FLOODPLAIN MANAGEMENT SERVICES (FPMS) PROGRAM OVERVIEW

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IWR-HQUSACE

https://www.usace.army.mil/Missions/Civil-Works/Technical-Assistance/FPMS/

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Program Basics

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Floodplain Management Services Authority

Section 206 of the Flood Control Act of 1960- that's a LONG time ago!

- Authorized USACE to:
- **Compile and disseminate information on floods and flood damages**, including identification of areas subject to inundation by floods of various magnitudes and frequencies, identification of areas subject to floods due to accumulated snags and other debris, and general criteria for guidance of Federal and non-Federal interests and agencies in the use of flood plain areas; and to
- **Provide advice to other Federal agencies and local interests for their use in planning to ameliorate the flood hazard**, to avoid repetitive flooding impacts, to anticipate, prepare, and adapt to changing climatic conditions and extreme weather events, and to withstand, respond to, and recover rapidly from disruption due to the flood hazards.
- Guidance: ER 1105-2-100 Appendix G Section 5- Floodplain Management Services (2004)

Full authority as amended:
https://uscode.house.gov/view.xhtml?req=(title:33%20section:709a%20edition:prelim)#:~:text=33%20USC%20709a%3A%20Information%20on%20floods%20and%20flood,floods%20and%20flood%20damage%20%28a%29%20Compilation%20and%20dissemination

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What FPMS Offers

General Technical Services

- Obtain, develop, and interpret flood and floodplain data
- Outreach to public entities upon request

General Planning Guidance

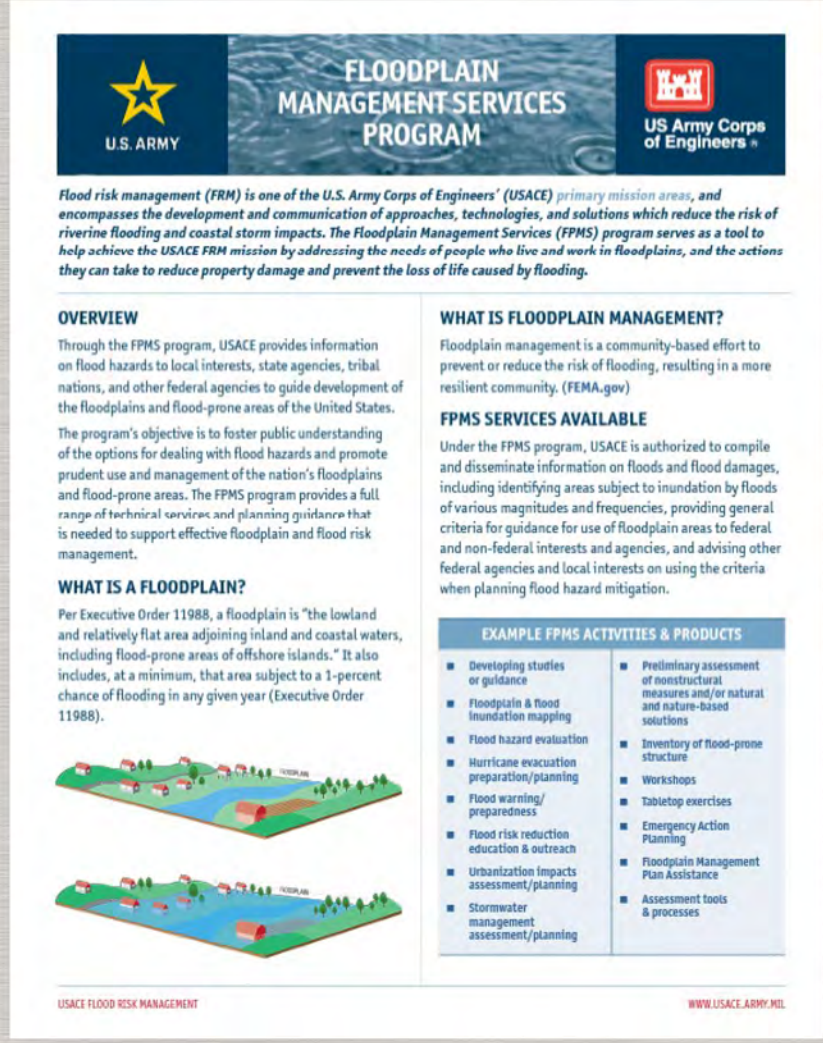
- Undertake “special studies” on all aspects of floodplain management planning
- Includes physical, socioeconomic, and environmental conditions of floodplain

Guides, Pamphlets, Supporting Studies

- Disseminate flood and floodplain data to foster public understanding of hazards and options

National Flood Insurance Program Support

(on reimbursable basis)



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FLOODPLAIN MANAGEMENT SERVICES PROGRAM

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Flood risk management (FRM) is one of the U.S. Army Corps of Engineers' (USACE) primary mission areas, and encompasses the development and communication of approaches, technologies, and solutions which reduce the risk of riverine flooding and coastal storm impacts. The Floodplain Management Services (FPMS) program serves as a tool to help achieve the USACE FRM mission by addressing the needs of people who live and work in floodplains, and the actions they can take to reduce property damage and prevent the loss of life caused by flooding.

OVERVIEW

Through the FPMS program, USACE provides information on flood hazards to local interests, state agencies, tribal nations, and other federal agencies to guide development of the floodplains and flood-prone areas of the United States.

The program's objective is to foster public understanding of the options for dealing with flood hazards and promote prudent use and management of the nation's floodplains and flood-prone areas. The FPMS program provides a full range of technical services and planning guidance that is needed to support effective floodplain and flood risk management.

WHAT IS A FLOODPLAIN?

Per Executive Order 11988, a floodplain is "the lowland and relatively flat area adjoining inland and coastal waters, including flood-prone areas of offshore islands." It also includes, at a minimum, that area subject to a 1-percent chance of flooding in any given year (Executive Order 11988).

WHAT IS FLOODPLAIN MANAGEMENT?

Floodplain management is a community-based effort to prevent or reduce the risk of flooding, resulting in a more resilient community. (FEMA.gov)

FPMS SERVICES AVAILABLE

Under the FPMS program, USACE is authorized to compile and disseminate information on floods and flood damages, including identifying areas subject to inundation by floods of various magnitudes and frequencies, providing general criteria for guidance for use of floodplain areas to federal and non-federal interests and agencies, and advising other federal agencies and local interests on using the criteria when planning flood hazard mitigation.

EXAMPLE FPMS ACTIVITIES & PRODUCTS

- Developing studies or guidance
- Floodplain & flood inundation mapping
- Flood hazard evaluation
- Hurricane evacuation preparation/planning
- Flood warning/ preparedness
- Flood risk reduction education & outreach
- Urbanization impacts assessment/planning
- Stormwater management assessment/planning
- Preliminary assessment of nonstructural measures and/or natural and nature-based solutions
- Inventory of flood-prone structure
- Workshops
- Tabletop exercises
- Emergency Action Planning
- Floodplain Management Plan Assistance
- Assessment tools & processes

USACE FLOOD RISK MANAGEMENT WWW.USACE.ARMY.MIL

Program factsheet available at: https://www.usace.army.mil/Missions/Civil-Works/Technical-Assistance/FPMS/

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Additional Considerations

FPMS Project Should:

- Use available data from all sources (and acknowledge when data is used from another source).
- Use available modeling and mapping whenever practical.
- Seek support from other Districts (within the Division or nation-wide) for personnel support to accomplish work prior to using contractor services.

FPMS Projects Should NOT:

- Duplicate efforts that should be or are being accomplished under another authority.
- Execute prior FPMS recommendations.
- Conduct detailed planning, design, or economic analysis or provide detailed and extensive mapping.
- Lead to USACE implementation.

General Reminders:

- If technical assistance requested could be accomplished under multiple USACE authorities, consult with the Division to determine the most appropriate path forward.
- If additional personnel resources are needed, first work with the Division to seek assistance from other Districts, then consider use of a contractor if appropriate expertise and resources are not available within USACE.
- If additional data collection, mapping, or modeling is needed, the request should be tied to the quality or validity of the resulting FPMS products.
- Implementation of any recommendations resulting from the FPMS project will be the responsibility of the requestor.

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WHO CAN Receive assistance?

At full federal cost

- State governments;
- Regional governments;
- Local governments;
- Non-federal public agencies;
- Federally-recognized Indian Tribes;
- Specified territories;
  - Puerto Rico, Virgin Islands, Guam, American Samoa, Northern Mariana Islands

- On a 100% cost-reimbursable basis*
  - Other federal agencies
  - Nongovernmental entities, including non-profits (501c)
  - “Private persons”

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File Name

Requirements to Accept Voluntarily Contributed Funds Under the FPMS Authority

- Can accept voluntarily contributed funds from nonfederal government agencies (or in-kind services) to expand the scope of services requested beyond the scope allowed by the available FPMS budget
- There **MUST** be a federal FPMS fund request before voluntarily contributed funds can be accepted
- Expanded services to be provided **MUST** fall within the scope of the FPMS program/authority
- Approval authority to accept contributed funds has been delegated to the Division Commander and can be delegated in writing to the District Commander
- A "Letter of Agreement" must be executed between the District and the nonfederal government agency prior to accepting contributed funds

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Floodplain Management Services Program Break-down

FPMS Base Program Special Studies= CCS 255

- Submitted annually to MSC (May/June timeframe)
- MSCs rank and prioritize

FPMS Coordination Accounts= CCS 255

- Quick Response
- Unit
- Technical Services

FPMS Interagency Projects= CCS 251

- Annual Application process due 31 March
- Must have two other agencies involved outside of USACE
- Must be Nonstructural or Nature-based
- Often supported by state Silver Jackets Teams

Other Sub-Programs:

- Systems Approach to Geomorphic Engineering (SAGE) CCS 252
- National Hurricane Program (NHP) CCS 253
- National Nonstructural Committee (NNC) CCS 254

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FPMS Base Program Special Studies/Coordination Funds (CCS 255)

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FPMS Special study (CCS 255): What Qualifies

- Must deal with flooding, floodplain management and provide technical support
- Does not have to be nonstructural or interagency – could result in a structural solution implemented by the local entity
- Must have a non-federal governmental entity requesting the assistance (otherwise must be reimbursable)
- Typically, 18-24 months in duration and less than $200k (RULE OF THUMB)- can be more with additional justification

Base Program Special Study Request Questions

1. What is the flood risk challenge or problem the assistance would address?
2. How will the requested project address the identified flood risk challenge or problem?
3. What is the anticipated end product or deliverable that would result from TA?
4. How does the nonfederal government agency requesting this TA anticipate using the end product or deliverable to address the identified flood risk challenge or problem?
5. Optional: Will the TA end product or deliverable:
    1. Improve environmental function?
    2. Address other social effects?
    3. Assist in managing repetitive flooding situations?
    4. Support drought planning or resilience efforts?
    5. Support protection, restoration, or other enhancement of wetlands?

FPMS Base Program Special Study: PROCESS

- Requestor must submit a written request for assistance to the District
- District develops a rough order of magnitude cost and scope
- Studies must be coordained with the District FPMS PgM
- Districts submit requests via the RI-TACOd database typically in May/June timeframe (MSC will specify due-date)
  - Current required information (beyond POC info): Description of the product, Impact of the product, Non-Federal government entity requesting assistance, start date, end date, location, description of any administration benefits supporting, budget request by month for following FY and amount needed FY+1

– Division completes review and prioritization of all Special Studies in their AOR

– HQ provides funding based on prioritization within funds available
  - Typically funded at beginning of FY (October)
  - Out of cycle requests may be considered as funds available

– Closeout: Will be completed in RI-TACOd database - funds should be returned via coordination with the MSC

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FPMS Coordination (CCS 255): What Qualifies

AMSCO	Item Name	Description
082030	FPMS Unit	Lump-sum amount to fund liaison and administrative support by District staff. Funds are also utilized to support program outreach.
082040	Technical Services	Lump-sum amount to fund the provision of Services general technical services to state and local governments by District staff including general information, hazard reports on spot locations, and general floodplain management planning guidance.
082045	Quick Responses	Lump-sum amount to fund limited services to Responses Federal agencies and private persons that take one person ten minutes or less to provide

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FPMS Interagency Special Studies (CCS 251)

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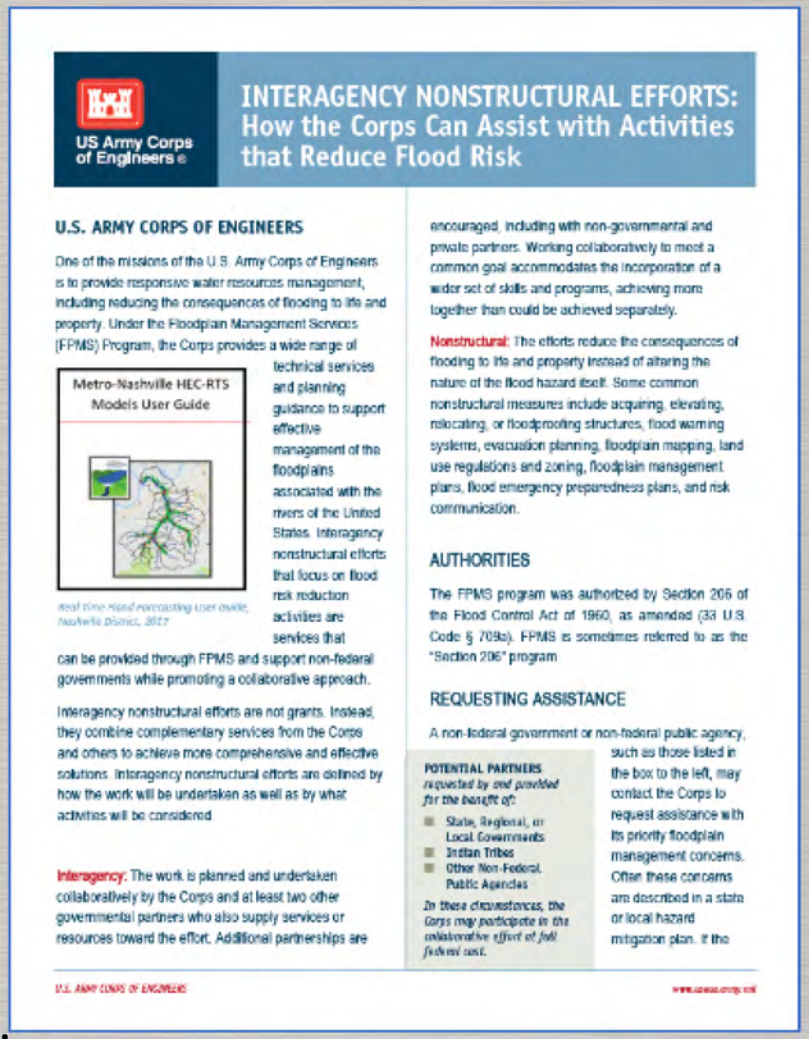
Interagency special studies

- Interagency Special Studies are a set-aside under FPMS, set aside under CCS 251
- Same rules apply as CCS 255 special study, PLUS:
  - Interagency
    - At least 2 governmental partners beyond USACE
    - Other partners as helpful; not limited to governmental
  - Nonstructural or Nature-Based
    - Seek to reduce flood risk through nonstructural or nature-based means
    - Reduce flood consequences (as opposed to altering nature or extent of flood hazard)
- Goals:
  - Collaborative work with partners
  - Integrated solutions
  - Outcomes: include or enable flood risk management action
- *Unlike other parts of FPMS, annual proposal process to allocate funds to Districts, typically for USACE labor*



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INTERAGENCY NONSTRUCTURAL EFFORTS: How the Corps Can Assist with Activities that Reduce Flood Risk

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One of the missions of the U.S. Army Corps of Engineers is to provide responsive water resources management, including reducing the consequences of flooding to life and property. Under the Floodplain Management Services (FPMS) Program, the Corps provides a wide range of technical services and planning guidance to support effective management of the floodplains associated with the rivers of the United States. Interagency nonstructural efforts that focus on flood risk reduction activities are services that can be provided through FPMS and support non-federal governments while promoting a collaborative approach.

Metro-Nashville HEC-RTS Models User Guide

Interagency nonstructural efforts are not grants. Instead, they combine complementary services from the Corps and others to achieve more comprehensive and effective solutions. Interagency nonstructural efforts are defined by how the work will be undertaken as well as by what activities will be considered.

Interagency: The work is planned and undertaken collaboratively by the Corps and at least two other governmental partners who also supply services or resources toward the effort. Additional partnerships are encouraged, including with non-governmental and private partners. Working collaboratively to meet a common goal accommodates the incorporation of a wider set of skills and programs, achieving more together than could be achieved separately.

Nonstructural: The efforts reduce the consequences of flooding to life and property instead of altering the nature of the flood hazard itself. Some common nonstructural measures include acquiring, elevating, relocating, or floodproofing structures, flood warning systems, evacuation planning, floodplain mapping, land use regulations and zoning, floodplain management plans, flood emergency preparedness plans, and risk communication.

AUTHORITIES

The FPMS program was authorized by Section 206 of the Flood Control Act of 1960, as amended (33 U.S. Code § 709a). FPMS is sometimes referred to as the "Section 206" program.

REQUESTING ASSISTANCE

A non-federal government or non-federal public agency, such as those listed in the box to the left, may contact the Corps to request assistance with its priority floodplain management concerns. Often these concerns are described in a state or local hazard mitigation plan. If the

POTENTIAL PARTNERS
requested by and provided for the benefit of:
- State, Regional, or Local Governments
- Indian Tribes
- Other Non-Federal Public Agencies

In these circumstances, the Corps may participate in the collaborative effort of full federal cost.

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Fact sheet:
https://planning.erdc.dren.mil/toolbox/library/FactSheets/USACE_InteragencyNonStructEfforts_FactSheet_April2020.pdf

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How are interagency (CCS 251) project proposals reviewed? What criteria are being applied?

- District enter proposals through RI-TACOd by the announced deadline (typically 31 March)
- MSCs review and work issues with Districts
- Interdisciplinary committee + MSCs rate proposals
- *Questions for District POC input are critical opportunity to influence rating*
- Selected efforts notified upon selection

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Key Points for FPMS Interagency proposals

Required Partner Documentation:

Documented support from **one** non-federal governmental partner

- If submitted by a Silver Jackets team, must be from state lead of that team

- Can also provide documented support from other partners if desired
- Format is not an issue (letter, email, optional partner support form template)
- Contents:
  - How proposal helps achieve partner goals
  - Partner role in conducting proposed effort
  - Partner commitment to long-term outcomes
- *Strongly suggest that partner uses own words*

FY26 Proposal Selection Criteria

1. Demonstrates that the flood risk challenge is a partner priority
2. Demonstrates that the TA will use nonstructural or nature-based approaches
3. Demonstrates that the TA is an appropriate fit for FPMS authority
4. Demonstrates that the TA will contribute to interagency flood risk priority
5. Demonstrates the strength of the interagency partnership
6. Proposals judged more favorably if they
   1. Improve environmental function
   2. Address other social effects
   3. Address repetitive flooding
   4. Support drought planning/resilience
   5. Supports protection/restoration/enhancement of wetlands
7. Demonstrated execution of previous FPMS interagency special studies

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WHAT MAKES A GOOD PROPOSAL?

PROGRESSION OF OUTCOMES

Progression: Who will take action? What will they do? How will that action affect flood risk?

Who:

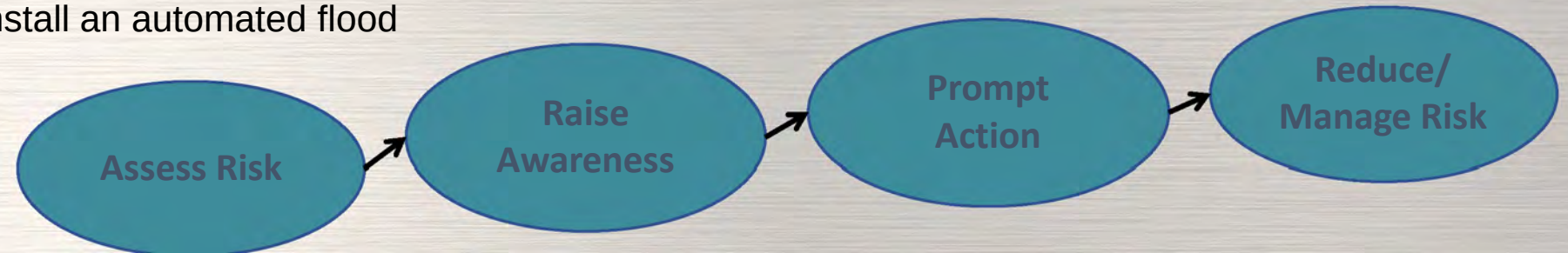
- To affect flood risk, often action is required beyond what USACE can offer.
- Consider upfront scoping engagement, to include those with decision authority.
- Ensure proposal encompasses proposed nonstructural or nature-based actions

Examples:

- Will the local government revise its ordinances or official plans?
- Will the local government install an automated flood warning system?

LEVERAGING PARTNERSHIPS

FEMA Developed HEC-RAS model for DFIRM.	**NOAA/NWS** Provides flood forecast data. Links to maps on NOAA/NWS webpage.	**Academia** Field assessments by students
USACE Surveys cross sections. Updates existing FEMA-developed HEC-RAS model with new survey data.	**State** Conducts public outreach activities with community. Identifies opportunities to manage or reduce risk.	**Nonprofit** Assess potential linkages to habitat improvement opportunities
USGS Models range of flood flows using updated HEC-RAS model. Develops inundation maps. Uploads to USGS FIM Mapper webpage.	**Local Community** Conducts public outreach activities. Updates local HMP.	**Neighborhood Association** Assistance with public outreach



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What is the difference between FPMS and Silver Jackets?

FPMS

- **PURPOSE:** Deliver technical assistance
- Base Program (CCS 255)– Quick, Unit, Tech & Special Studies focused on aspects of floodplain management planning
- Interagency Special Studies (CCS 251)- Proposals must identify at least 2 additional governmental partners, often developed in partnership with Silver Jackets teams, but not “Silver Jackets Projects”

Silver Jackets

- **Purpose:** USACE staff support and participate on Silver Jackets teams
- Is a component of the National Flood Risk Management Program (NFRMP) (CCS 179 AMSCO 133938)
- FRM-SJ funds support NFRMP coordination and outreach activities

Note: FRM-SJ Coordination funds and/or FPMS Unit funds may be used to develop FPMS Interagency proposals until effort is funded

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Out of Cycle Requests FPMS Base Program and Interagency Efforts

- Districts can submit a request for a project or funding outside of the typical timeline if there is a need
- Requests should be coordinated with and submitted through the MSC
- Interagency Nonstructural projects may need to complete a full Subject Matter Expert review
- MSC may have additional requirements beyond typical request process
- If submitting a request be sure to have a scope and a reason the request could not be submitted during the typical submission period (i.e. a large flood just occurred, additional coordination was needed)

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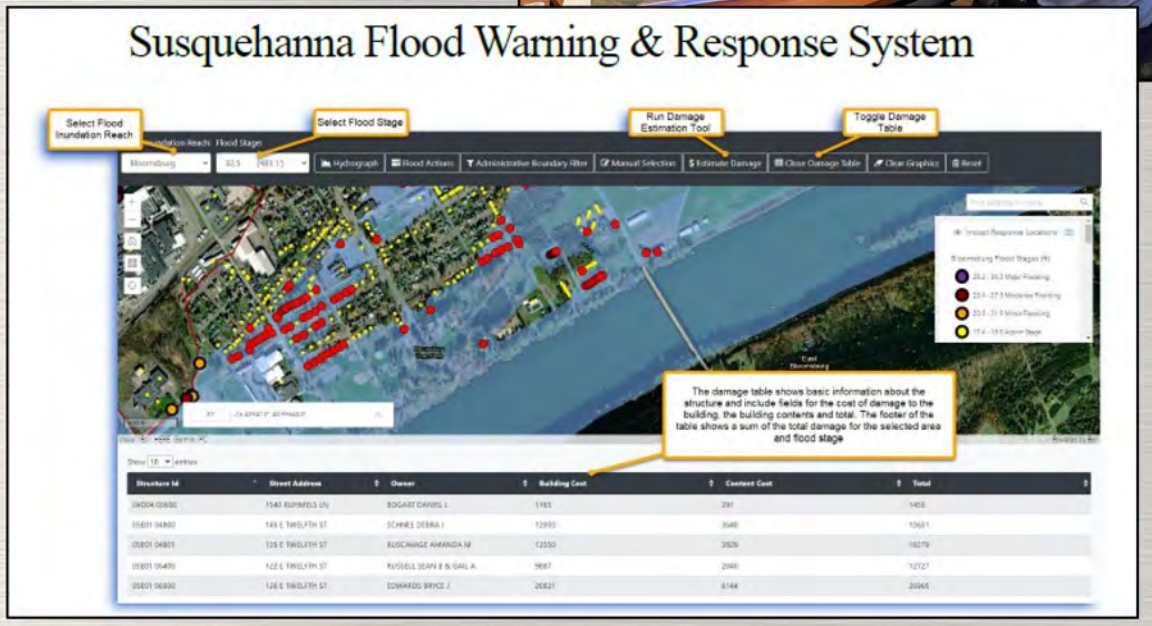
District Project Examples

Typical Baltimore District FPMS Studies

- Flood Risk Management Evaluation and Alternatives
- Stormwater Management Evaluation and Alternatives
- Nonstructural Floodproofing Assessment for Individual Buildings
- Flood Exercises
- Flood Inundation Mapping (tied to gauges)
- Flood Warning System Development
- Outreach Efforts:
  - Flood risk related outreach videos
  - High school students flood risk training
  - Floodproofing workshops
  - Ice jam workshops
  - State flood awareness week support
  - Outreach to specific communities



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Oxon Run Watershed Flood Hazard Assessment and Flood Risk Mgmt Study

Partner: Prince George's County, Maryland

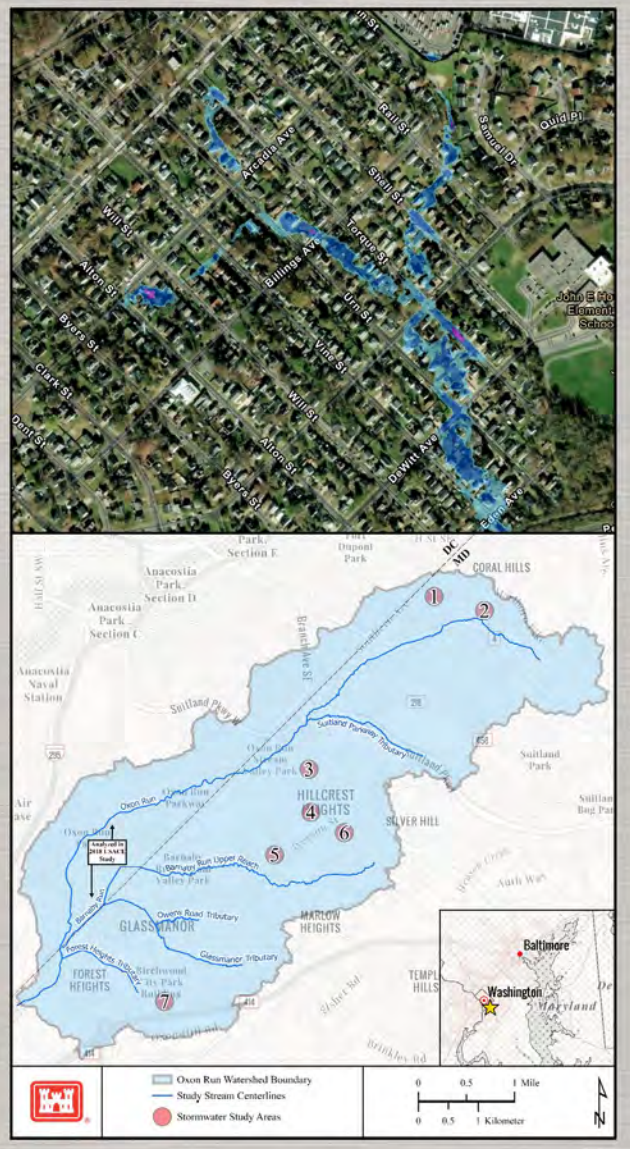
Project Description: This watershed is heavily urbanized and experiences both stormwater and riverine flooding. Study purposes were to identify regions that frequently experience riverine and/or stormwater flooding, use watershed-scale models to evaluate the Oxon Run watershed's present and future flooding risks, and to recommend actions to lessen the effects of floods on the communities within the watershed, with a focus on natural systems and infrastructure.

Technical Assistance Support Provided: HEC-RAS modeling was conducted for the mainstem river and all of the tributaries. Floodplain maps for the 10% and 1% annual chance (10-year/100-year) were developed. The stormwater system was mapped and modeling conducted for seven focus areas. USACE evaluated riverine flood risk management alternatives such as levees/floodwalls, upstream detention, bridge/culvert modifications, channelization, stream restoration, and floodproofing options (acquisition, elevation, dry and wet floodproofing). For stormwater management alternatives, USACE evaluated upstream storage via underground vaults and pipe upgrades.

Accomplishments and Outcomes: The study provided various riverine and stormwater solutions and cost estimates for the County to consider to reduce the flood risk. The County is conducting various watershed studies and plans to pursue grants and funding to design and implement solutions for priority areas.

Challenges: The watershed is highly urbanized so there are limited options to reduce the flood risk significantly.

POC: Stacey Underwood and Ed Benish



Tug Fork Tabletop Exercise

Partners: NOAA/NWS (Charleston and Jackson), FEMA, WV State Resiliency Office, WV Emergency Management Division, KY Emergency Management, Pike County Emergency Management, Mingo County Emergency Management, county floodplain coordinators.

Project Description: Conduct a tabletop exercise for six floodwalls along the Tug Fork River in Mingo County, WV and Pike County, KY to aid in flood risk management preparedness and response. The six floodwalls are Williamson, West Williamson, Matewan, Magnolia Ringwall, Appalachian Regional Hospital (ARH), and South Williamson.

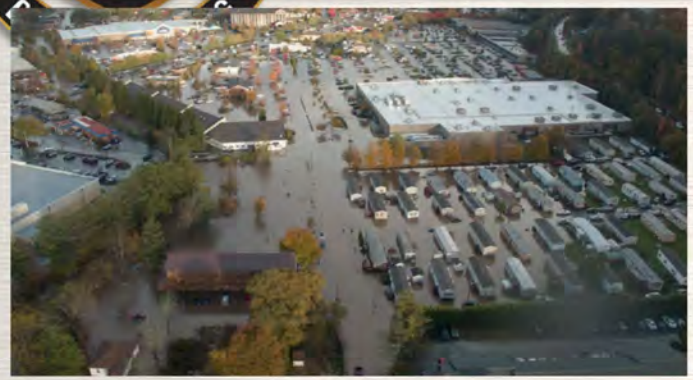
Technical Assistance Support Provided: The NWS helped develop the flood scenario used for this tabletop exercise that mimicked the 1977 flood, the largest flood of record. Other partners helped review existing Emergency Action Plans and identify any gaps in preparedness and response upon completion of the exercise. Inundation maps were also created as a product of this effort. The Readiness Support Center used the flood scenario from NWS to create an online storymap and handouts for visual reference.

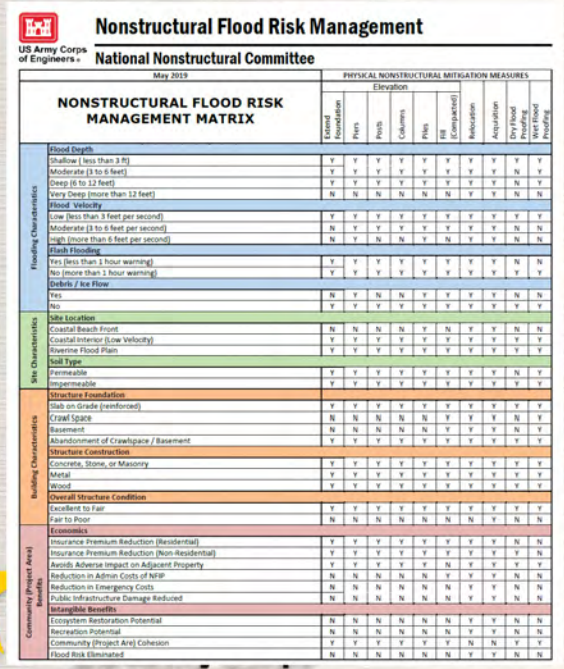
Accomplishments and Outcomes: Forty-four people from twenty agencies participated in the tabletop exercise in September 2024. In February 2025, the second largest flood of record occurred that was almost identical to the exercise scenario. The results of this tabletop strengthened the communities' preparedness and increased resiliency.

Challenges: It was difficult getting all stakeholders to participate since the exercise covered a large area and six floodwalls. Appalachian Regional Hospital was a key stakeholder that did not participate and that floodwall would be the first to overtop in a flood event. Upon completion of the exercise, it was noted that having more time for key discussion would be ideal and having breakout sessions to focus on specific groups with questions geared toward them would be helpful.

POC: Charles Goad

Boone, NC Non-structural Assessment





Nonstructural Flood Risk Management

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National Nonstructural Committee

May 2019

NONSTRUCTURAL FLOOD RISK MANAGEMENT MATRIX

		PHYSICAL NONSTRUCTURAL MITIGATION MEASURES									
		Elevation									
		Extend Foundation	Piers	Posts	Columns	Piles	Fill (Compacted)	Relocation	Acquisition	Dry Flood Proofing	Wet Flood Proofing
Flooding Characteristics	**Flood Depth**										
	Shallow (less than 3 ft)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Moderate (3 to 6 feet)	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
	Deep (6 to 12 feet)	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
	Very Deep (more than 12 feet)	N	N	N	N	N	N	Y	Y	N	N
	Flood Velocity										
	Low (less than 3 feet per second)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Moderate (3 to 6 feet per second)	N	Y	Y	Y	Y	Y	Y	Y	N	N
	High (more than 6 feet per second)	N	Y	N	N	Y	N	Y	Y	N	N
	Flash Flooding										
	Yes (less than 1 hour warning)	Y	Y	Y	Y	Y	Y	Y	Y	N	N
	No (more than 1 hour warning)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Debris / Ice Flow										
	Yes	N	Y	N	N	Y	Y	Y	Y	N	N
	No	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Site Characteristics	**Site Location**										
	Coastal Beach Front	N	N	N	N	Y	N	Y	Y	N	N
	Coastal Interior (Low Velocity)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Riverine Flood Plain	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Soil Type										
	Permeable	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
	Impermeable	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Building Characteristics	**Structure Foundation**										
	Slab on Grade (reinforced)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Crawl Space	N	N	N	N	N	Y	Y	Y	N	Y
	Basement	N	N	N	N	N	Y	Y	Y	N	Y
	Abandonment of Crawlspace / Basement	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Structure Construction										
	Concrete, Stone, or Masonry	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Metal	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Wood	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Overall Structure Condition										
	Excellent to Fair	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Fair to Poor	N	N	N	N	N	N	N	Y	N	N
Community (Project Area) Benefits	**Economics**										
	Insurance Premium Reduction (Residential)	Y	Y	Y	Y	Y	Y	Y	Y	N	N
	Insurance Premium Reduction (Non-Residential)	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
	Avoids Adverse Impact on Adjacent Property	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
	Reduction in Admin Costs of NFIP	N	N	N	N	N	Y	Y	Y	N	N
	Reduction in Emergency Costs	N	N	N	N	N	N	Y	Y	N	N
	Public Infrastructure Damage Reduced	N	N	N	N	N	N	Y	Y	N	N
	Intangible Benefits										
	Ecosystem Restoration Potential	N	N	N	N	N	N	Y	Y	N	N
	Recreation Potential	N	N	N	N	N	N	Y	Y	N	N
	Community (Project Are) Cohesion	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
	Flood Risk Eliminated	N	N	N	N	N	N	Y	Y	N	N

Partners: Town of Boone, NC

Project Description: The study evaluated a representative sample of structures in the town of Boone, NC that experience repeated flooding and provided nonstructural flood risk management measure recommendations.

Technical Assistance Support Provided: Approximately a dozen sample structures were chosen in coordination with the town of Boone to represent the different residential, commercial, and educational buildings. Based on the building characteristics, site characteristics, and flood risks, recommendations of nonstructural flood risk management measures were made to provide a resource for local government, residents, businesses, and Appalachian State University interested in pursuing implementation of flood risk reduction measures.

Accomplishments and Outcomes: A non-structural assessment report was provided to the town that included an overview of non-structural flood risk management measures, assessment criteria for each of the representative structures, and recommendations to reduce flood risk.

Challenges: Current residential areas are predominantly used for Appalachian State University students. Given the limited availability of affordable housing for local residents, careful consideration was given to balance technical aspects and community factors in recommendations.

POC: Sarah Glass

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Saratoga Springs, Utah Alluvial Fan Risk Assessment and Risk Informed Strategies for Mitigation FPMS Project - Sacramento District

Saratoga Springs is a rapidly growing community located between the Lake Mountains and Utah Lake in north-central Utah that is highly vulnerable to alluvial fan flooding and debris flows.

- A Floodplain Management Services (FPMS) Interagency Floodplain Hazard Assessment (FHA) project was completed in 2019. Based on information in the FHA, the City requested further assistance to enhance its understanding of risk and develop flood risk management strategies.
- In 2022, USACE initiated the Saratoga Springs, UT Floodplain Management Services Phase II as a Base FPMS project to perform floodplain modeling and mapping, geologic hazard analysis and mapping, and sediment yield analysis and debris flow mapping.

The 2024 Saratoga Springs Project included elements of Communication, Preparedness, Hazard Identification, Risk Analysis and Risk Management. The products completed for this project are already supporting the community as they plan for their future growth.

- Three technical analyses were conducted to further evaluate risks and mitigation strategies associated with alluvial fan flooding in the City:
  - Floodplain modeling and mapping to understand the City's flooding potential,
  - Geologic hazard analysis and mapping to better understand expansion of the upper basin and potential for movement, and
  - Estimated sediment yield for the five proposed debris basins and debris flow alluvial fan delineations for the three highest hazard fans.

Saratoga Springs, Utah Alluvial Fan Risk Assessment & Risk Informed Strategies for Mitigation

Partners: Jeremy Lapin-Publics Work Director, City of Saratoga Springs, Utah

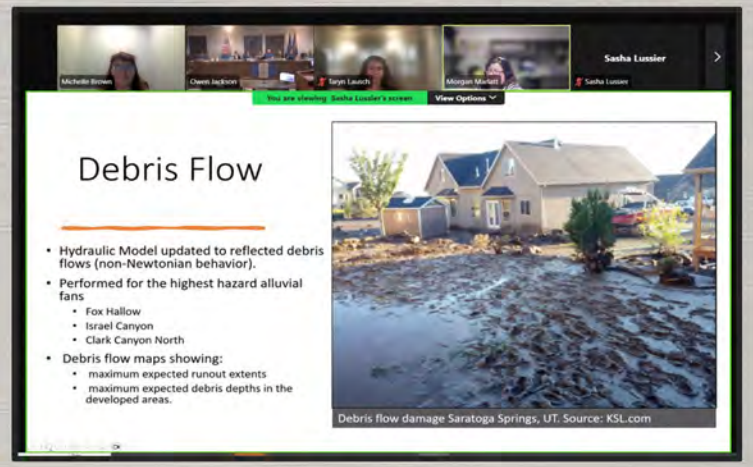
Project Description: The objective of the study was to further evaluate risks and mitigation strategies associated with alluvial fan flooding in Saratoga Springs, UT. This built upon the FY19 Alluvial Fan Hazard Mapping project (Phase 1), which developed a prioritized list of alluvial fans in the project area based on risk/hazard. Activities under this Phase 2 project included the incorporation of hydrology data into the alluvial fan prioritization and developing refined flow data for identified fans that would be beneficial for planning.

Technical Assistance Support Provided: Three technical analyses were conducted to further evaluate risks and mitigation strategies associated with alluvial fan flooding in the City: 1) floodplain modeling and mapping to understand the City's flooding potential, 2) geologic hazard analysis and mapping to better understand expansion of the upper basin and potential for movement, and 3) estimated sediment yield for the five proposed debris basins and debris flow alluvial fan delineations for the three highest hazard fans.

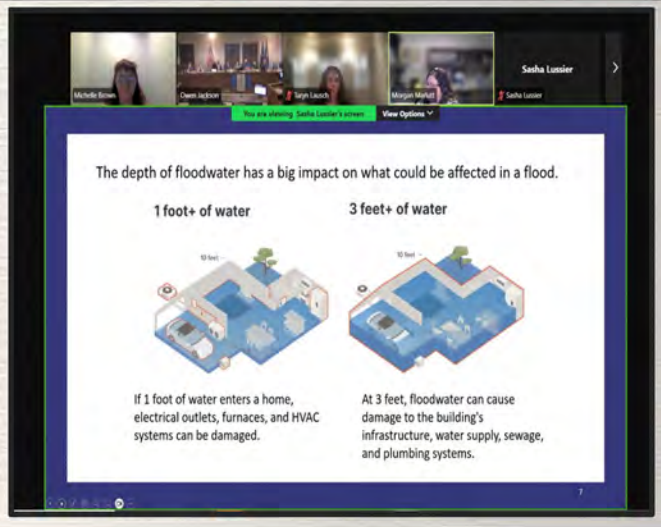
FY24 Accomplishments and Outcomes: The City will use the risk assessment results to review their local mitigation actions plans and incorporate and prioritize new risk reduction actions to reduce their alluvial fan flooding risk, reduce damage from debris flow events that have affected the City's residential developments, and improve the well-being and safety of their community members.

Challenges: There are limitations on the use of the models and analysis conducted in this project because the modeling conducted for this project represent the conditions present during the years 2019-2022 and the topography of the City in a fixed time. The City will need to continually update the models to reflect changes to topography and land use, as they will change the outcomes of the risk assessment. For example, wildfires are likely to occur in the area, and this can affect the potential for debris flow.

POC: Michelle Brown, Project Manager, michelle.m.brown@usace.army.mil



Above Left: Taryn Lausch presents on geological findings. Above Right: Morgan Marlatt presents on engineering analyses and floodwater depth effects on homes. Bottom Right: Michelle Brown presents strategies to reduce risk of alluvial fan flooding.



Questions??

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