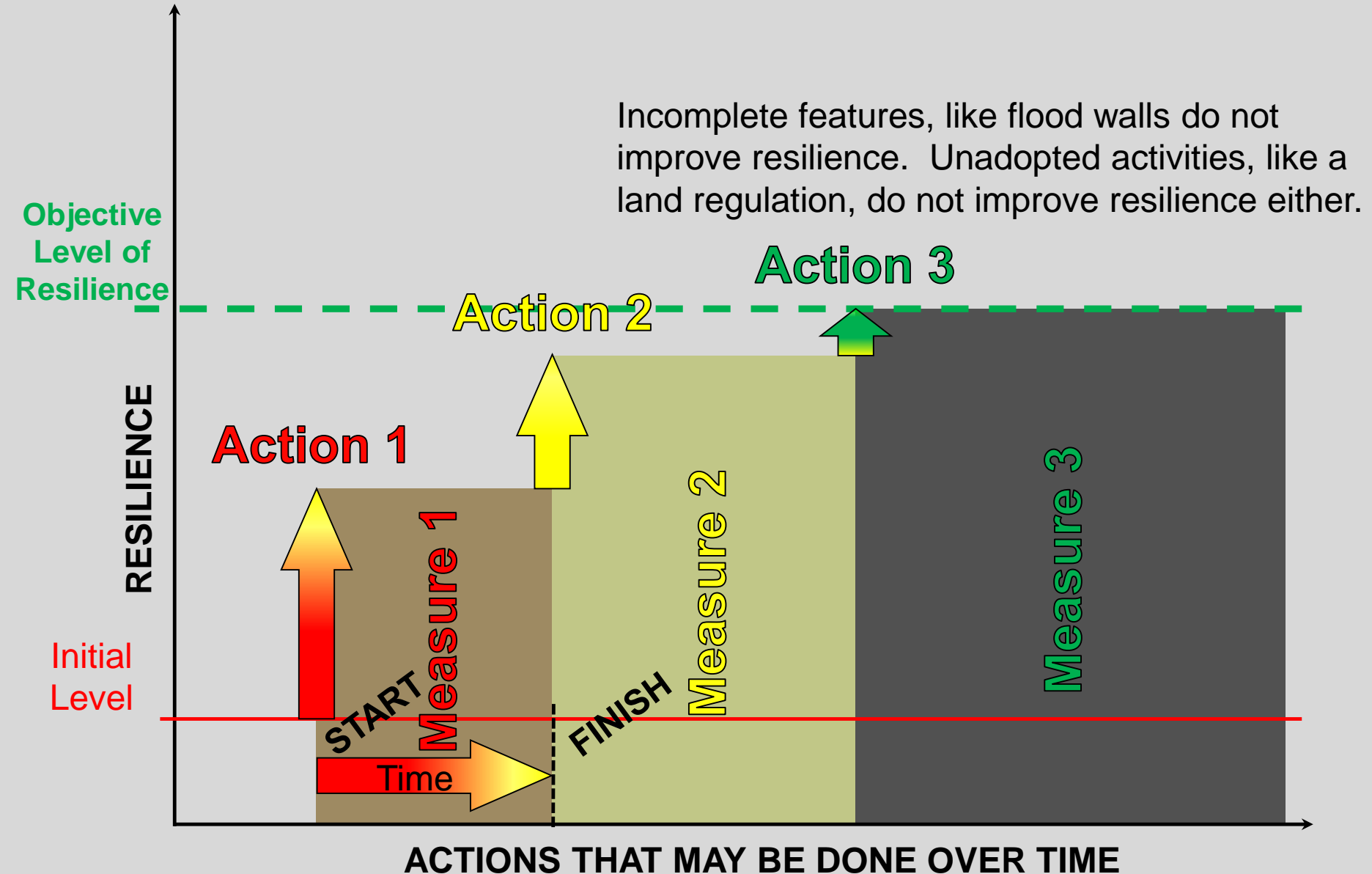
HOW CAN WE IMPROVE RESILIENCE?

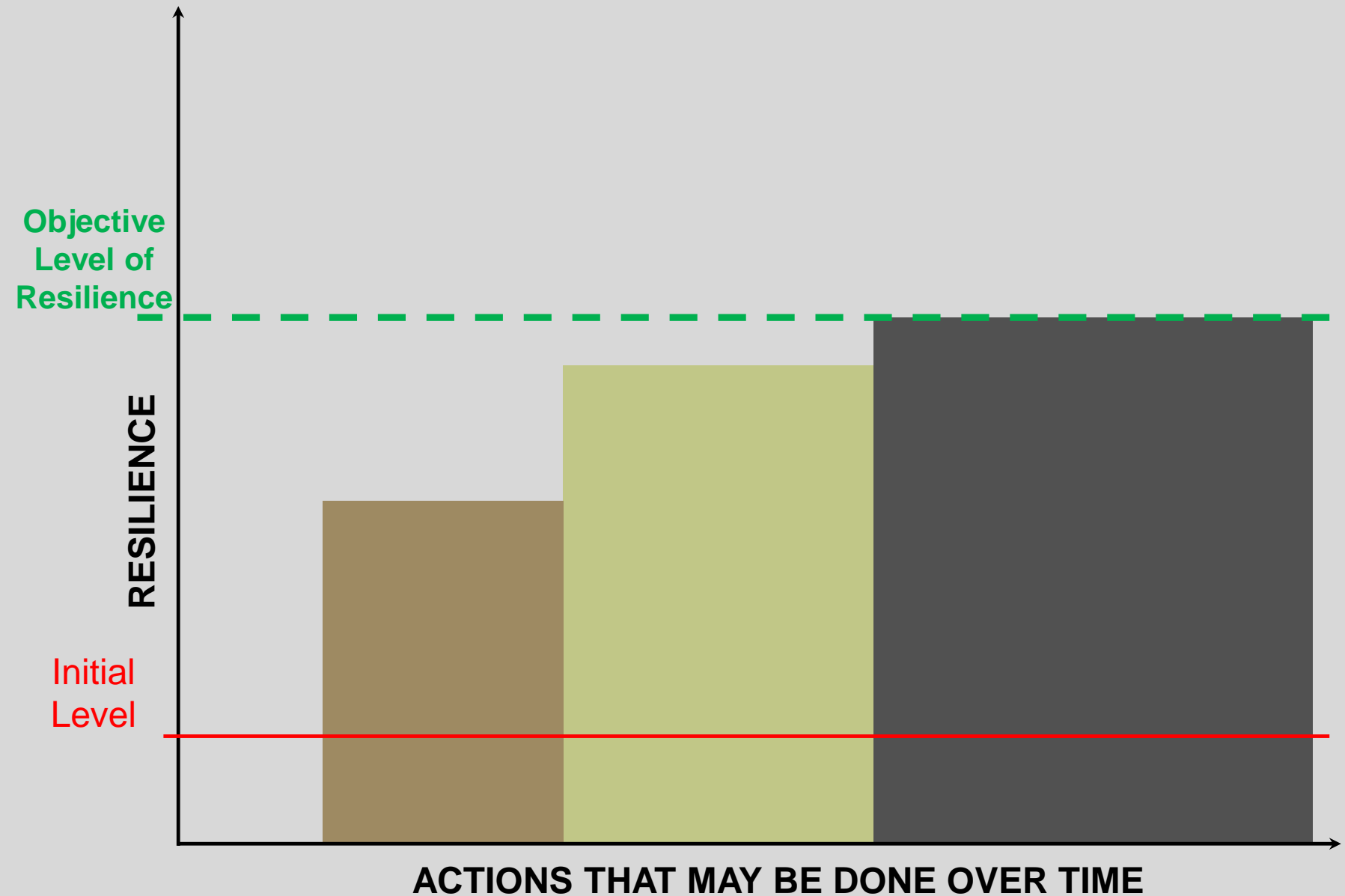


STOP THE MADNESS AND START TO MITIGATE



IMPROVING RESILIENCE!





KNOW YOUR ROLE

- Federal / State / Local
- Local
- Individual Property Owner
- ALL



CORPS' ROLES DURING LIFE CYCLE

■ Civil Works Project Planning and Design

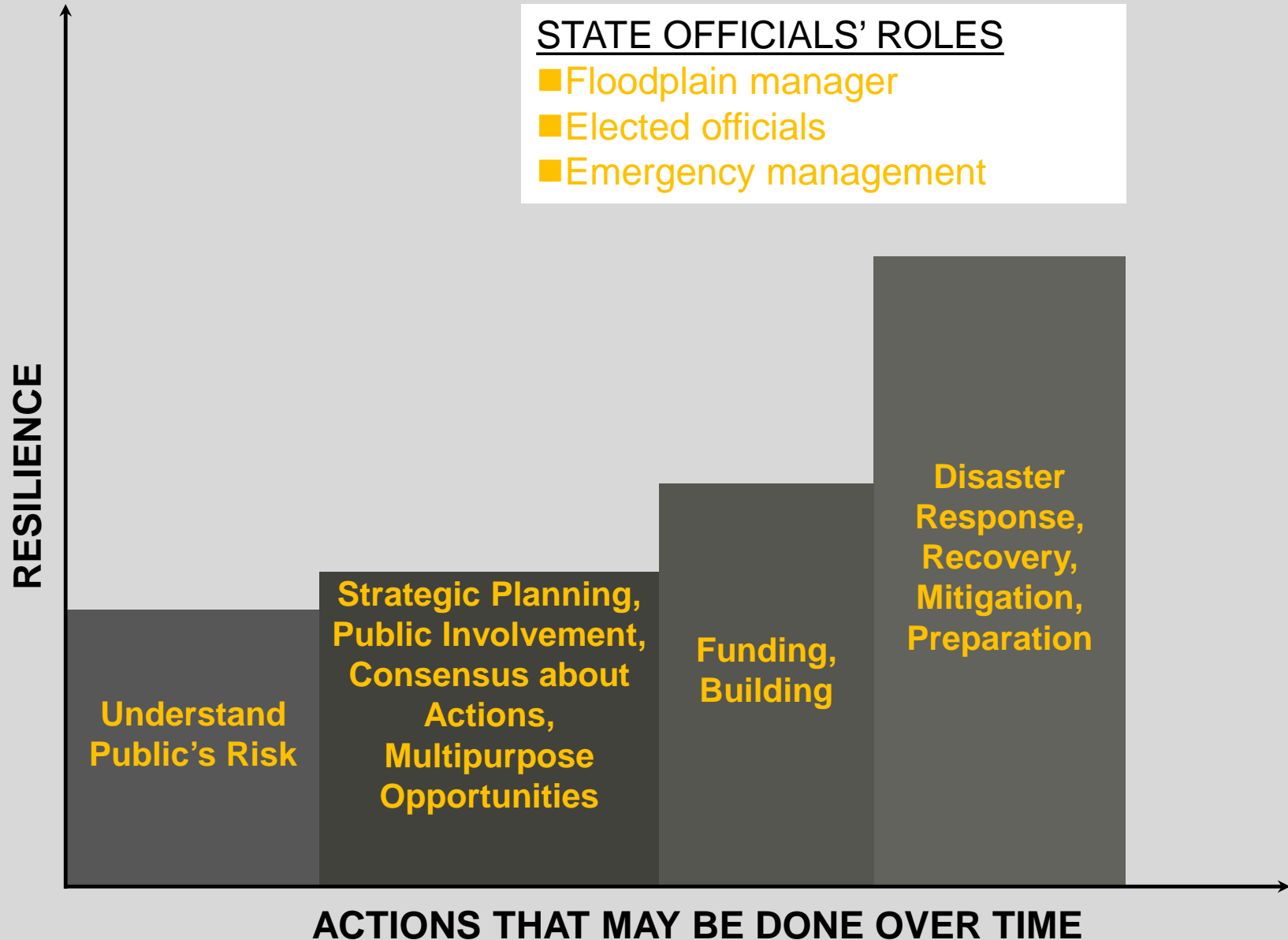
■ Civil Works Water Management and Reservoir Operations

■ Emergency Management and Risk Management Center

RESILIENCE



ACTIONS THAT MAY BE DONE OVER TIME

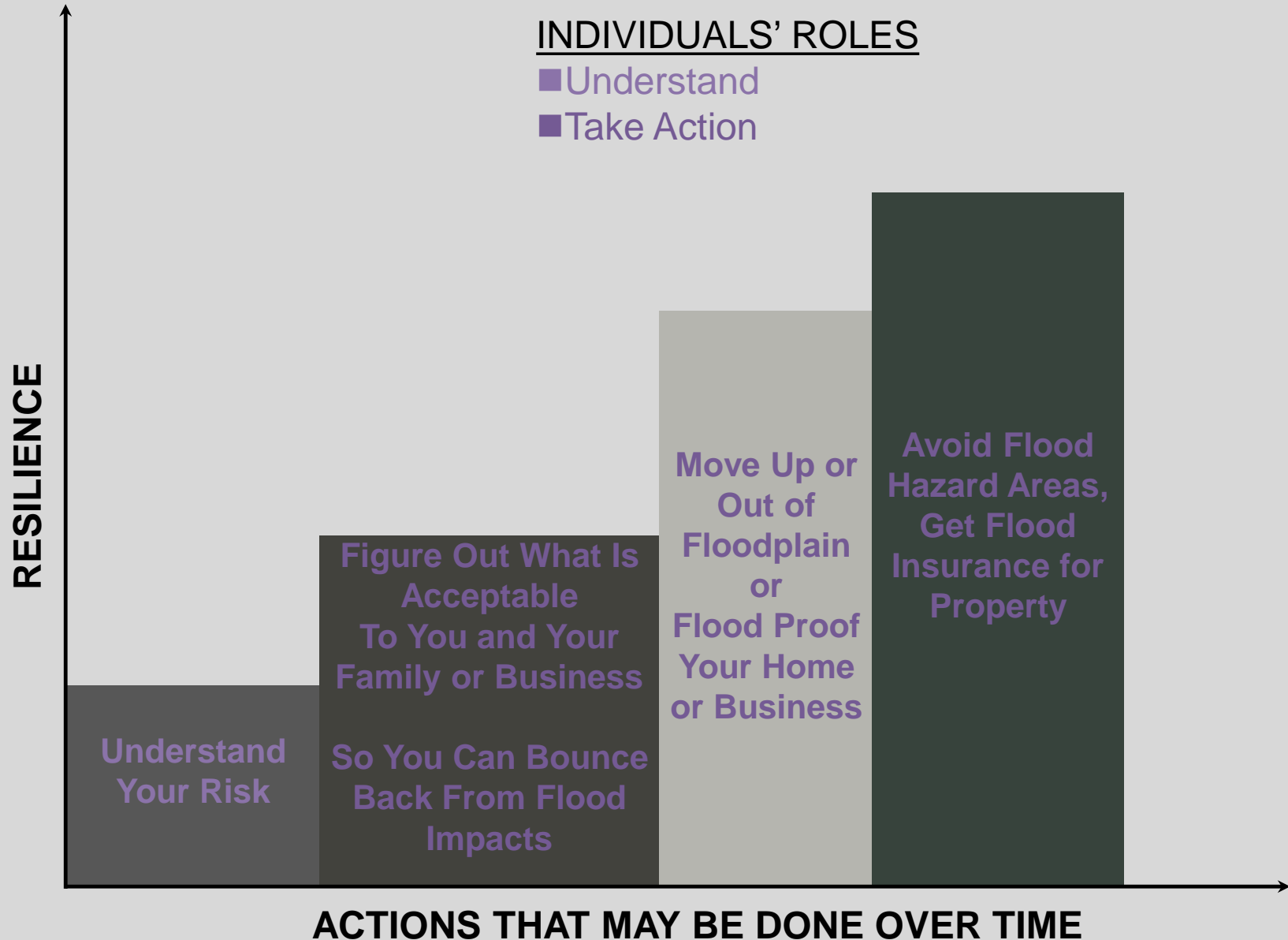


THE LOCAL COMMUNITIES' FOCUS

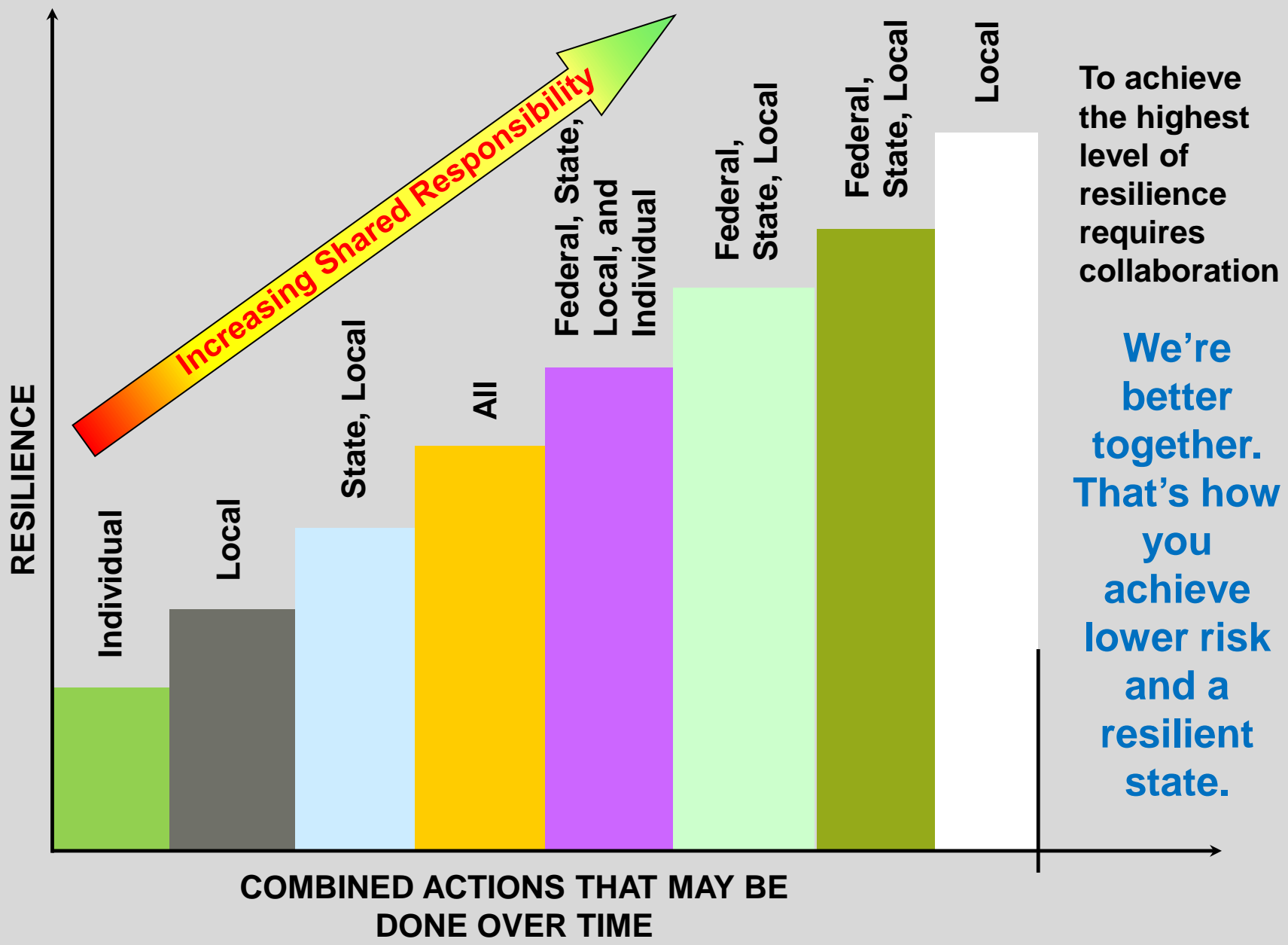
COMMUNITY OFFICIALS' ROLES

- Floodplain manager
- Elected officials
- Emergency responders





HELP COMMUNITIES THRIVE



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FLOODPLAIN MANAGEMENT PLAN

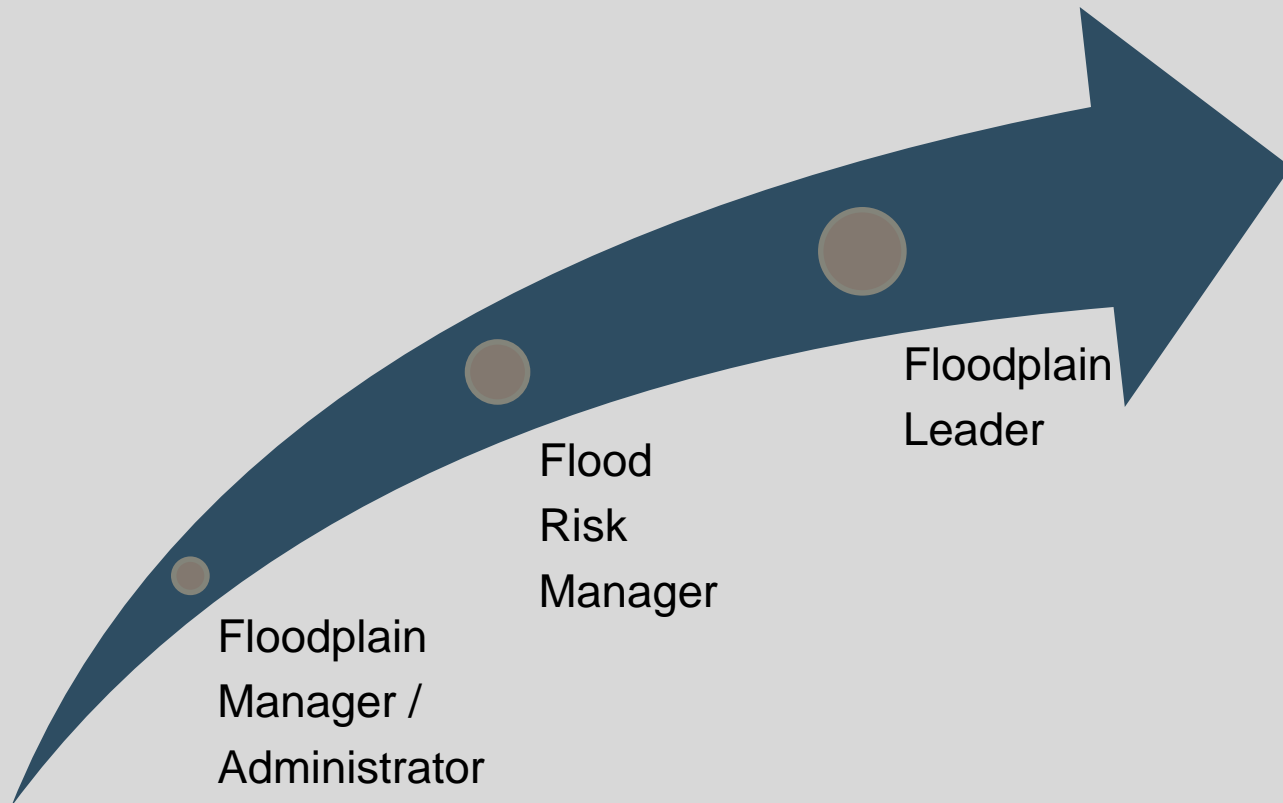
A **floodplain management plan** is a playbook for managing flood risks.

These plans typically have the following main elements:

- Risk Assessment - Understand the flood **risk**
- Evaluation of All Measures - Document the **decision history** about the full menu of flood risk management measures (physical and nonphysical) (features and activities)
- Risk Informed Decision Making - Get **public participation**
- List - Prioritize the community's risk management **actions** (measures)
 - ▶ What will be done
 - ▶ Who will be doing it
 - ▶ When

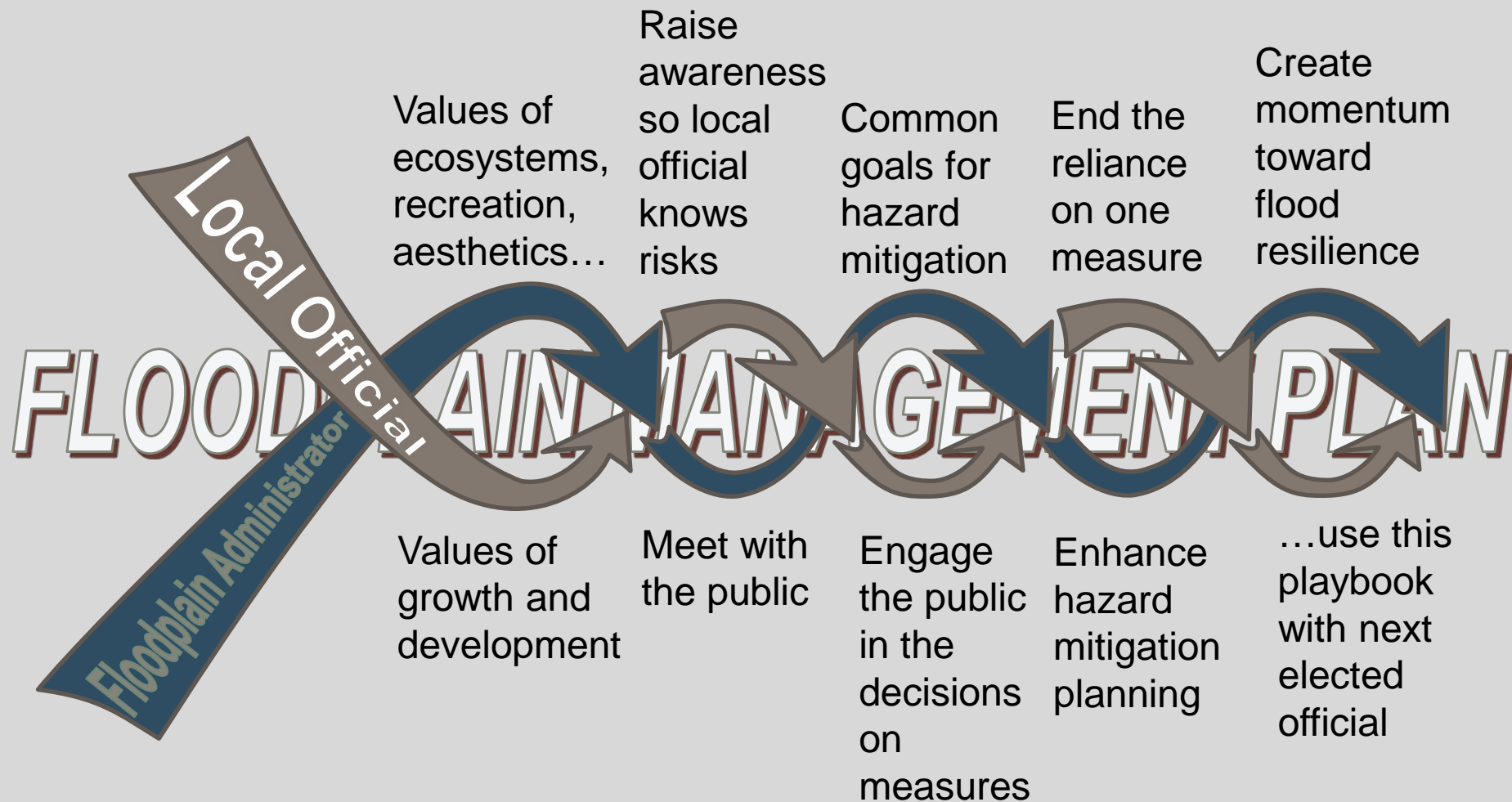
Funding Justification - Use the plan to help local elected officials understand the prioritized actions, as well as communication processes, roles & responsibilities, and flood story







PERIODIC DIALOGUE ACROSS DEPARTMENTS, ROLES, AND WITH ALL THE STAKEHOLDERS WILL RESULT IN SHARED RESPONSIBILITY AND MOVE THE ENTIRE COMMUNITY TOWARD RESILIENCY



Like the thread in a patch-work quilt, a **Floodplain Management Plan** weaves it all together.

WORKSHOPS AND WEBINARS BY THE USACE NFPC

Nonstructural Flood Proofing Committee (NFPC)

<http://www.usace.army.mil/Missions/CivilWorks/ProjectPlanning/nfpc.aspx>

Variety of instruction methods to choose from

- In district office
- Partnering community site
- Remote webinars

Modules on nonstructural alternatives include

- Conducting nonstructural assessments
- Plan formulation of wet and dry flood proofing
- Cost estimating
- Floodplain management plans

Services

- Nonstructural assessments
- Agency Technical Review

And more.



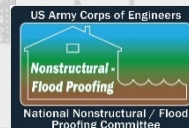
US Army Corps
of Engineers



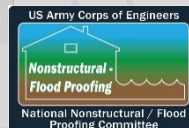
Questions?

Type questions in the chat box.
We will answer as many
as time allows.

This webinar will be posted to the
Planning Community Toolbox:
<http://www.corpsplanning.us>



THANKS FOR YOUR TIME!



US Army Corps
of Engineers.



FOR MORE INFORMATION

Corps of Engineers interagency project example of FMP

<http://silverjackets.nfrmp.us/Portals/0/doc/Kansas/19068.pdf>

City of Manhattan, KS website for adopted plans for Big Blue or Wildcat

<http://knowyourfloodriskmhk.com/>

<http://cityofmhk.com/2150/Wildcat-Creek-Floodplain-Management-Plan>

Corps of Engineers Emergency Action Plan template

<http://www.mvp.usace.army.mil/Missions/CivilWorks/FloodRiskManagement/EmergencyActionPlanGuidebook.aspx>

Conflict Resolution & Public Participation Center of Expertise

www.iwr.usace.army.mil/cpc

Corps of Engineers Nonstructural Flood Proofing Committee

<http://www.usace.army.mil/Missions/CivilWorks/ProjectPlanning/nfpc.aspx>

Corps of Engineers IWR Public Awareness and Communication Team

Brian Rast: brian.t.rast@usace.army.mil

