

USACE CASE STUDIES SUCCESSFUL MITIGATION & ACTIONS FOR RESILIENCY

US Army Corps of Engineers, Philadelphia District

Prepared by Jason Miller

For PA Plan Implementation and Grants Development Workshops

April 2024

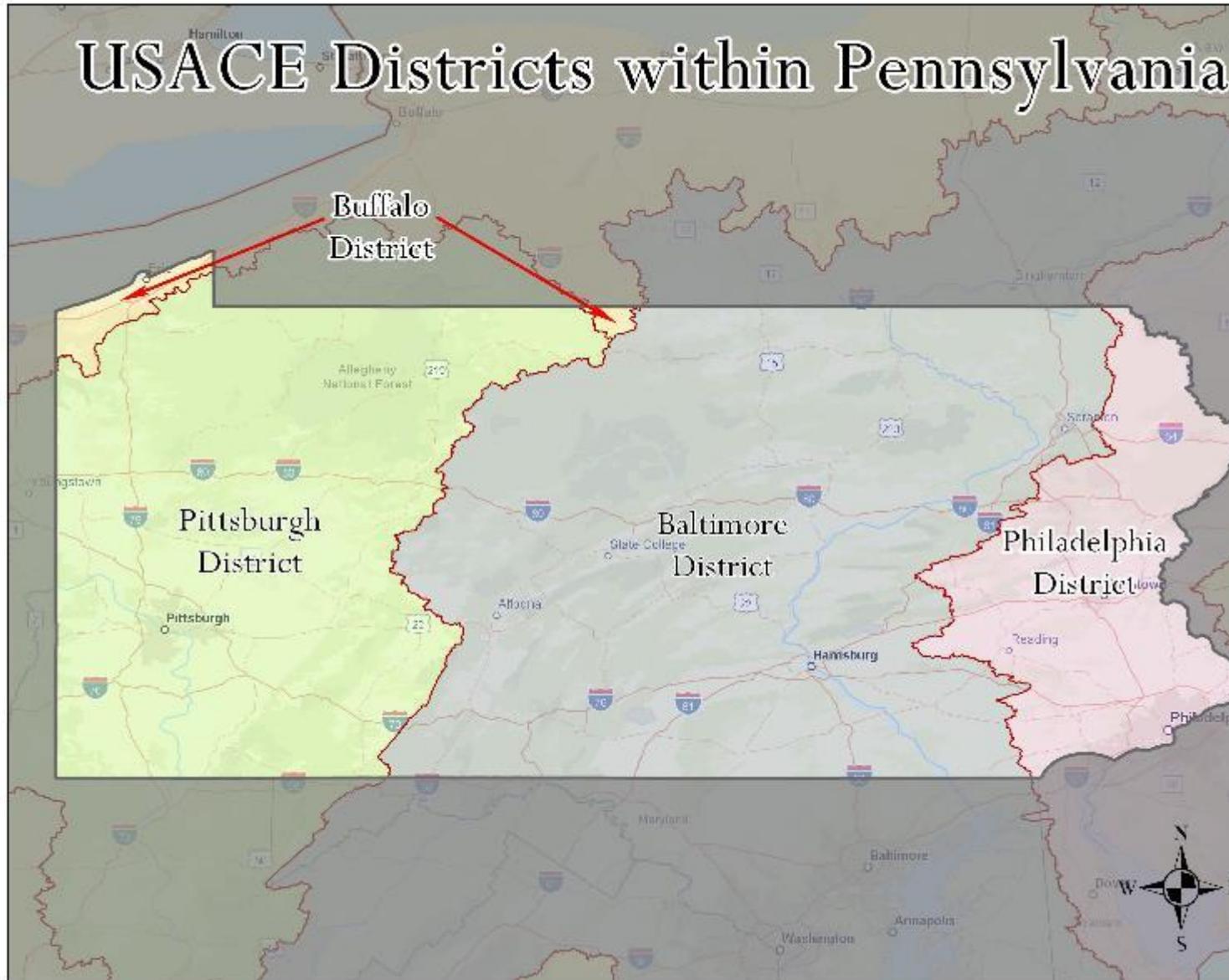
"The views, opinions and findings contained in this report are those of the authors(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation."



US Army Corps
of Engineers®



U.S ARMY CORPS OF ENGINEERS BOUNDARIES



Pennsylvania Flood Resiliency Success Stories



Developed by the Pennsylvania Silver Jackets Team
September 2023

USACE FLOOD RISK MANAGEMENT PROGRAMS

This document is intended to provide general guidelines to identify common USACE programs and authorities that m

TECHNICAL ASSISTANCE PROGRAMS

- Flood Plain Management Services (FPMS)
 - Silver Jackets Coordination
 - Interagency Projects
 - Base FPMS Program
- Planning Assistance to States (PAS)
- What does Technical Assistance mean at the Corps?
- Some important differences
 - FPMS vs PAS Scope of Effort
 - Cost Share Details
 - General Scale of USACE Costs

US Army Corps of Engineers	FRM-SILVER JACKETS COORDINATION	FLOODPLAIN MANAGEMENT SERVICES (FPMS)		PLANNING ASSISTANCE TO STATES (PAS) [†]	S
		INTERAGENCY <i>(must have at least two governmental partners in addition to USACE)</i>	BASE		
SHORT DESCRIPTION	<i>Coordination (not to support projects)</i>	<i>Multi agency nonstructural</i>	<i>Planning and technical assistance</i>	<i>Water resources planning/ technical assistance</i>	<i>Pr ot in fr (c</i>
CAN A MULTI-PURPOSE EFFORT (MORE THAN FLOOD RISK) BE COMPLETED UNDER THIS PROGRAM?	NO	NO	NO	YES	
CAN THIS AUTHORITY DIRECTLY RESULT IN APPROVAL FOR A USACE COST-SHARED CONSTRUCTION PROJECT? <i>* Requires additional authorization</i>	NO	NO	NO	NO	
DOES THE PROGRAM REQUIRE THE COMMUNITY SPONSOR TO PROVIDE FUNDING OR WORK-IN-KIND?	NO	NO	NO	YES	
COST SHARE (FED/NON-FED)	Full Federal cost for USACE support	Can be Full Federal cost for USACE support	Full Federal cost for USACE Support - voluntary contributions can be provided to expand the scope	50/50 (can utilize work-in-kind, unless technical assistance). Cost-share waiver for economically disadvantaged communities applies. [†]	
TYPICAL SCALE OF FEDERAL (USACE) COSTS	N/A	<\$150k for Studies	<\$150k for Studies	<\$500k for Studies	
TIMELINE TO					

WHAT WE DO: FLOODPLAIN MANAGEMENT SERVICES

Floodplain Management Services & Silver Jackets

Authorizes Corps to provide technical services and planning guidance to support effective floodplain management

- *Hydrologic & Hydraulic modeling*
- *Floodplain delineation*
- *Flood warning & preparedness*
- *Stormwater Analysis*
- *Structural & non-structural flood risk reduction analyses*

Cost Share:

- **100% Federally funded**

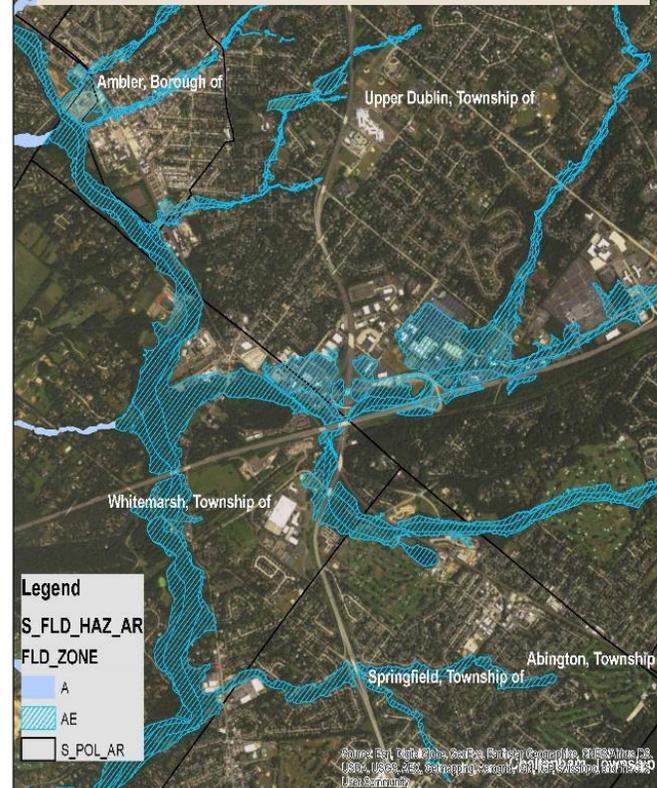
No specific authorization required

Costs are generally \$100k or less

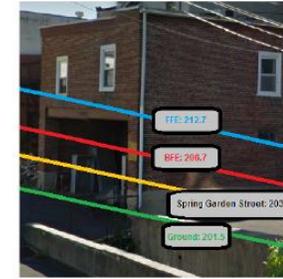
Montgomery County, Nonstructural Assessments & Community Outreach

Objectives:

- Utilize updated H&H
- Develop structure inventory
- Identify non-structural measures
- Identify potential funding sources

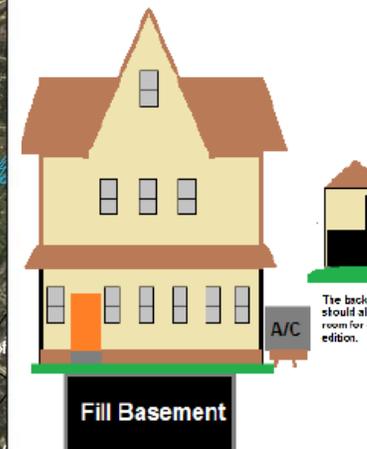
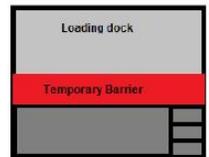
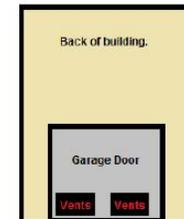
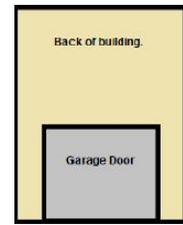


Existing Structure



DIAGRAMATIC BUILDING SECTION (EXISTING)
NOT TO SCALE

Possible Mitigation Measures



WHAT WE DO: PLANNING ASSISTANCE TO STATES

Section 22: Planning Assistance to States

Authorizes Corps to assist states, local governments, and other entities in broad, comprehensive water resource planning (flood risk management)

- Hydrologic & hydraulic modeling
- Watershed & land use planning
- Floodplain management
- Stormwater management
- Wetlands
- Water supply

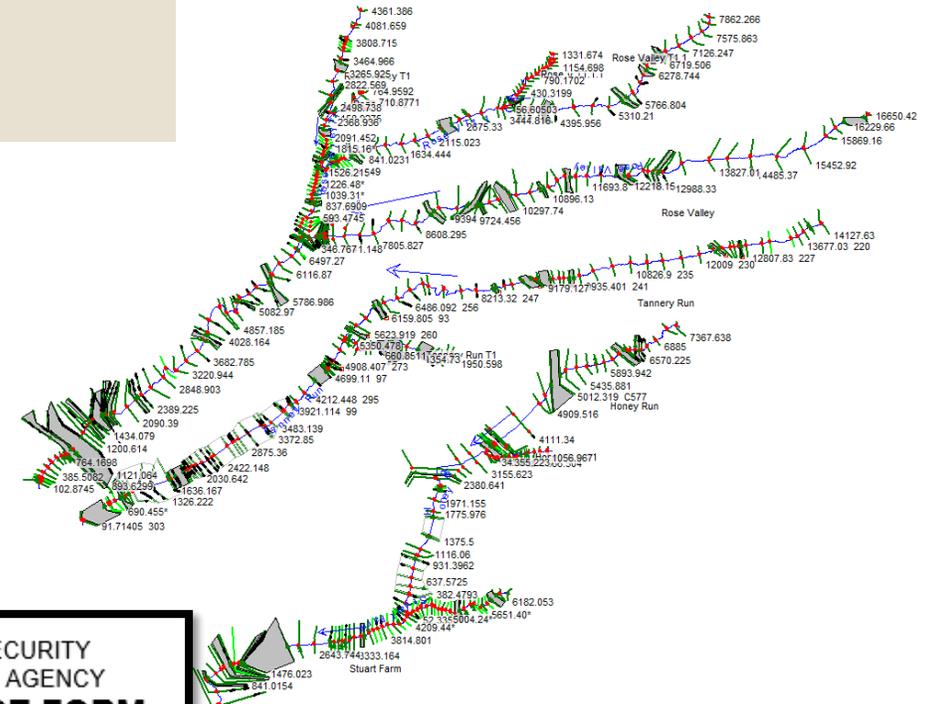
Cost Share:

- 50/50 Federal/local
- Can be work-in-kind (WIK)
- Potential waiver for disadvantaged communities

No specific authorization required

Rose Valley Creek Watershed Objectives:

- Update Hydraulic Model
- LOMR Application



U.S. DEPARTMENT OF HOMELAND SECURITY FEDERAL EMERGENCY MANAGEMENT AGENCY OVERVIEW & CONCURRENCE FORM



Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT

LOCAL NEWSPAPER

Name: *The Ambler Gazette*

Dates: March 27, 2016 and April 3, 2016



US Army Corps
of Engineers®



TYPICAL PROCESS FOR TECHNICAL ASSISTANCE

Identify the Problem

- Site Visit
- Scope/Scale

Analyze the Problem

- Hydrology & Hydraulics
- Mapped Inundations
- Structure Inventory

Identify potential mitigation measures

- Structural
- Non-Structural
- Risk Communication

Recommend potential mitigation measures

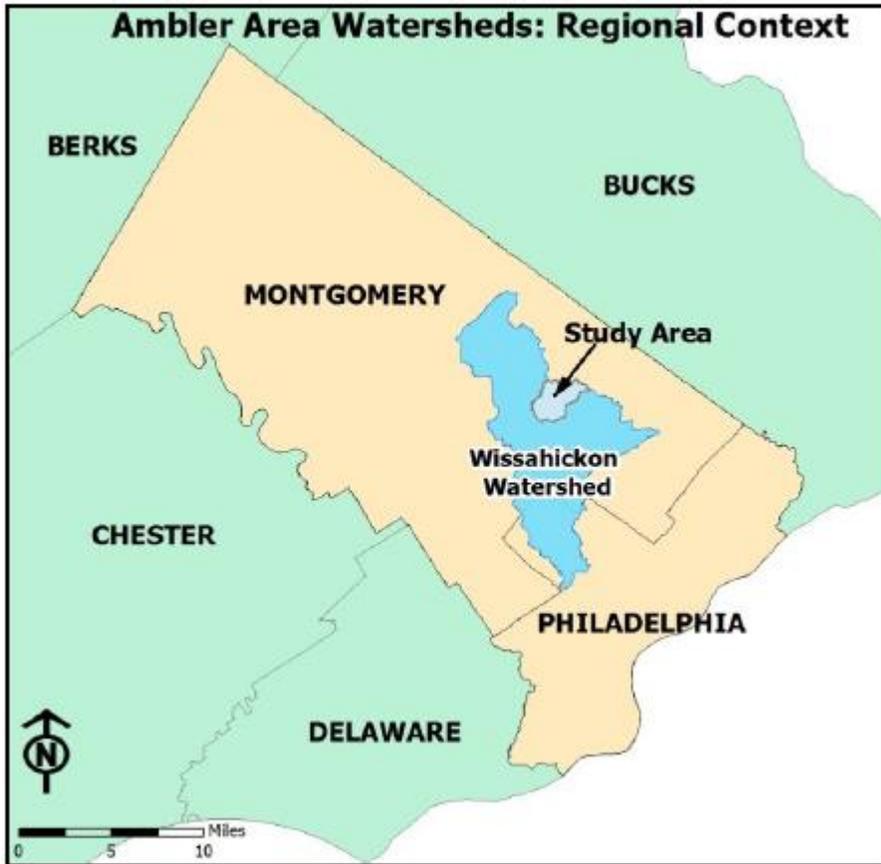
- Flood Plain Management Plan
- Conceptual Design
- Rough Order Costs
- Implementation Recommendations



US Army Corps
of Engineers®



ROSE VALLEY CREEK WATERSHED – PROJECT LOCATION AND PROBLEMS



Rose Valley Creek Flood Hazard Analysis PAS Study

1. Flooding issues hampering housing, economic development & public safety
2. Storm water infrastructure undersized and contributing to flooding issues
3. FEMA Maps outdated and unmapped areas – homeowners seeing damages with no flood insurance
4. Environmental Remediation Site damaged by flooding



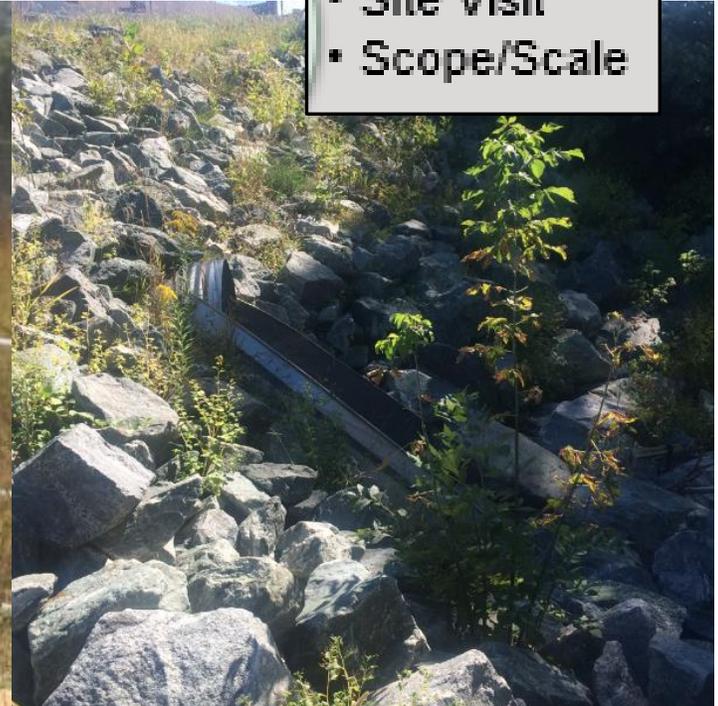
US Army Corps
of Engineers®



SITE VISIT:

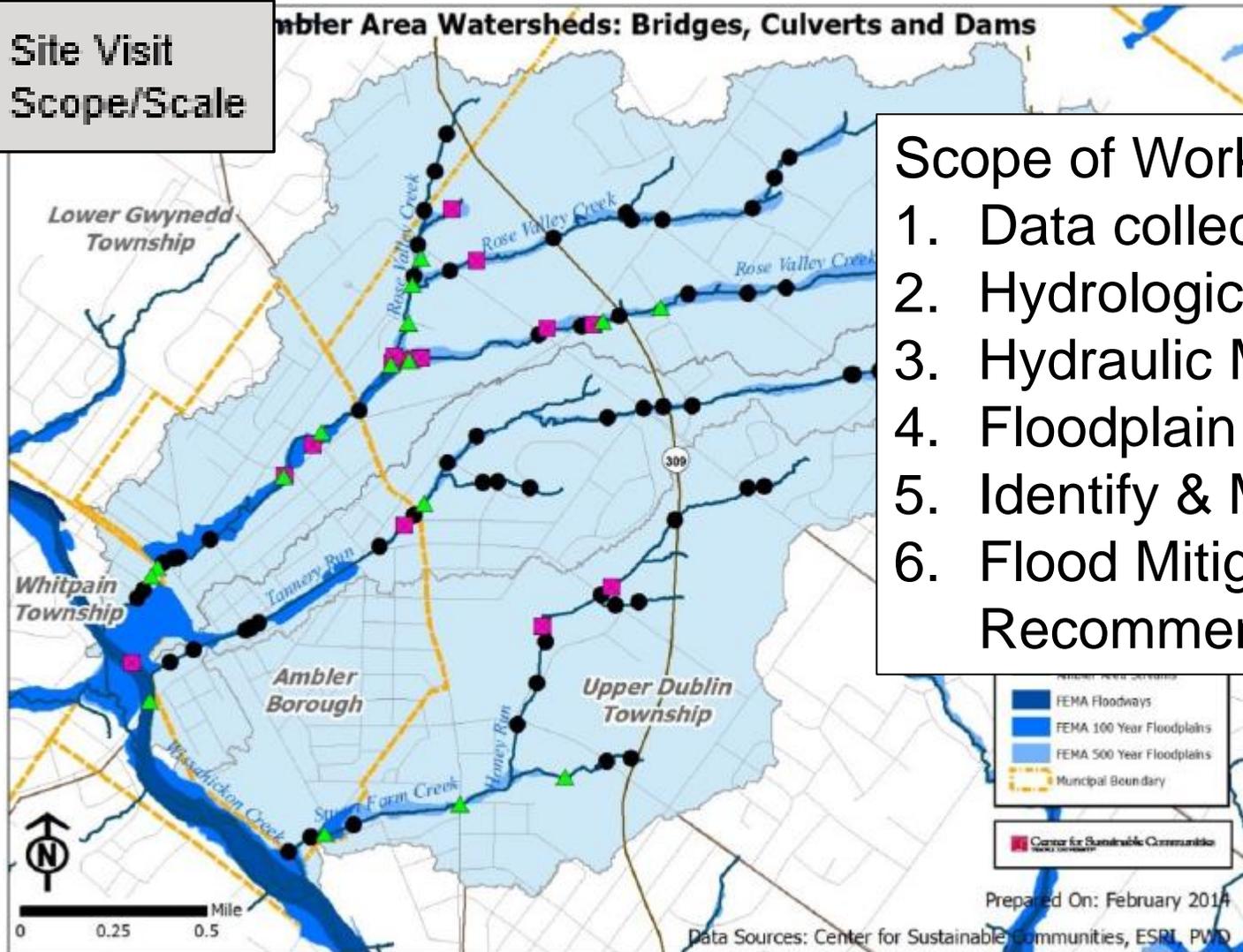
ROSE VALLEY CREEK WATERSHED

- Site Visit
- Scope/Scale



ROSE VALLEY CREEK WATERSHED – SCOPE OF WORK

- Site Visit
- Scope/Scale



Scope of Work – Primary Tasks

1. Data collection
2. Hydrologic Analysis/Refinement
3. Hydraulic Modeling
4. Floodplain Mapping
5. Identify & Model Mitigation Options
6. Flood Mitigation Report & Recommendations



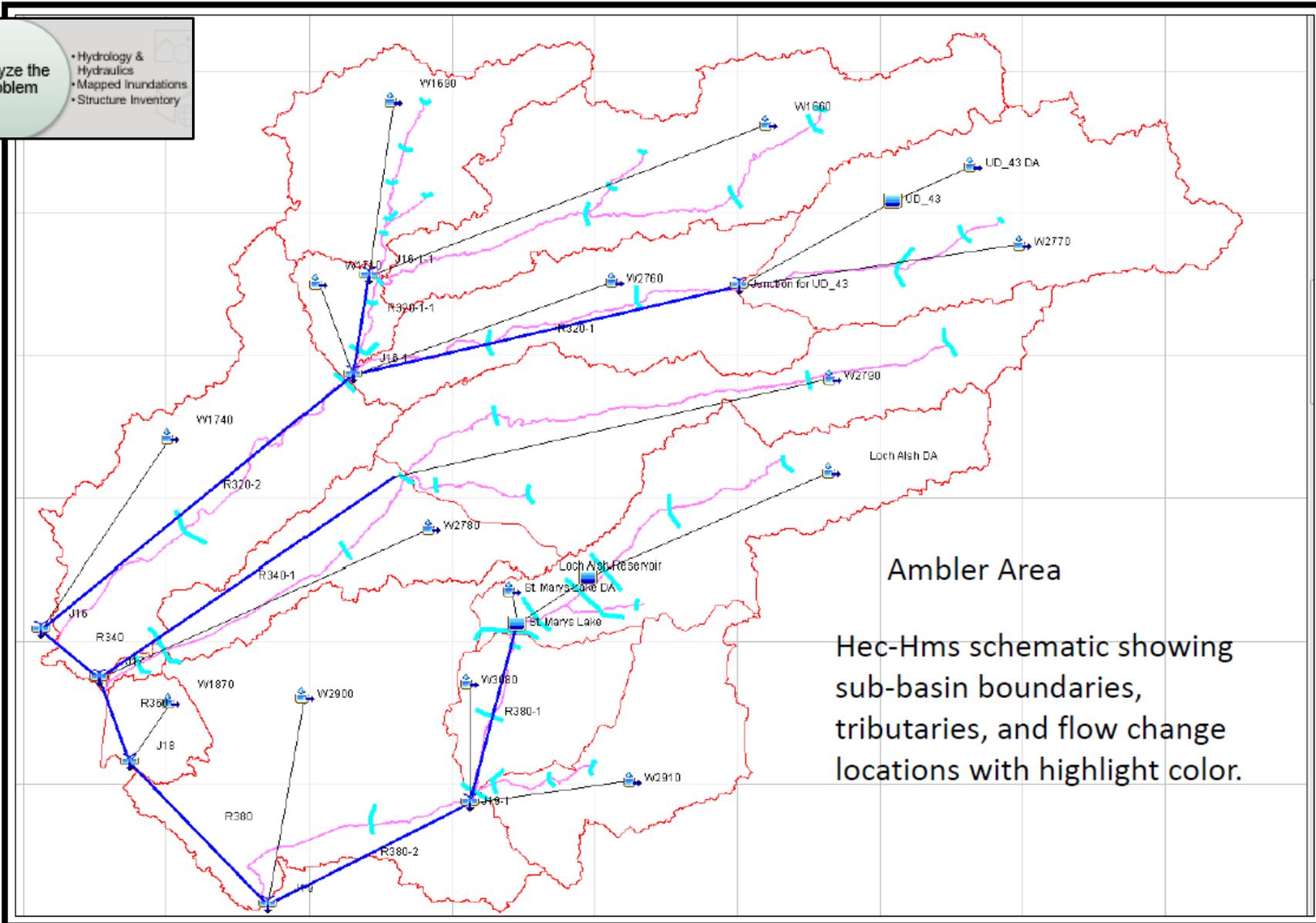
US Army Corps
of Engineers®



STUDY AREA: ROSE VALLEY CREEK WATERSHED

Analyze the Problem

- Hydrology & Hydraulics
- Mapped Inundations
- Structure Inventory



Ambler Area

Hec-Hms schematic showing sub-basin boundaries, tributaries, and flow change locations with highlight color.



US Army Corps of Engineers®

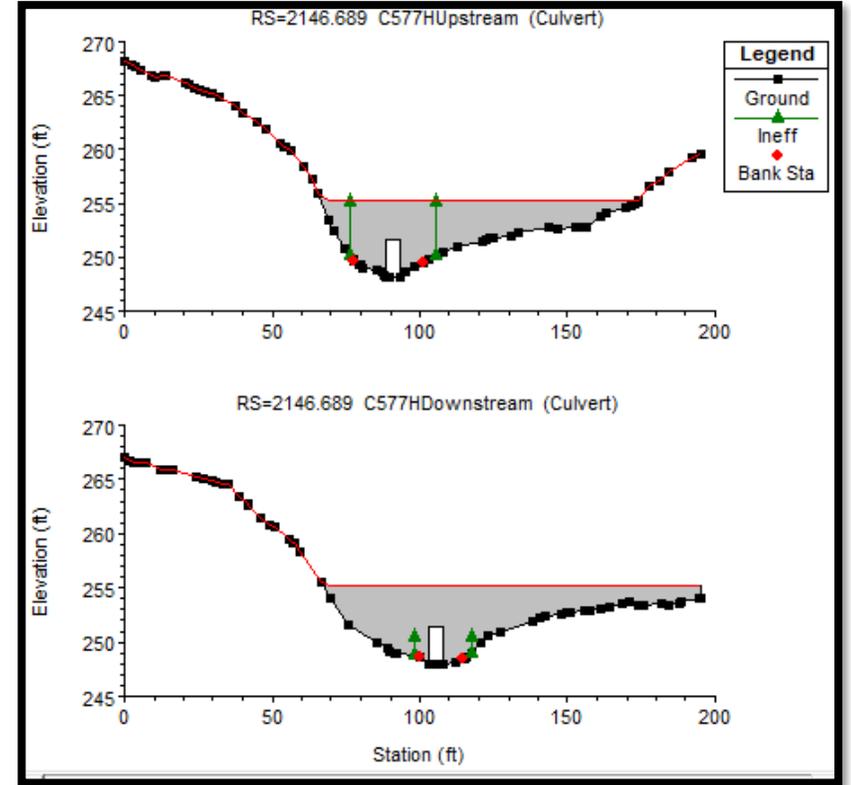
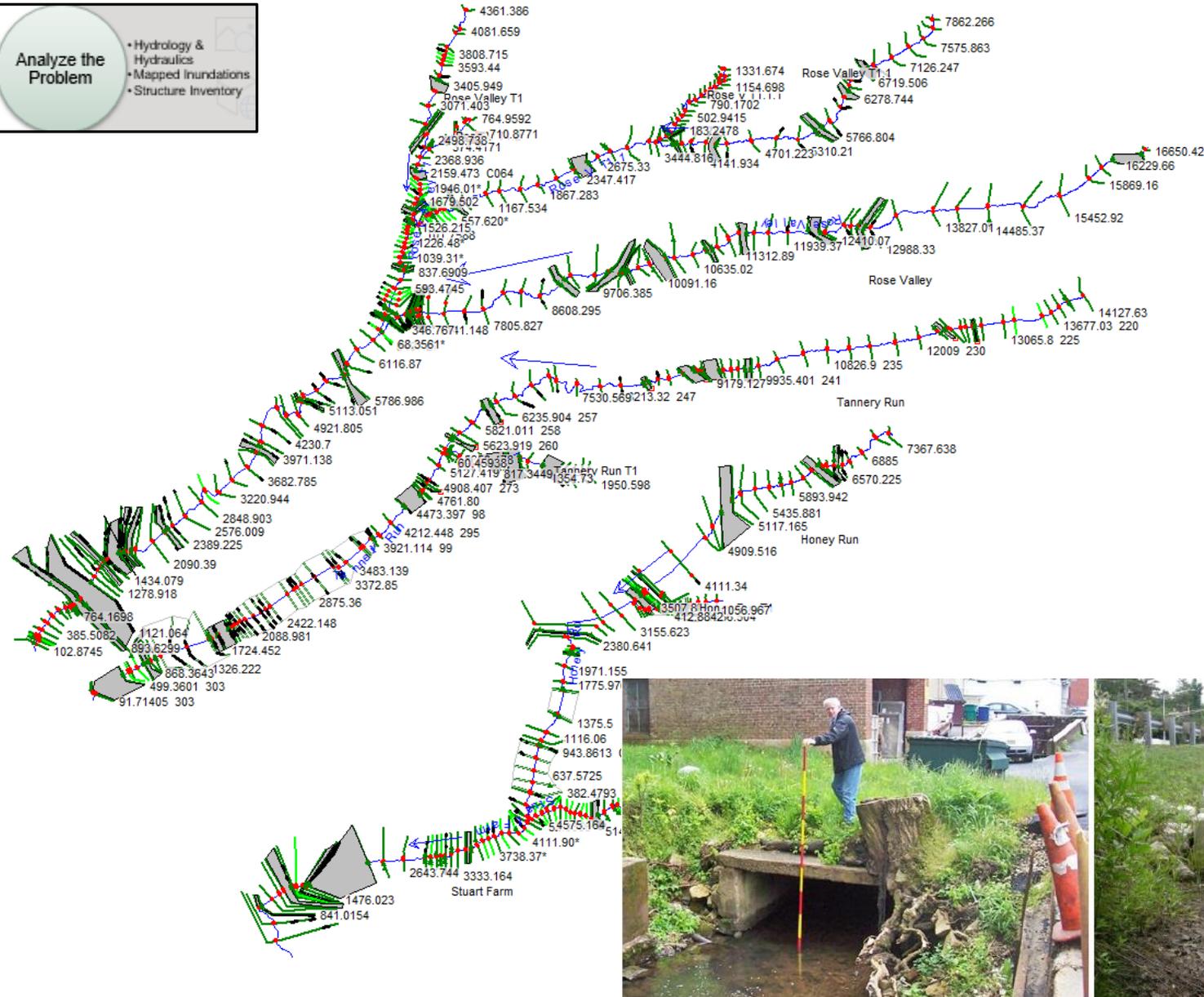


U.S. ARMY

STUDY AREA: ROSE VALLEY CREEK WATERSHED

Analyze the Problem

- Hydrology & Hydraulics
- Mapped Inundations
- Structure Inventory

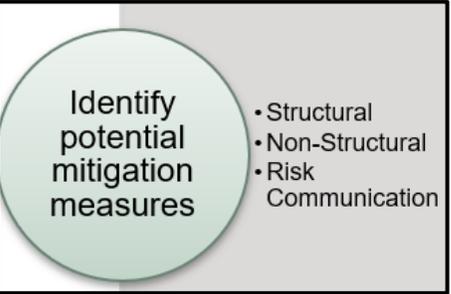


US Army Corps of Engineers®



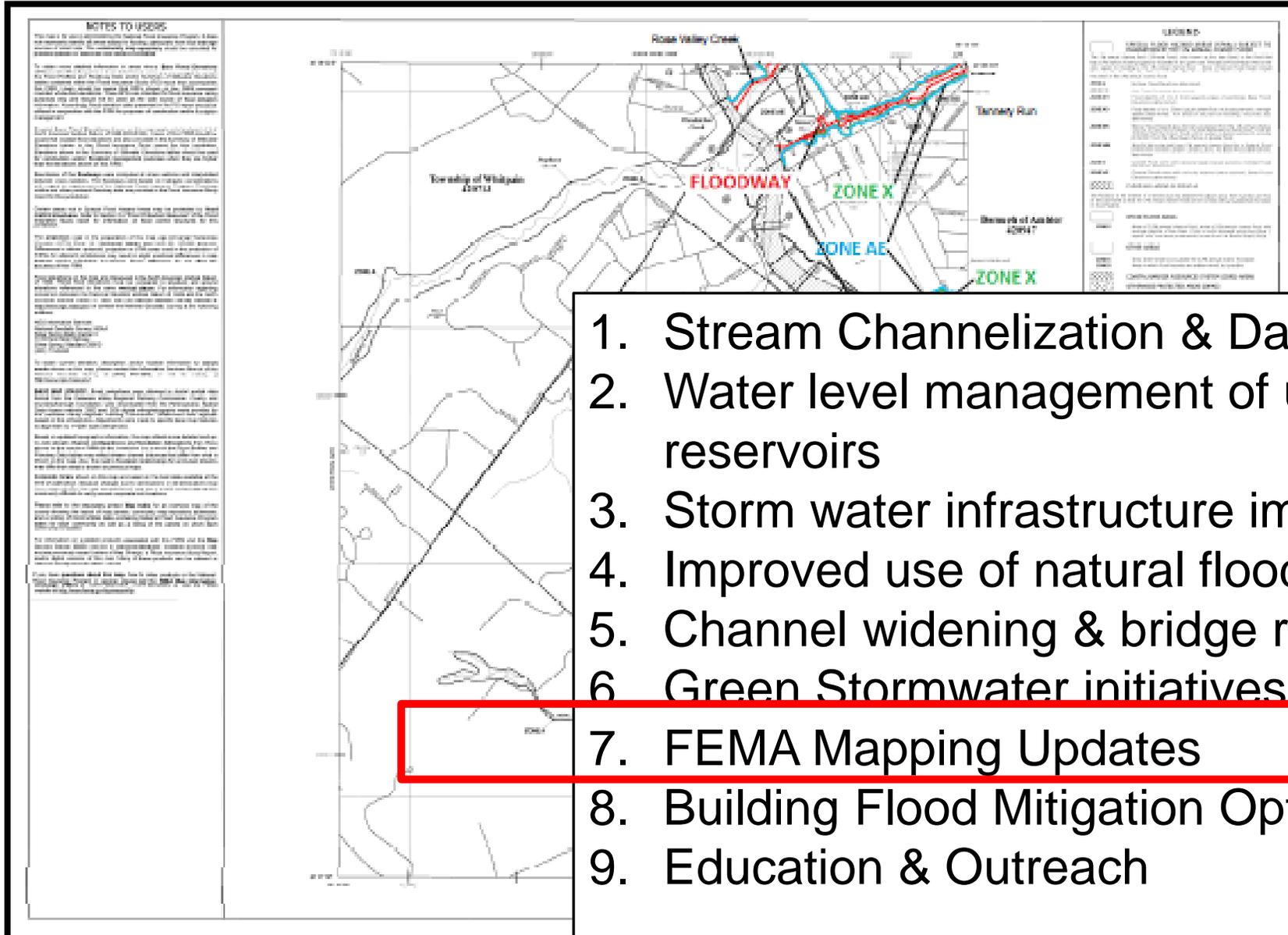
U.S. ARMY

STUDY AREA: ROSE VALLEY CREEK WATERSHED



1. Stream Channelization & Daylighting
2. Water level management of upstream lakes & reservoirs
3. Storm water infrastructure improvements
4. Improved use of natural floodplains
5. Channel widening & bridge replacement
6. Green Stormwater initiatives
7. FEMA Mapping Updates
8. Building Flood Mitigation Options
9. Education & Outreach

STUDY AREA: ROSE VALLEY CREEK WATERSHED



Recommend potential mitigation measures

- Flood Plain Management Plan
- Conceptual Design
- Rough Order Costs
- Implementation Recommendations

1. Stream Channelization & Daylighting
2. Water level management of upstream lakes & reservoirs
3. Storm water infrastructure improvements
4. Improved use of natural floodplains
5. Channel widening & bridge replacement
6. Green Stormwater initiatives
7. FEMA Mapping Updates
8. Building Flood Mitigation Options
9. Education & Outreach

STUDY AREA: ROSE VALLEY CREEK WATERSHED

Recommend potential mitigation measures

- Flood Plain Management Plan
- Conceptual Design
- Rough Order Costs
- Implementation Recommendations

Existing Structure



Nonstructural Mitigation Assessment for the Rose Valley Creek Watershed in Montgomery County, Pennsylvania

Possible Mitigation Measures



DIAGRAMATIC BUILDING SECTION (MITIGATED)
NOT TO SCALE

1. Stream Channelization & Daylighting
2. Water level management of upstream lakes & reservoirs
3. Storm water infrastructure improvements
4. Improved use of natural floodplains
5. Channel widening & bridge replacement
6. Green Stormwater initiatives
7. FEMA Mapping Updates
8. Building Flood Mitigation Options
9. Education & Outreach

STUDY AREA: ROSE VALLEY CREEK WATERSHED

1. Stream Channelization & Daylighting
2. Water level management of upstream lakes & reservoirs
3. Storm water infrastructure improvements
4. Improved use of natural floodplains
5. Channel widening & bridge replacement
6. Green Stormwater initiatives
7. FEMA Mapping Updates
8. Building Flood Mitigation Options
9. Education & Outreach

Recommend
potential
mitigation
measures

- Flood Plain Management Plan
- Conceptual Design
- Rough Order Costs
- Implementation Recommendations

Homeowner & Community Leader Flood Proofing Workshop

June 22 and 24, 2017



Nonstructural Mitigation Assessment for
the Rose Valley Creek Watershed in
Montgomery County, Pennsylvania



GREEN INFRASTRUCTURE

ANY QUESTIONS OR NEED FOR ADDITIONAL INFORMATION?

Technical Assistance (FPMS & PAS) Program Manager

Jason F. Miller, P.E.

215-656-6549

jason.f.miller@usace.army.mil



US Army Corps
of Engineers®

