HRG
Herbert, Rowland & Grubic, Inc.
Engineering & Related Services
AN EMPLOYEE-OWNED COMPANY

Fishing Creek Watershed Flooding Assessment and Mitigation Study

Columbia County Resiliency Office

SEDA COG

Public Stakeholder Update Meeting

pennsylvania DEPARTMENT OF COMMUNITY & ECONOMIC DEVELOPMENT

This project has been financed by grants from the Commonwealth of Pennsylvania, Commonwealth Financing Authority and the Department of Community and Economic Development.

November 30, 2021

Agenda

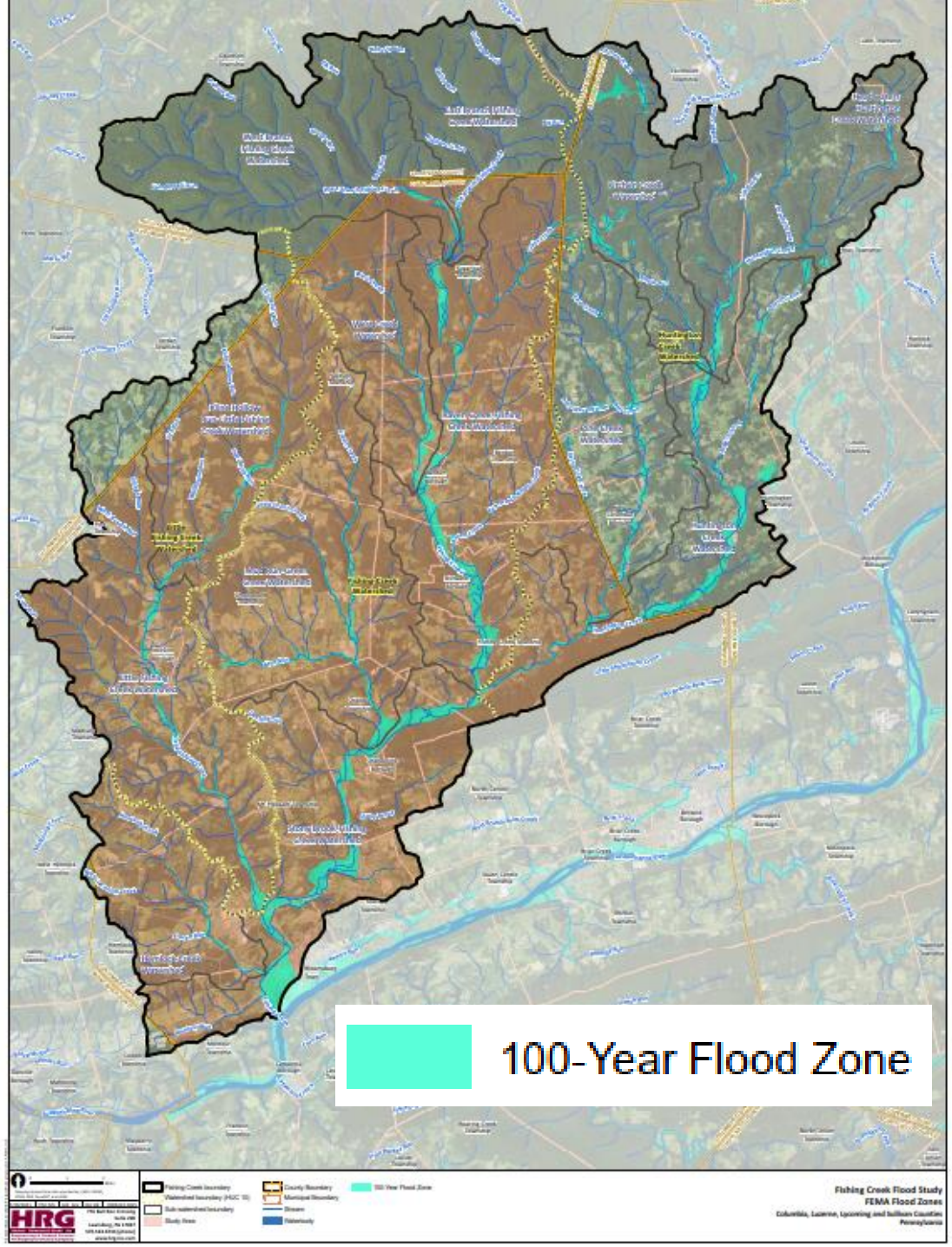
- *Goals of the Study*
  - Identify Flooding Problems
  - Identify Potential Solutions
  - Assess & Analyze Solutions
- *Project Status Review:*
  - Problem Areas
  - Potential Mitigation Strategies & Solutions
- *Comments and Questions*
- *Breakout to Open House Discussion*

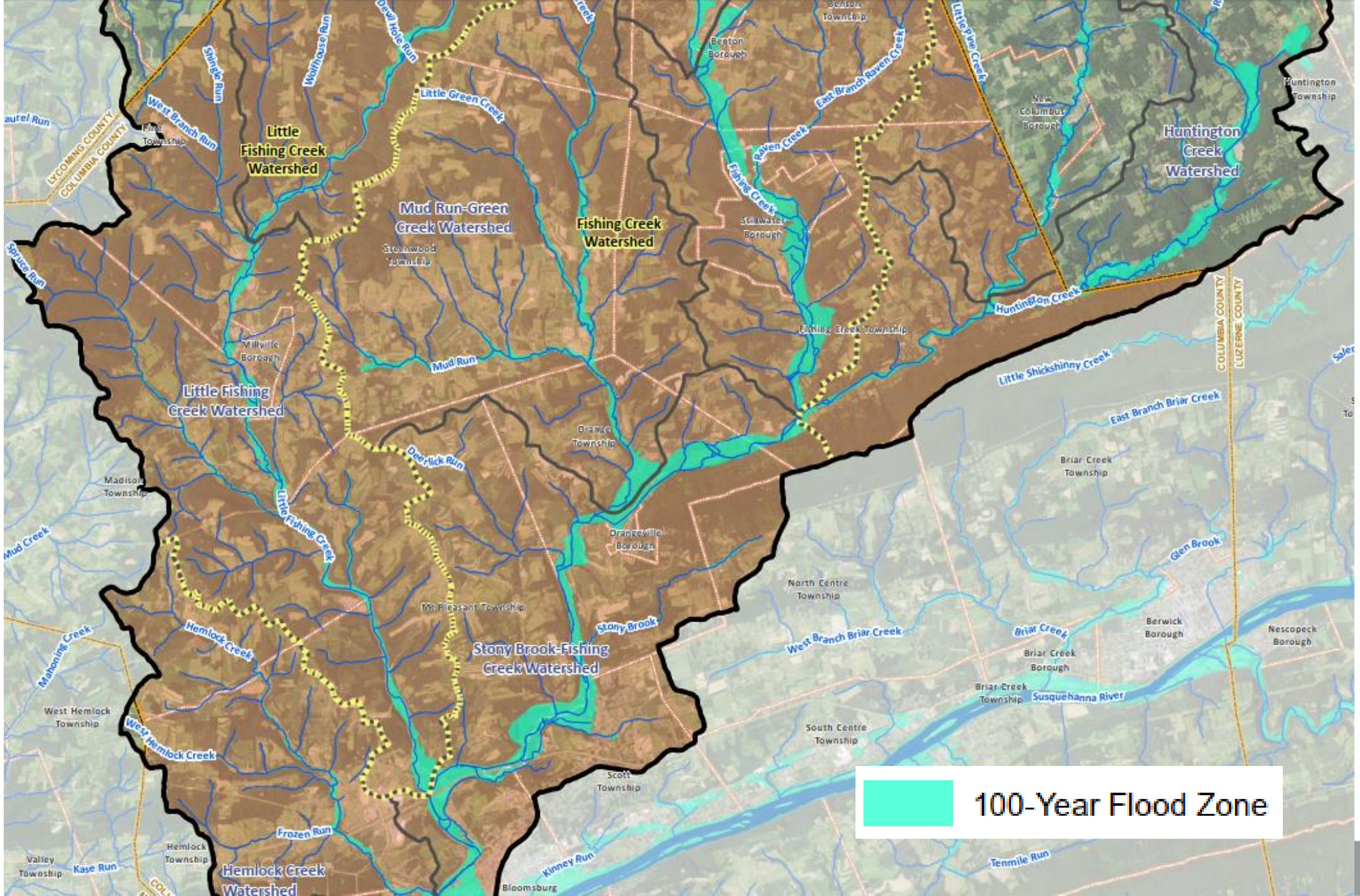
Goals of the Study

Identification of Flooding Problems

> What does flooding mean in Fishing Creek ***Watershed***?

- *Where does flooding occur?*
- *When does it occur?*
- *Why does it occur?*



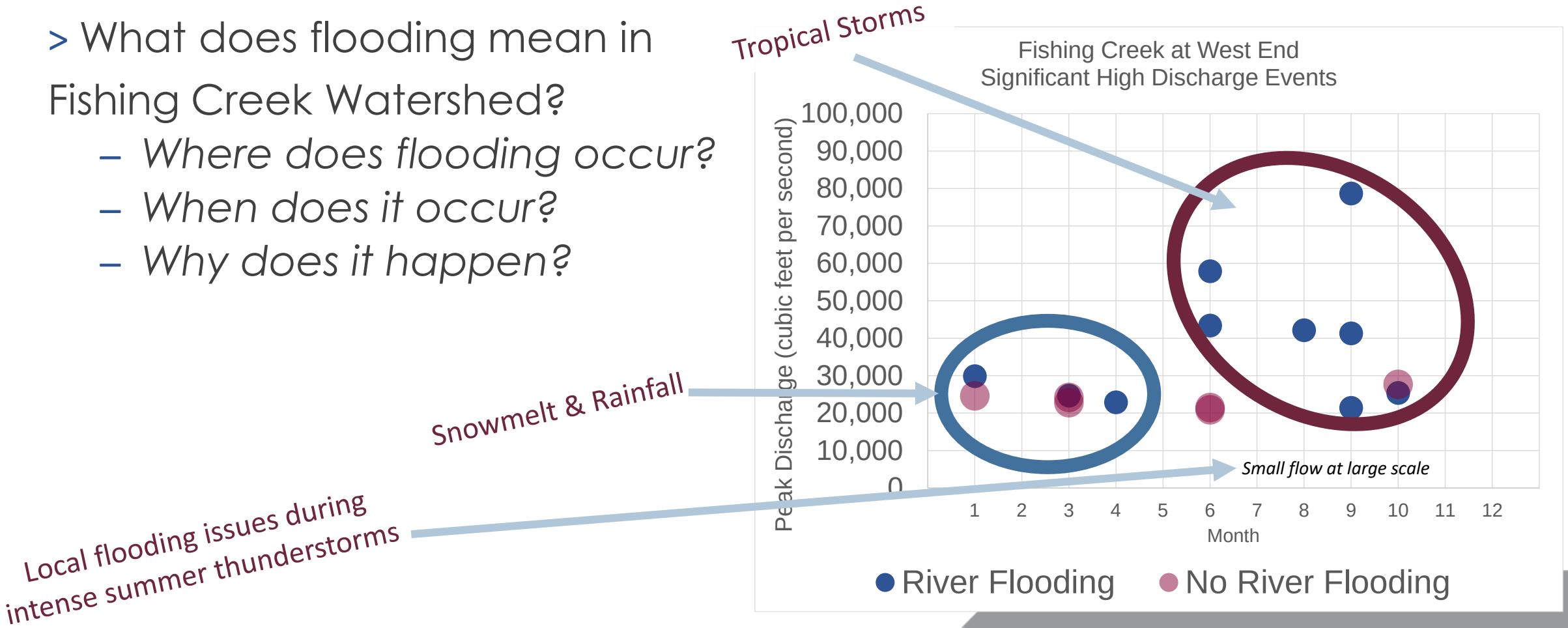

Little Fishing Creek Watershed
Mud Run-Green Creek Watershed
Fishing Creek Watershed
Huntington Creek Watershed
Little Fishing Creek Watershed
Stony Brook-Fishing Creek Watershed
Hemlock Creek Watershed
Little Green Creek
Mud Run
Deer Lick Run
Little Fishing Creek
Hemlock Creek
West Hemlock Creek
Stony Brook
Frozen Run
Kinney Run
Kase Run
Tenmile Run
Huntington Creek
Little Shickshinny Creek
East Branch Briar Creek
West Branch Briar Creek
Briar Creek
Glen Brook
Susquehanna River
Raven Creek
East Branch Raven Creek
Fishing Creek
Little Pine Creek
West Branch Run
Shingle Run
Wolfhouse Run
Devil Hole Run
Spruce Run
Laurel Run
Mud Creek
Mahoning Creek
LYCOMING COUNTY
COLUMBIA COUNTY
LUZERNE COUNTY
Benton Borough
Benton Township
New Columbus Borough
Huntington Township
Stillwater Borough
Fishing Creek Township
Millville Borough
Greenwood Township
Orange Township
Orangeville Borough
Madison Township
Mt Pleasant Township
North Centre Township
South Centre Township
Briar Creek Township
Briar Creek Borough
Berwick Borough
Nescopeck Borough
West Hemlock Township
Scott Township
Hemlock Township
Valley Township
Bloomsburg
100-Year Flood Zone

Goals of the Study

Identification of Flooding Problems

> What does flooding mean in Fishing Creek Watershed?

- *Where does flooding occur?*
- *When does it occur?*
- *Why does it happen?*



Goals of the Study

Identification and Assessment of Potential Mitigation Measures

> What is effective at mitigating or protecting against flooding?
- Resiliency?
- Feasibility?
- Cost effectiveness?

Project Status Review - Schedule

July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April
Data Collection									
	Data Review and Prep								
	Site Visits								
	Technical Analysis								
		Flood Mitigation Assessment							
			Report Development						
							Public Mtg		Public Mtg
								Final Report	

Problem Area Identification

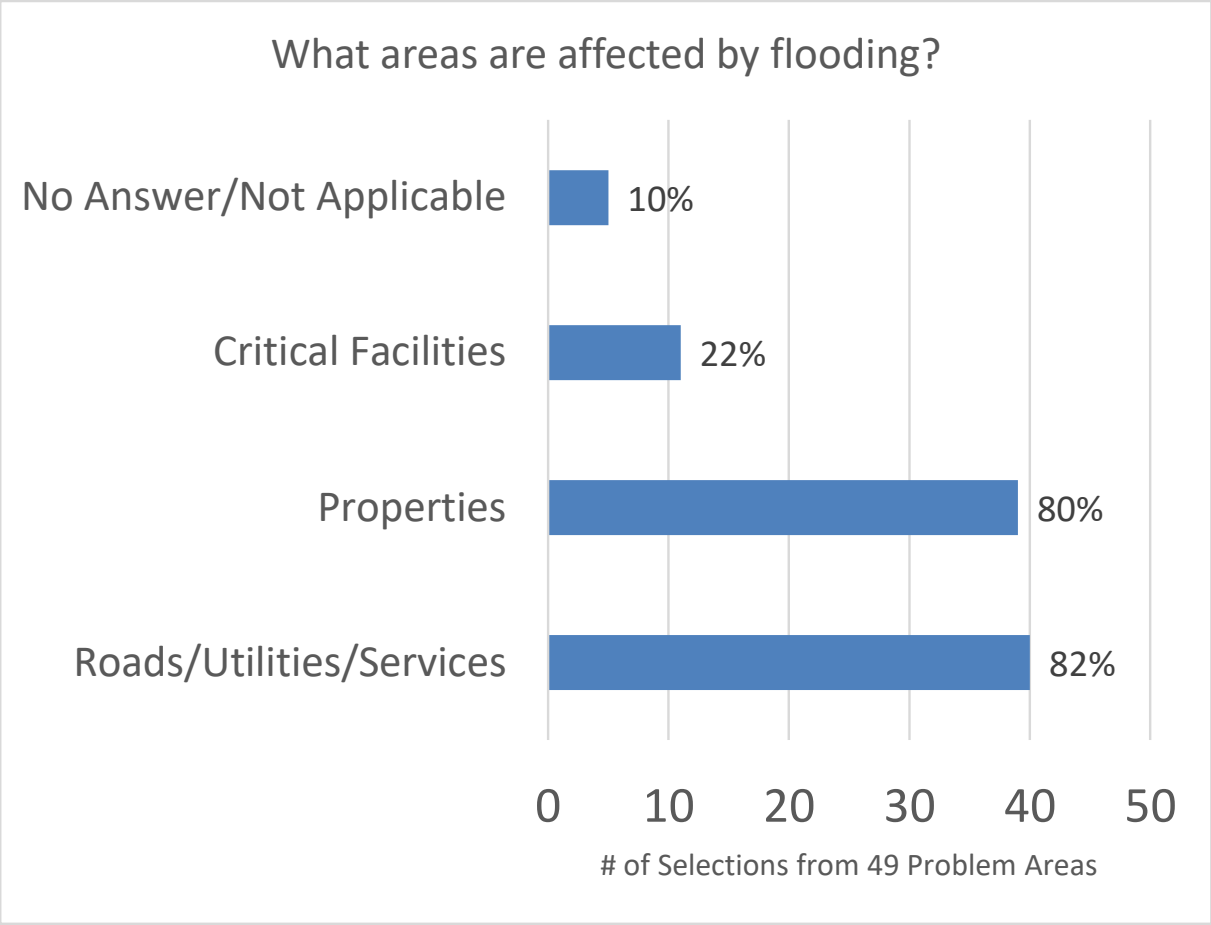
- Seeking input on up to 3 problem areas per Municipality
- Received direct input from 15 of 19 Municipalities
- 49+/- Problem Areas/Sites Identified

Problem Area Survey Summary

Where does flooding occur?

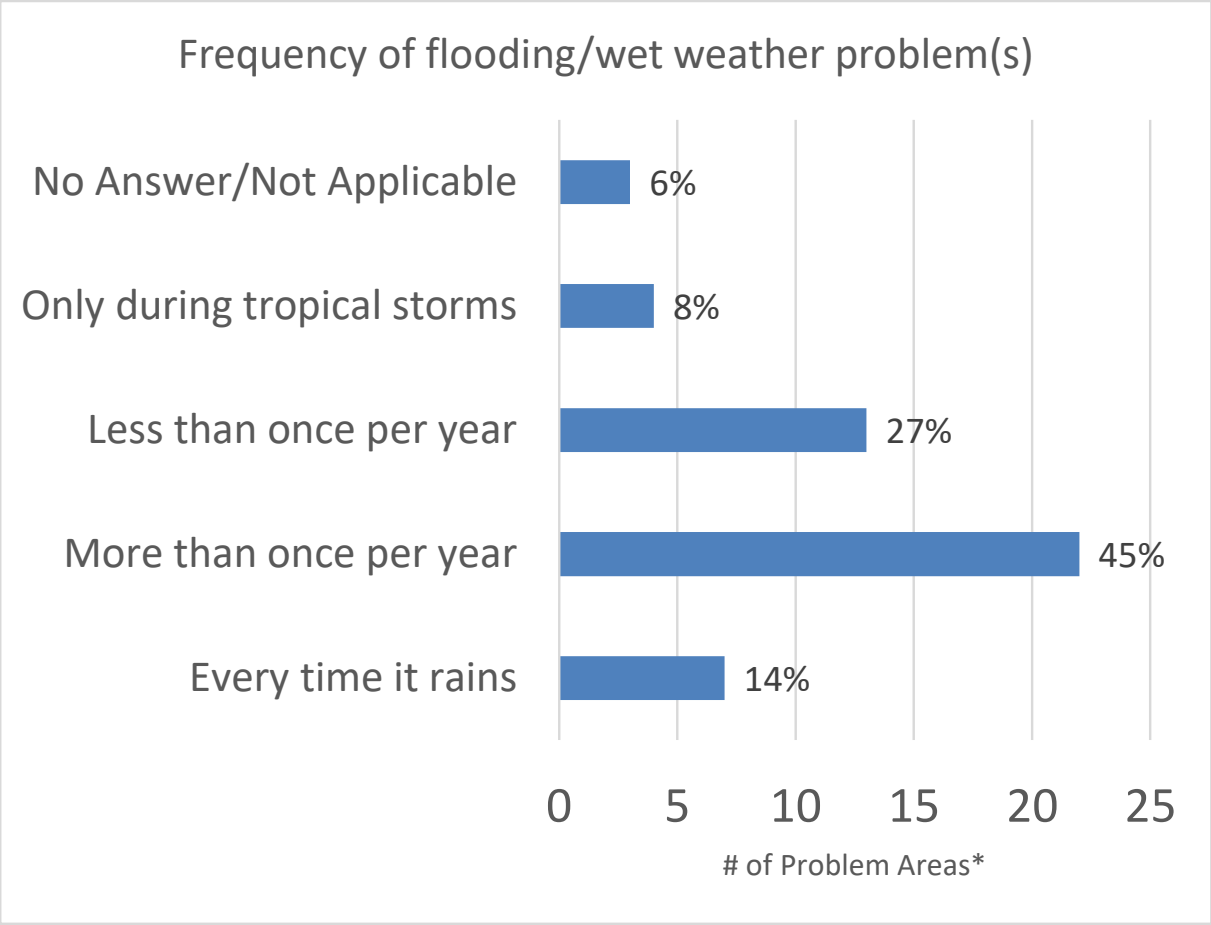
83%

of municipalities stated they have flooding issues



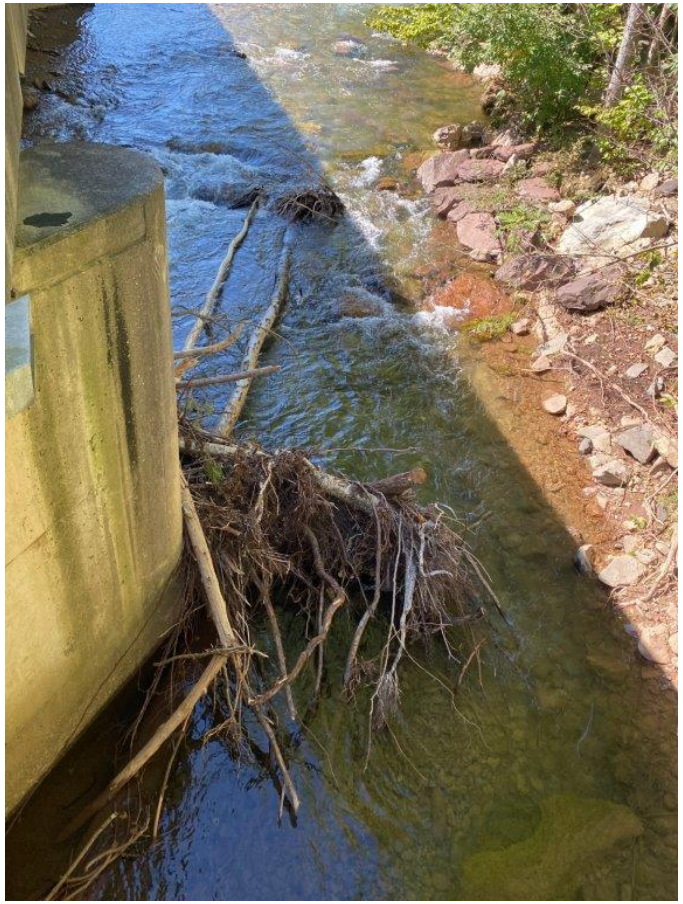
Problem Area Survey Summary

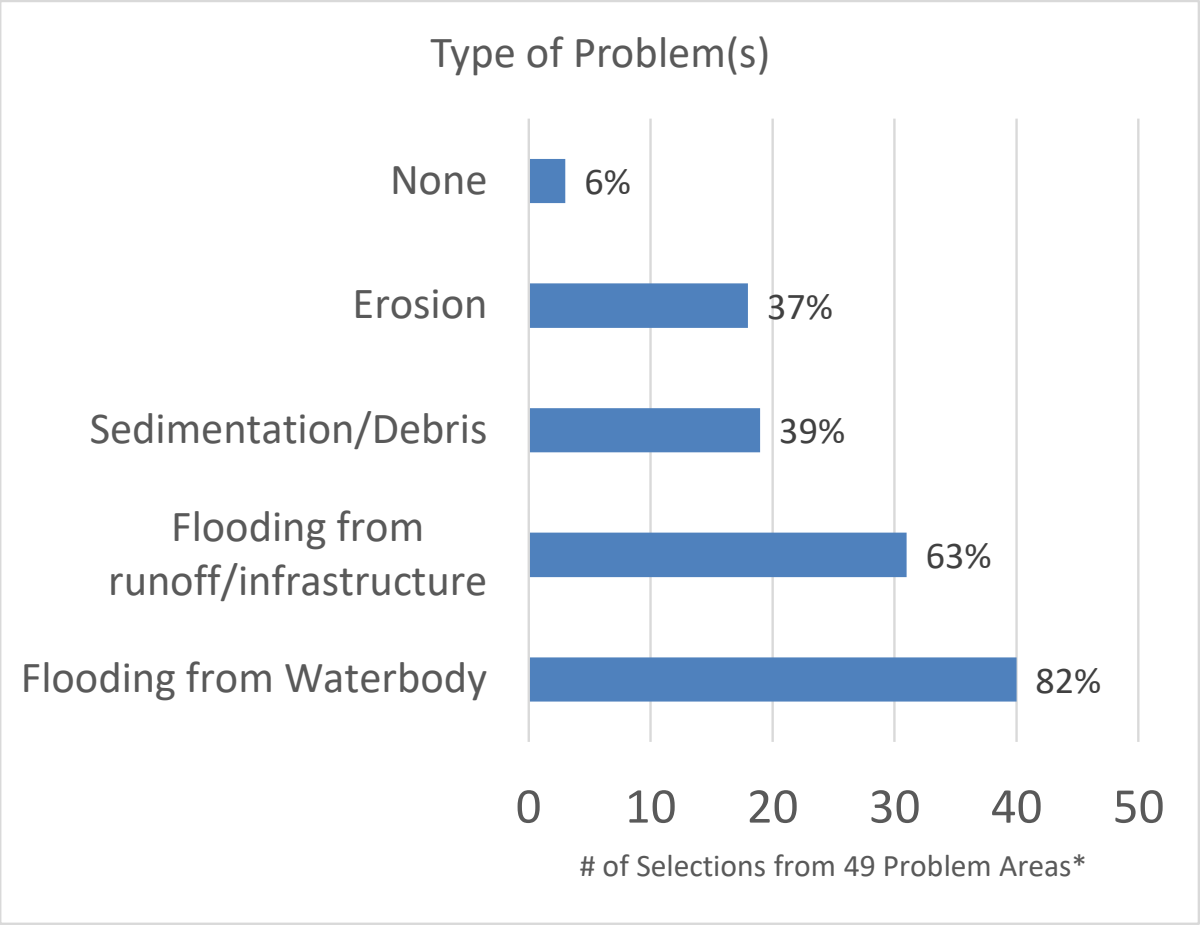
When does flooding occur?



Problem Area Survey Summary

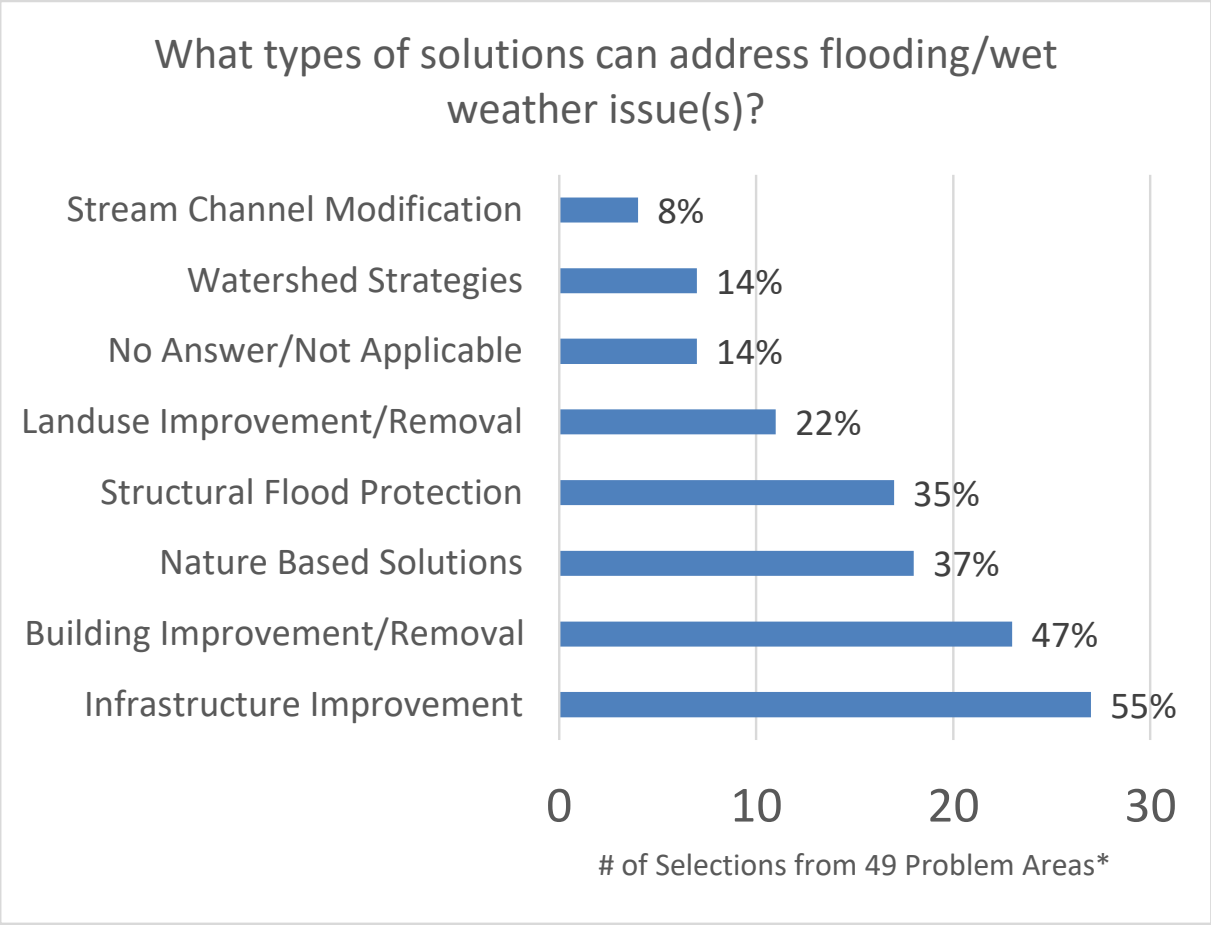
Why does flooding occur?





Problem Area Survey Summary - Solutions

What is effective at mitigating or protecting against flooding?



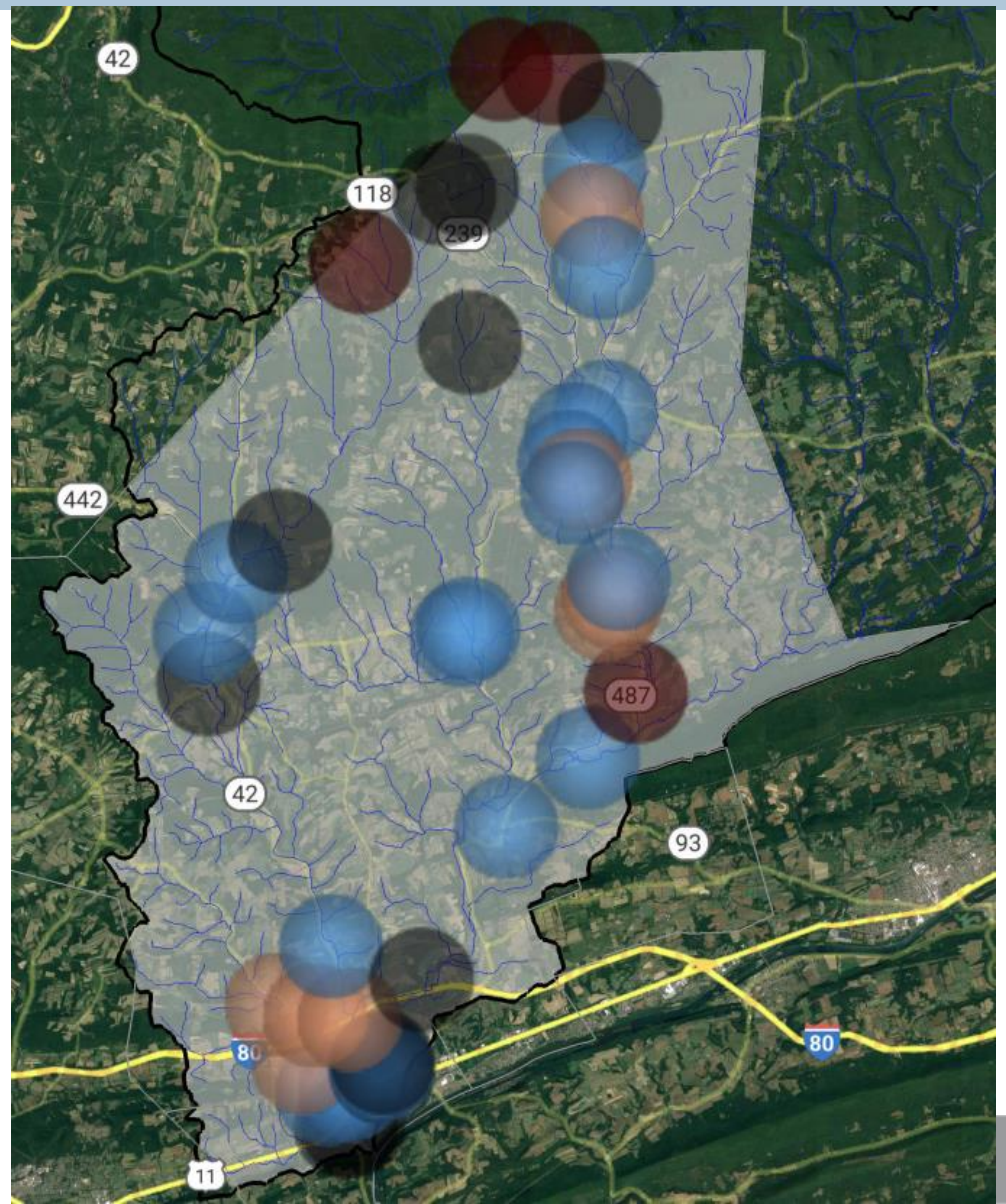
Problem Area Site Visits/Investigation

1 FLOODING FROM CREEKS

Areal flooding in Benton from Fishing and West Creeks

2 UPLAND & OVERLAND RUNOFF

Runoff on a harvested cornfield after an inch of rain



3 INFRASTRUCTURE CONDITIONS / SIZE

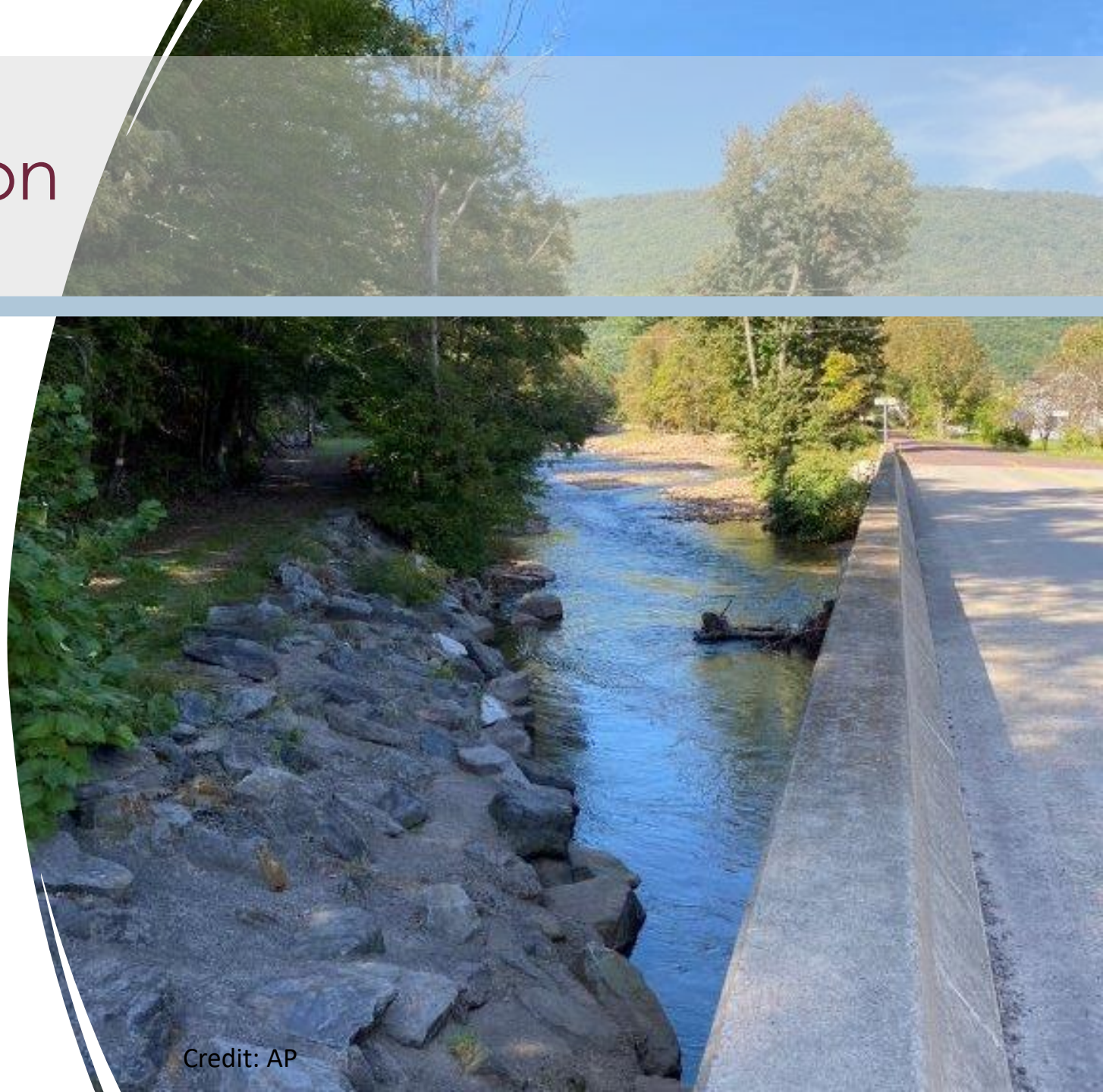
Infrastructure on Honey Ridge Road in Fishing Creek Township

4 EROSION & SEDIMENTATION OR OTHER

Erosion on the roadside

Potential Flood Mitigation Strategies and Solutions

- Strategy Based Solutions
- Nature Based & Non-Structural Solutions
- Structural Solutions



Credit: AP

Potential Mitigation Strategies/Projects

> **Example Strategy Based Solutions**

Community Planning

1. RECOGNIZING REGULATORY & LEGISLATIVE AUTHORITY
2. COMMUNITY ENGAGEMENT & THE CURRENT STRUCTURE
3. DETERMINING IMPACT AREA
4. IDENTIFYING AVAILABLE PERSONNEL
5. DETERMINING TIMEFRAMES
6. ESTABLISHING SUBSTANTIAL IMPROVEMENT/SUBSTANTIAL DAMAGE DETERMINATION PROCESS AND METHODOLOGY
7. COMMUNICATING DAMAGE TO PARTNERS (LOCAL/STATE/FEDERAL)
8. COMMUNICATING SUBSTANTIAL IMPROVEMENT/SUBSTANTIAL DAMAGE INFORMATION TO PROPERTY OWNERS
9. MONITORING & REINTEGRATION

Flood Warning System

Example of the flood tool displaying inundation in West Pittston, PA

necessary response actions.

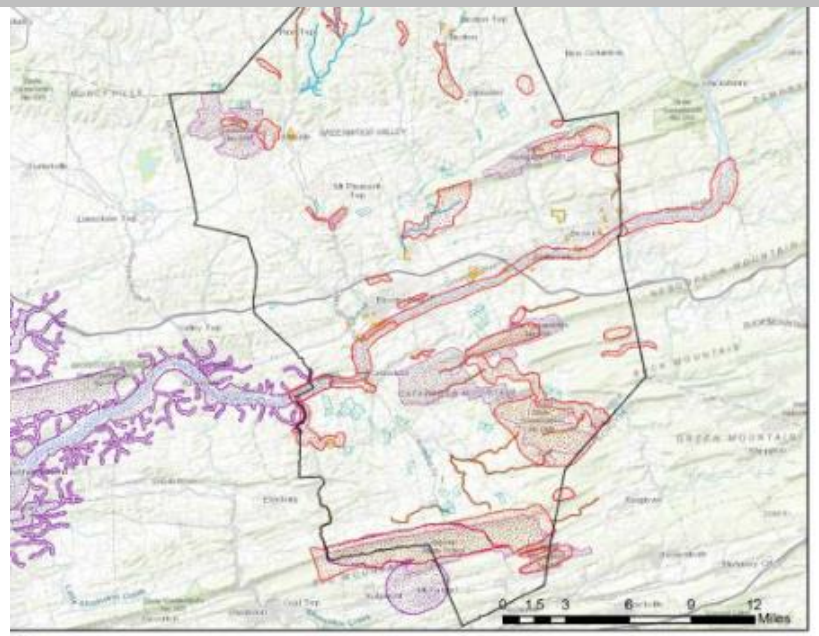
SFWRS Contacts

Susquehanna River Basin Commission
4423 North Front Street
Harrisburg, PA 18110
(717) 238-0423
inundationmaps@srbc.net

Partners

US Army Corps of Engineers
SRBC SUSQUEHANNA RIVER BASIN COMMISSION NY ▪ PA ▪ MD ▪ USA
PEMA
FEMA

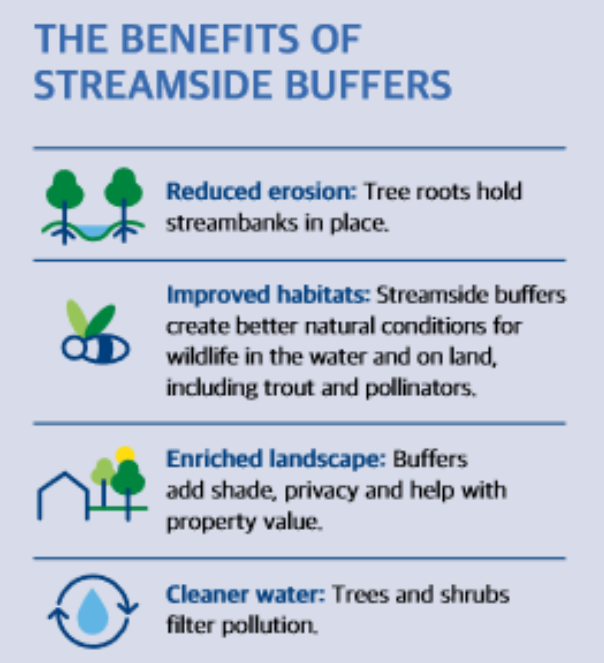
Land Use Management & Conservation



Potential Mitigation Strategies/Projects

> **Example Nature Based/Non-Structural Solutions/Projects**
  - **Local and Site Scale**

Riparian Buffers



Wetlands

Espy Bog & Wetlands

Aristes Vernal Pond Community

Beaver Run Wetlands

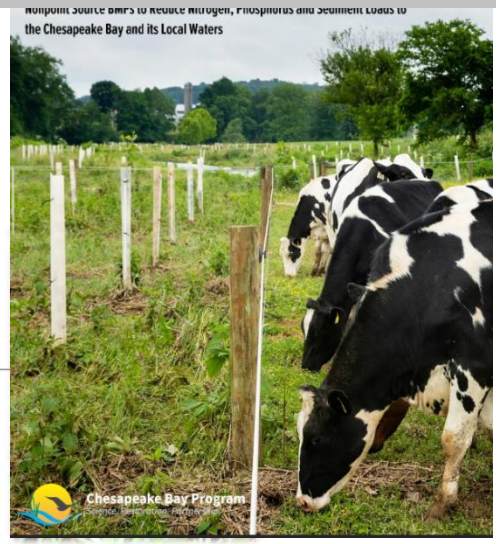
Catawissa Shrub Swamp

Five Points Swamp

Summer Hill Bog

Wenner Swamp

Land Use Practices



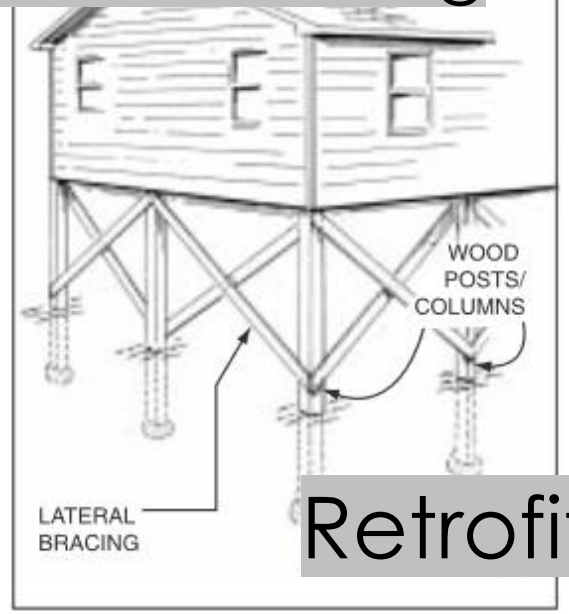
Potential Mitigation Strategies/Projects

- Example Structural Solutions/Projects
  - Stream Flooding Protection/Conveyance
  - Risk Reduction – floodproofing and/or elevating buildings
  - Risk Elimination – buyout/demolition

Bridge/Culvert Improvements

Figure 6.3—The road illustrated here will allow water from extreme events to flow over the reinforced bypass.

Flood Proofing



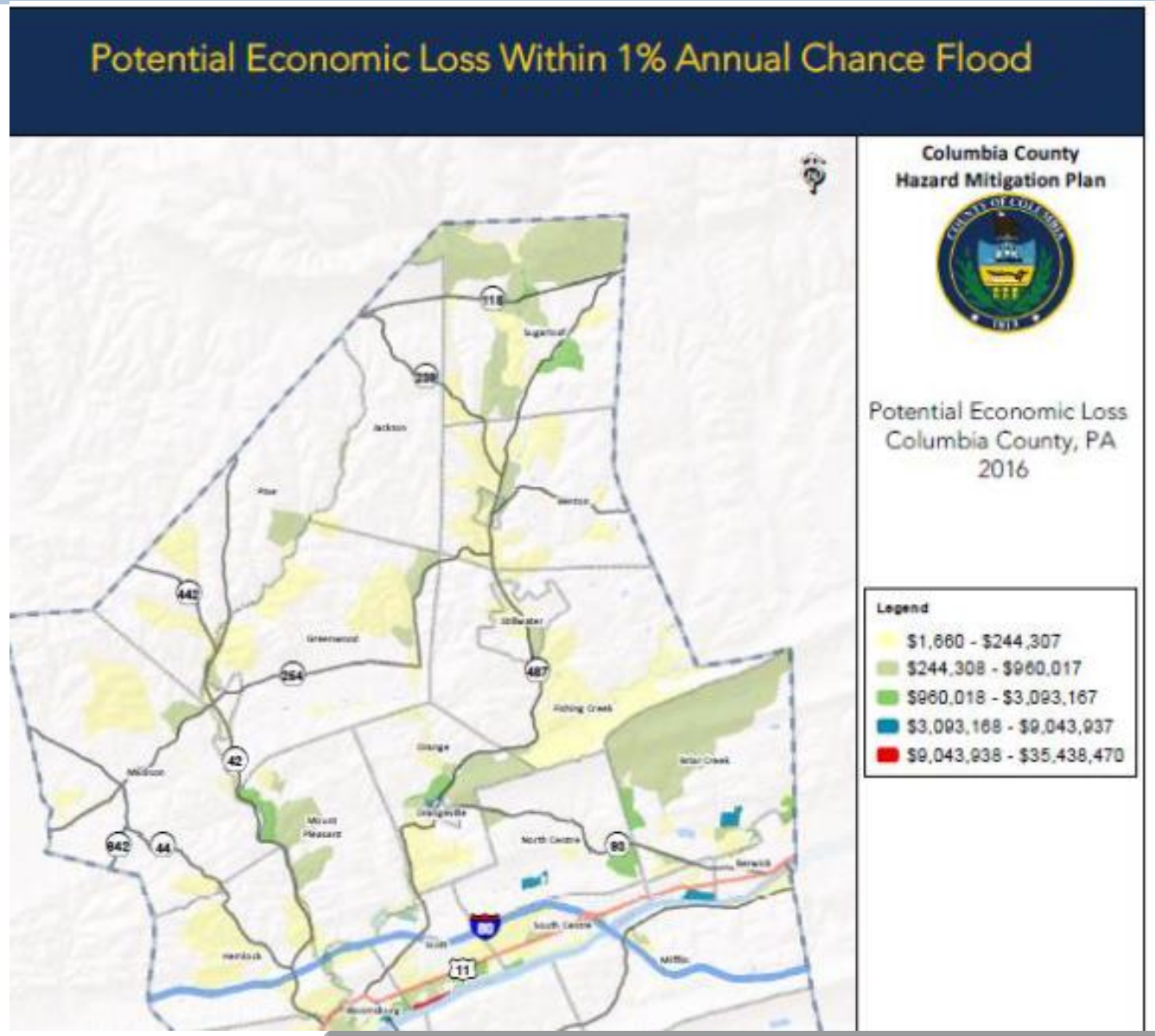
Retrofits

Earthen Levees

Flood Walls

Mitigation Strategies & Solution Assessment: Risk, Feasibility, and Economic Considerations

- Risk and Resiliency
  - → Changing Weather and Hydrologic Conditions
    - = changing design criteria
- Mitigation Strategy/Solution
  - → Feasibility
    - = can it be implemented easily?
- Economic Considerations
  - → Benefit of Strategy/Solution vs Cost of Implementation
    - = seeking high benefit to cost



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Still Accepting Flooding Problem Area Input

Fishing Creek Flood Survey

Survey of municipal stakeholder identified flooding and wet weather issues in Fishing Creek within Columbia County.

> Link to Questionnaire

https://forms.office.com/r/MBgd5tN6Gk

> Printed forms available →

FISHING CREEK WATERSHED FLOODING/WET WEATHER PROBLEM AREA SURVEY

Name:	Date:		
Municipality:			
Email:	Phone:		
Problem Area 1 (PA1) Location (address, intersection, landmark)*:			
Problem Area 2 (PA2) Location (address, intersection, landmark)*:			
Problem Area 3 (PA3) Location (address, intersection, landmark)*:			
Please specify what type and specific location (check multiple if applicable)	**PA 1**	**PA 2**	**PA 3**
Flooding from creek/stream/waterbody			
Flooding from runoff/stormwater conveyance infrastructure limitations			
Erosion			
Sedimentation			
Other, Please Specify*			
What do you think is the cause of this flooding/wet weather issue?	**PA 1**	**PA 2**	**PA 3**
check multiple if applicable: Runoff/Stormwater Volume			
Runoff/Stormwater Velocity			
Runoff/Stormwater Direction			
Obstruction			
Other, Please Specify*			
How frequent/regular does this flooding/wet weather issue occur (i.e. times per year)?	**PA 1**	**PA 2**	**PA 3**
Every time it rains			
More than once per year			
Less than once per year			
Only during snowmelt			
Only during tropical storms			
What types of property issues does this problem cause? (check multiple if applicable)	**PA 1**	**PA 2**	**PA 3**
Loss of life			
Loss of utilities/services			
Affects critical facilities			
Property damage			
Other, please specify*			
What types of solutions do you think would assist with this problem area? (check multiple if applicable, make notes on back as necessary)	**PA 1**	**PA 2**	**PA 3**
Specific infrastructure improvement(s)			
Property land use improvement			
Property improvement (flood proofing, elevating structures)			
Regional strategies (early flood warning system, land use management)			
Regional projects (floodplain changes and infrastructure design standards)			
Stream flood protection projects (flood wall, levee)			

*Make notes on back of form as necessary

Comments and Questions…

…Break to Open House

Contact info:

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