

# Guidance for Flood Risk Analysis and Mapping

## **Incorporating Mitigation Planning Technical Assistance into Risk MAP Projects**

February 2018



**FEMA**

Requirements for the Federal Emergency Management Agency's (FEMA) Risk Mapping, Assessment, and Planning (Risk MAP) program are specified separately by statute, regulation, or FEMA policy (primarily the Standards for Flood Risk Analysis and Mapping). This document provides guidance to support the requirements and recommends approaches for effective and efficient implementation. Alternate approaches that comply with all requirements are acceptable.

For more information, please visit the [FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage](#). Copies of the Standards for Flood Risk Analysis and Mapping policy, related guidance, technical references, and other information about the guidelines and standards development process are all available here. You can also search directly by document title on the FEMA library webpage.

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended by the Disaster Mitigation Act of 2000, provides the legal basis for state, tribal, and local governments to undertake risk-based approaches to reducing natural hazard risks through mitigation planning. Specifically, the Stafford Act requires state, tribal, and local governments to develop and adopt FEMA-approved hazard mitigation plans as a condition for receiving certain types of non-emergency disaster assistance.

Title 44, Chapter 1, Part 201 ([44 CFR Part 201](#)) of the Code of Federal Regulations (CFR) contains requirements and procedures to implement the hazard mitigation planning provisions of the Stafford Act.

Additional information on hazard mitigation planning can be found by visiting the [FEMA Hazard Mitigation Planning webpage](#).

## Table of Revisions

Affected Section or Subsection	Date	Description
First Publication	February 2018	Initial version of new transformed guidance. The content was derived in part by Operating Guidance 01-11, <u>Risk MAP Guidance for Incorporating Mitigation Planning Technical Assistance and Training into Flood Risk Projects</u> . It has been reorganized and is being republished.

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# Incorporating Mitigation Planning Technical Assistance into Risk MAP Projects

## 1. Introduction

The purpose of this guidance is to further implement the Department of Homeland Security, Federal Emergency Management Agency's (FEMA) Risk Mapping, Assessment, and Planning (Risk MAP) program by describing how Risk MAP Project Teams can provide communities with mitigation planning technical assistance throughout the Risk MAP project lifecycle. Under Risk MAP, mitigation planning technical assistance is envisioned to be a component of every flood risk project. It is the region's responsibility to appropriately resource this technical assistance in concert with Risk MAP program goals and measures.

The primary audiences for this guidance document are staff from the 10 FEMA Regional Offices, FEMA Headquarters, and the Project Teams that are formed to carry out the projects in support of the Regional Offices. In addition to the FEMA Project Officer, the Project Team can and should include management and staff from the Cooperating Technical Partners (CTPs) and/or Risk MAP providers who are participating in the project; the State National Flood Insurance Program (NFIP) Coordinator, the State Hazard Mitigation Officer (SHMO), and the State Planner (where applicable); and representatives of other federal agencies and entities, such as regional planning agencies and water management districts.

This guidance focuses on using the support and expertise of Risk MAP Project Teams to provide mitigation planning technical assistance to a local or tribal jurisdiction. In this document, both local and tribal jurisdictions are referred to as "communities." The guidance is organized into three sections:

- Section 1 provides an overview of the intersections between FEMA's Risk MAP lifecycle and a community's hazard mitigation planning cycle;
- Section 2 provides guidelines for selecting appropriate technical assistance activities for a Risk MAP project; and
- Section 3 presents a comprehensive menu of mitigation planning technical assistance activities that can be integrated into Risk MAP projects.

The technical assistance provided through Risk MAP should focus on building the capability of a community to plan for and reduce risk; it should not be limited to assistance with preparing or updating a mitigation plan. Reducing risks from natural hazards requires extensive coordination among the many local and state staff with mission areas in planning and emergency response. To this end, Section 3 addresses both the content of mitigation planning technical assistance and the importance of stakeholder engagement.

The guidance in this document is consistent with the Risk MAP program vision. The Risk MAP program seeks to integrate flood hazard mapping, risk assessment tools, and mitigation planning into one seamless program to increase public awareness and inspire action that reduces risk to life and property. Technical assistance to support mitigation planning plays a key role in the Risk MAP program vision and should be offered as part of every Risk MAP project. By building stakeholder understanding of Risk MAP information and tools, such technical assistance can support the development of more robust mitigation and outreach strategies that are more precisely tailored to a community's risks.

The guidance, context, and other information in this document are not mandatory unless they are codified separately in a statute, regulation, or policy. Alternate approaches that comply with all requirements are acceptable.

### 1.1. Risk MAP Project Lifecycle

To assist FEMA Regional Offices and Project Teams in providing mitigation planning technical assistance throughout a Risk MAP project, this subsection reviews the Risk MAP lifecycle (Figure 1). Risk MAP projects seek to reduce risk from natural hazards by providing communities with access to quality hazard data. While comprehensive flood risk information is a product of all Risk MAP projects, other natural hazards may be addressed as well, depending on the needs of the community.

Figure 1: Risk MAP Project Lifecycle



A typical Risk MAP project consists of six steps, with each step producing a distinct set of products and tools. Many of the steps are associated with “touchpoints” in which Project Teams exchange information with communities. These touchpoints should serve as opportunities to discuss all hazards of interest to the community, as well as the interconnectedness of hazards.

### **1.1.1. Project Planning**

All Risk MAP projects begin with a project planning and Discovery step to define the location and scope of future projects. The Discovery process is particularly relevant to hazard mitigation planning. The goals of the Discovery process are to (1) determine what natural hazard information already exists, (2) identify what natural hazard information is still needed to make mitigation decisions, and (3) identify which areas and resources could be most vulnerable during a natural hazard event. This information is assembled into a Discovery Report and Discovery Map(s) that are presented to and discussed with communities at the Discovery Meeting(s). The Discovery process is also an opportunity to assess community capability and plan for technical assistance and training based on that capability. The Project Team may also determine if an Areas of Mitigation Interest (AoMI) dataset will be developed for use in the mitigation planning process.

### **1.1.2. Mapping and Data Phase**

Once a Risk MAP project is initiated, FEMA and its project partners move forward with preparing the regulatory flood hazard products. This step produces draft versions of the Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS) report, as well as additional non-regulatory flood risk information that may be packaged into a draft set of Flood Risk Products (FRPs). See Section 3.3.4 for a detailed description of the FRPs. An optional Flood Risk Review (FRR) Meeting may be organized to give community officials the chance to review and provide early feedback on these draft products.

### **1.1.3. Preliminary FIRM Issuance**

In this step, preliminary versions of the FIRM and FIS report are delivered to community officials and posted publicly through FEMA’s Flood Map Service Center for review and comment. These preliminary products show new or updated flood hazard data that will affect floodplain development requirements and/or flood insurance rates in communities once the FIRM becomes effective. This step includes two touchpoints with communities within the study area. FEMA organizes a Community Coordination and Outreach (CCO) Meeting to present the preliminary products to community officials and alert them that their floodplain ordinance will likely need to be updated. An optional Flood Risk Open House Meeting may also be offered to familiarize the general public with any changes in flood risk.

### **1.1.4. Risk Assessment**

This step refers to the development of comprehensive natural hazard information for the project area. Risk MAP projects provide communities not only with regulatory flood hazard products, but

with a set of non-regulatory FRPs as well. These FRPs include a Flood Risk Map (FRM), Flood Risk Report, and Flood Risk Database (FRD). See Section 3.3.4 for a detailed description of the FRPs. At the request of the communities in the project area, Risk MAP projects may also generate information on multi-hazard risks. The risk assessment information produced by a Risk MAP project may be presented at several different meetings, including the CCO Meeting discussed above, and the Resilience Meeting discussed below.

#### **1.1.5. Effective FIRM and FIS Report Issuance**

Once FEMA and its mapping partners have finalized all changes to the FIRM and FIS report, a Letter of Final Determination (LFD) is issued to each community's Chief Executive Officer. The LFD establishes the effective date of the new FIRM and FIS report for the community and initiates a 6-month adoption period. During this period, the community must adopt and amend its floodplain management regulations to reflect the new regulatory information. Two distinct touchpoints can be introduced into this step. Before the FIRM effective date, Project Teams can organize discussions with local officials on the adoption of local floodplain ordinances that meet or exceed minimum NFIP and state standards. These discussions should also touch on opportunities for lower flood insurance premiums through the Community Rating System (CRS). Before or after the effective date, Project Teams can also organize a Resilience Meeting. The Resilience Meeting provides an opportunity for FEMA, state, tribal, territory and local leaders to (1) discuss ways that Risk MAP products can support ongoing risk assessment and planning efforts, and (2) work together to identify additional mitigation actions to reduce natural hazard risks.

#### **1.1.6. Mitigation Planning**

Although the Mitigation Planning step precedes the Project Planning step in the Risk MAP lifecycle diagram, this activity is continuous and should occur throughout a Risk MAP project. Every step of a Risk MAP project generates products and tools that communities can incorporate into the mitigation planning process and use to mitigate natural hazard risk.

### **1.2. Hazard Mitigation Planning Cycle**

To assist FEMA Regional Offices and Project Teams in tailoring mitigation planning technical assistance to ongoing hazard mitigation activities, this subsection reviews the four phases of the hazard mitigation planning cycle (Figure 2). Hazard mitigation is defined by FEMA as sustained action(s) taken to reduce or eliminate long-term risk to people and property from hazards. While flood hazards are often a concern, hazard mitigation is intended to reduce risks from all natural hazards that affect a community.

Hazard Mitigation Plans (HMPs) serve as the foundation for a community's long-term hazard mitigation strategy. Federal law requires that state, tribal, and local governments develop and adopt HMPs to receive certain types of non-emergency disaster assistance. To remain eligible

for this assistance, federal regulations also require that HMPs be updated and approved by FEMA at least every five years.

Figure 2: Hazard Mitigation Planning Cycle



Hazard mitigation plans provide a framework for mitigation actions across local and regional agencies. The mitigation strategies identified in an HMP are intended to engage all programs with mission areas relevant to hazard mitigation and emergency response in actions to protect life and property. For example, local and regional agencies with functions related to land use planning can integrate hazard mitigation priorities into a range of planning mechanisms. These may include comprehensive plans, zoning ordinances, subdivision and land development ordinances, design standards, building codes, capital improvement plans, and open space plans.

Project Teams should not expect the Risk MAP project lifecycle to align with the five-year hazard mitigation planning cycle, and should be prepared to tailor technical assistance to different phases of the five-year timeframe. Project Teams should also recognize that most Risk MAP project areas do not align with HMP planning areas, and should be prepared to coordinate technical assistance with multiple jurisdictions. While Risk MAP project areas often correspond to watershed boundaries, HMP planning areas generally correspond to political jurisdictions. By learning about the hazard mitigation planning cycle, Project Teams can help communities throughout a project area apply Risk MAP products and tools in every phase of hazard mitigation planning.

### **1.2.1. Organize Resources**

The hazard mitigation planning cycle begins with a planning phase in which communities assemble the resources needed for a successful planning process. This includes securing technical expertise, defining the planning area, outlining the planning process, and identifying key individuals and stakeholders to participate in the process. This phase also includes identifying how the public and other interested organizations will be involved. If a Risk MAP project is underway in the planning area, or was recently completed, FEMA will provide the community with materials and contacts collected throughout the Risk MAP lifecycle to assist them with organizing resources. The Discovery Report, for example, is an excellent tool that communities can use to kick-start the hazard mitigation planning process. See Section 3.3.1, below.

### **1.2.2. Assess Risks**

Once the planning process is defined, the community begins to identify the characteristics and potential consequences of natural hazards. This includes identifying the location and extent of the hazards, describing previous occurrences and the probability of future events, assessing vulnerabilities, and describing overall impacts. It is important to understand what geographic areas different hazards might affect and which people, property, or other assets may be vulnerable. For the initial plan development, significant effort is expended in identifying natural hazards, developing profiles, and utilizing existing data. For a plan update, the focus is on including new hazard events and refining the risk assessment based on any other new data. The non-regulatory flood risk information developed during the Risk Assessment step of the Risk MAP life cycle, discussed in Section 3.3.4 below, can be extremely useful in this phase.

### **1.2.3. Develop a Mitigation Strategy**

Based on its understanding of risk, the community then develops long-term strategies for reducing disaster losses and identifies specific mitigation actions. The mitigation strategy addresses how each mitigation action will be implemented and administered, including the responsible department, existing and potential resources, and timeframes for completion. For a plan update, the focus is on tracking and reporting the implementation status of existing activities, confirming changes in capability or effectiveness, and developing new mitigation actions that align with assessed risk. If an Areas of Mitigation Interest (AoMI) dataset was or will be developed as part of the Risk MAP lifecycle, the community should use this information to prioritize mitigation actions and target mitigation resources. AoMI is discussed in more detail in Section 3.3.4.

As discussed in Section 1.2, planning agencies are key players in implementing HMPs. Many of the mitigation actions identified in a typical HMP involve the policies and programs that shape land use and development. These include comprehensive planning, zoning ordinances, subdivision and land development ordinances, design standards, building codes, capital improvement plans, and conservation programs.

#### **1.2.4. Adopt and Implement the Plan and Monitor Progress**

The final phase of the hazard mitigation planning lifecycle consists of implementing and maintaining the plan. This phase begins with the community adopting the approved plan and receiving an approval letter from FEMA. The community can then bring the mitigation plan to life in a variety of ways, ranging from implementing specific mitigation projects to changing aspects of day-to-day organizational operations. To remain relevant, the plan must also be maintained. Communities should conduct regular plan update meetings to incorporate new information and priorities.

Risk MAP touchpoints and tools can be extremely useful during this phase of the hazard mitigation planning cycle. Communities can use Risk MAP touchpoints to evaluate implementation progress and identify additional resources, such as training or funding opportunities. Communities can also use Risk MAP data and tools to reassess their risks and priorities. New information about the distribution of vulnerability and potential loss can be used to update existing mitigation actions, add new mitigation actions, or identify data needs for the next plan update. The Resilience Meeting can serve as an effective forum for these discussions (see Section 3.3.5).

## 2. Selecting Activities

Under Risk MAP, mitigation planning technical assistance is envisioned to be a component of every flood risk project. Mitigation planning technical assistance can be provided informally through interactions among the Project Team, SHMOs, state planners, and local planning teams; or ordered as a stand-alone effort based on relative risk and stakeholder contributions, at the discretion of the FEMA Regions. It is important to note that stand-alone efforts may be ordered even when flood mapping and/or creation of Flood Risk Products may not be part of the flood risk project for a community. Specific activities will vary and may be limited by the availability of funding, but innovative and new activities may be considered. The Regional Mitigation Planning staff has the resources and experience to help identify and scope out the different types of technical assistance and training activities. The selection of technical assistance activities should be done in consultation with the SHMO and state planner (if applicable) as well as the State NFIP Coordinator.

### 2.1. Determining the Need

Community need should be determined during the Discovery phase based on each community's expressed interests, its in-house capabilities, and its mitigation planning timeline. To the greatest extent possible, Project Teams should then tailor mitigation planning technical assistance to the identified community needs. Additions or changes to technical assistance activities after the Discovery phase may be difficult from a contracting and funding perspective.

Project Teams should use the Discovery process to gather input on community concerns and capabilities. Several participatory techniques can be built into the Discovery process to gather this information from state and local stakeholders. These techniques include questionnaires, mapping exercises, and roundtable discussions. For example, questionnaires can request information on local databases, staff, and mitigation successes to provide insights into local capacity. Communities with greater capacity-building needs can then be prioritized for technical assistance.

Project Teams will often have to tailor technical assistance to communities in different phases of the hazard mitigation planning cycle. For example, a Risk MAP project may include jurisdictions in two counties – one of which has updated and adopted its HMP in the past year, and one of which is just beginning to update its HMP. While jurisdictions in the first county would benefit more from technical assistance activities that support plan implementation and maintenance, jurisdictions in the second county would benefit more from technical assistance activities that address risk assessment and the development of mitigation actions. Project Teams can access information on mitigation plan status through the FEMA [Mitigation Planning Portal GIS Mapping Service](#). This portal provides information on plan status, jurisdictional adoption, and expiration dates, and is described in more detail in Section 3.3.6.

## **2.2. Identifying the Budget**

Project Teams can provide technical assistance both informally, through a customer-centric approach to project delivery, and formally, through stand-alone efforts. In ordering stand-alone efforts, it is important for regions to understand the budget for each project's five-year mapping plan. Risk MAP projects are prioritized on a watershed basis by evaluating several factors, including risk, need, and the availability of data. Every watershed across the nation is ranked based on these factors; and FEMA Regional Offices use this information in coordination with the states to help select potential projects. Selected projects are intended to include the full suite of FRPs and services, including flood mapping, risk assessment, and mitigation planning activities. In addition to ordering standard regulatory and non-regulatory products, regions have the opportunity to order dataset enhancements using the *Guidance and Criteria for Selection of Flood Risk Dataset Enhancements*.

CTPs should consider and incorporate mitigation planning technical assistance needs into the Risk MAP Business Plan each year as needed to secure funding.

## **2.3. Coordinating Timelines**

Beginning with the Discovery process, Project Teams should coordinate mitigation planning technical assistance with ongoing efforts in the study area. One way of coordinating timelines is to align Risk MAP meetings and touchpoints with the local mitigation planning update and/or public involvement process. For example, the Project Team can schedule Risk MAP meetings to coincide with the HMP meeting schedule to encourage better attendance and participation by all stakeholders in both processes. This also encourages the members of the hazard mitigation planning team to contribute their unique knowledge of community development, capabilities, and hazards to the Risk MAP process. Additionally, if a community maintains a website that community members view regularly, the Project Team can work with the community to post information about Risk MAP meetings, information requests, and project status.

## **2.4. Addressing Federal, State, and Local Priorities**

After the budget and timelines are identified, the most appropriate mitigation planning technical assistance activities are selected. Section 3 of this guidance identifies several activities that can be performed by FEMA Project Teams under Risk MAP. Innovative or new activities may also be considered. Technical assistance should focus on building local capabilities to plan for and reduce local hazard risks. General guidelines for valid mitigation planning technical assistance activities include the following:

1. The activities tie directly to and support Risk MAP, especially the call to take action that reduces risk to life and property.
2. The activities do not duplicate federal assistance that communities have already been awarded, such as a FEMA Hazard Mitigation Assistance (HMA) planning grant. Mitigation

planning technical assistance may supplement but should not duplicate other federal assistance. Mitigation grant status can be provided by the Regional HMA Branch.

3. The activities do not establish official FEMA guidance.
4. The activities do not involve writing the plan for the community.

Selecting the most appropriate technical assistance activities requires consultation with the state NFIP Coordinators, SHMOs, and state planners, who work closely with communities and generally have an excellent sense of community need and statewide priorities. For example, state hazard mitigation program staff track local HMP status and updates. They also tend to have a broad perspective on mitigation needs and opportunities based on their knowledge of active mitigation projects throughout the state's diverse communities. State floodplain management staff should also be consulted. They tend to have a comprehensive understanding of local floodplain mapping needs and challenges as well as state priorities. Active consultation with state stakeholders can also help obtain community buy-in.

## **2.5. Ordering**

The regional mitigation planning, engineering, and risk analyst staff should work together to finalize the selection of technical assistance activities. The regional mitigation planning staff should then work with the regional staff members responsible for procuring production activities to order the selected activities. To ensure alignment of proposed efforts, a project charter may be developed in conjunction with the scope of work and ordering process. The following activities should be completed to appropriately order technical assistance or training:

1. Define the scope of the technical assistance (including communities and/or planning teams involved, number of potential meetings, etc.).
2. Identify deliverables, such as technical assistance and/or an AoMI dataset.
3. Develop a schedule.
4. Develop a cost estimate.

The regional mitigation planning staff will work with the appropriate regional point of contact to include the scope and independent government cost estimate in the procurement documents and Requests for Proposals for the regional production work. During the Planning and Budgeting phase, the regional mitigation planning staff should work with the regional engineer and risk analyst to select projects for the coming year and develop a high-level cost estimate of potential technical assistance activities. This planning exercise can help sequence technical assistance activities.

For CTPs, known scope and budget information must be included in the Community Outreach and Mitigation Strategy (COMS) and/or Mapping Activity Statement. The procurement process that is normally followed for the individual CTP should be utilized. Additional mitigation planning technical assistance projects can also be determined throughout the Risk MAP project lifecycle and added to CTP planning documents.

### 3. Menu of Activities

This section presents a menu of structured technical assistance activities that Project Teams can integrate into Risk MAP projects to advance local mitigation planning. The activities are intended to help communities effectively execute risk-based mitigation planning, leading to sustainable actions that produce a measurable reduction in the loss of life and property and the associated economic impacts. Communities with effective risk-based mitigation plans can fund their mitigation strategies through an array of federal, state, and local programs, including FEMA's HMA programs, as well as private-sector investments.

It is important to note that Project Teams can also provide technical assistance through informal interactions with SHMOs, state planners, and local planning teams. Throughout the Risk MAP lifecycle, Project Teams should adopt a customer-centric approach, emphasizing their interest in understanding and resolving community challenges. This customer-centric approach will reveal additional opportunities to assist communities. The technical assistance provided through Risk MAP should not be limited to assistance with preparing or updating a plan. Rather, technical assistance should focus on building the capability of a community to plan for and reduce risk.

The following list of sample activities meets the guidelines in Section 2.4 for FEMA Project Teams to perform mitigation planning technical assistance and training. Any new or innovative actions in support of these activities may also be considered.

#### 3.1. Available Training to Improve a Community's Capability

Project Teams may offer several existing FEMA training resources to communities in Risk MAP study areas. These training resources are designed to improve a community's capability for mitigation planning. Examples of workshops, courses, and other training offered by FEMA and its providers include the following:

- **Hazard Mitigation for Non-Planners:** This webinar introduces non-planners to the overall framework and legislative basis for hazard mitigation planning. This training also provides advice on how to develop an HMP, with an emphasis on interpreting the planning requirements set forth in the CFR.
- **G-318: Local Mitigation Planning:** This workshop covers the fundamentals of the mitigation planning requirements for developing local mitigation plans that address community priorities and meet the requirements established in 44 Code of Federal Regulations (CFR) Section 201.6. This workshop walks through the entire planning process - stakeholder involvement, assessing risks, and developing effective mitigation strategies.
- **Planning for a Resilient Community:** The purpose of the workshop is to enhance the effectiveness of community planners and officials in creating safe, resilient communities

through hazard mitigation. The workshop includes interactive exercises and specific examples to help participants identify the role of the community planner in making communities more resilient, discuss the relationship between the impacts of hazards and community design, implement mitigation through local plans and policies, consider key planning issues they may face during disaster recovery, and explain the value of mitigation in improving community resilience.

- **Integrated Hazard Mitigation Planning:** This webinar is intended for community planners, emergency managers, and local officials. The webinar reviews how to use local planning tools and plan integration to implement actions that reduce risk, and how to coordinate with departments across multiple agencies.
- **Action Keepers—Collecting Mitigation Actions during the Risk MAP Lifecycle:** This webinar is intended for local and state planners and other individuals responsible for documenting mitigation actions during the Risk MAP lifecycle. The training focuses on identifying and collecting mitigation actions as well as following up with communities on implementation.
- **IS-922: Applications of GIS for Emergency Management:** The goal of this online course is to explore how GIS technology can support the emergency management community. Topics addressed in this course include: GIS fundamentals and history, how GIS is used in emergency management, and tools available to enhance GIS usefulness.
- **E190: ArcGIS for Emergency Managers:** This course is designed to provide the essential ArcGIS skills and knowledge to effectively use the HAZUS-MH software. The course combines lectures with hands-on exercises that present practical examples of how to use GIS for disaster mitigation and response. Course topics will include an introduction to GIS concepts; tools for symbolizing data; tools for querying and analyzing data; data management; manipulating tabular data; understanding coordinate systems; basic editing; spatial data adjustment; geocoding; and a survey of some of the advanced options provided by ArcGIS and the Spatial Analyst extension using geodatabases and raster data. The course will conclude with an introduction to HAZUS-MH with a focus on how to apply the tools and techniques covered in the preceding sections of the class.
- **Connecting the Community Rating System to Hazard Mitigation Planning:** This training helps FEMA and state partners support local governments in meeting the requirements for both the Community Rating System and a FEMA-approved hazard mitigation plan. The training outlines areas of overlap and support to help communities maximize the benefit of existing planning efforts. Participating in the Community Rating System serves not only to reduce flood risk and lower flood insurance premium rates for policyholders, but can sometimes help projects qualify for other federal assistance

programs as well. For communities with limited capacity, this assistance can support mitigation activities that might not otherwise be possible.

- **EO212: Unified Hazard Mitigation Assistance: Developing Quality Application Elements:** The purpose of this course is to educate participants on the process of preparing and submitting quality Unified HMA grant programs planning and project sub-application elements. For those communities with limited capacity, funding assistance may be necessary to implement mitigation projects.
- **EO214: Unified Hazard Mitigation Assistance: Project Implementation and Closeout:** This course provides participants with the knowledge and skills required to effectively implement and close out a Hazard Mitigation Assistance grant project. Again, for those communities with limited capacity, funding assistance may be necessary to implement mitigation projects.
- **Flood Risk Products Training:** This hands-on training focuses on the use of FEMA Depth and Analysis Grids to reduce flood risk. Participants learn how to access and download Flood Risk Products for their community, and practice using Depth and Analysis Grids with local datasets to identify high-risk areas and to assess risk and develop mitigation strategies.
- **Using Digital Flood Hazard Information:** This training, offered by the Community Engagement and Risk Communication (CERC) provider, will familiarize communities with FEMA's digital flood hazard data and focuses on how communities can leverage digital flood hazard information to support local planning and flood hazard management decisions.
- **Hazus Training:** Hazus training courses provide instruction in the application of the three Hazus modules: hurricane, flood, and earthquake, as well as specialized instruction for application by floodplain and emergency managers. Results from a Hazus analysis can be used to refine a risk assessment, develop a Benefit Cost Analysis (BCA), and apply for FEMA mitigation planning grants.
- **IS-276A: Benefit Cost Analysis Fundamentals:** This course serves as an overview of fundamental BCA concepts and theory and is the framework and prerequisite for the classroom, field, or facilitated distance learning BCA course.
- **IS-277A: Benefit-Cost Analysis: Entry- Level:** This course is designed as an introduction to the fundamental concepts of BCA. Participants will learn how to obtain BCA data and conduct analyses using the latest version of the Benefit Cost Toolkit. Level-two BCA is not covered in this course.

- **Mitigation Measures—Actions for Community Resilience:** This webinar is intended for emergency managers, hazard mitigation planning committee members, and/or community stakeholders. Training is provided in the following mitigation action categories: prevention, property protection, natural resource protection, emergency services, structural projects, and public information.
- **Using Digital Flood Hazard Information:** This training will familiarize communities with FEMA’s digital flood hazard data, and focuses on how communities can leverage digital flood hazard information to support local planning and flood hazard management decisions.
- **The Flood Provisions of the International Codes and ASCE 24:** This workshop presents basic information needed to understand the flood provisions of the International Codes and ASCE 24, Flood Resistant Design and Construction, and the importance of coordinating local floodplain management ordinances with building codes. The 2009 and later editions of the I-Codes contain flood-resistant provisions that FEMA has determined to be consistent with the NFIP. Participants will learn how the I-Code provisions are consistent with the NFIP regulations; understand the relationship between the I-Codes and ASCE 24; learn about distinctions between the I-Codes and ASCE 24, and the NFIP regulations; and learn the importance of coordinating the I-Codes with local floodplain management ordinances.
- **FEMA P-936 Floodproofing Non-residential Buildings:** This training presents floodproofing concepts, procedures, calculations and examples for non-residential buildings, and will demonstrate linkages between flood mapping products and floodproofing projects.

### 3.2. Stakeholder Engagement for Mitigation Planning during Risk MAP

Engagement with state and local stakeholders in hazard mitigation planning is vital for mitigation planning technical assistance to be effective (See FEMA Guidance for Stakeholder Engagement). State and local groups with a stake in hazard mitigation planning include the state NFIP Coordinator, the SHMO, state planners, and members of the steering committees involved in previous HMPs.

Many of the relevant federal and state stakeholders can be engaged through a state’s Silver Jackets team. These state-led teams bring together federal and state agencies with mission areas in hazard mitigation, emergency management, and floodplain management to reduce flood risk. The collective resources of the participating agencies can help Project Teams develop and deliver targeted technical assistance to communities in the project area. Similarly, many of the relevant local stakeholders can be engaged through local hazard mitigation planning steering committees. Key local stakeholders include Geographic Information Systems (GIS) specialists, planning staff,

public works staff, and the permitting and enforcement staff responsible for code compliance. Involving staff from multiple departments brings unique experiences and perspectives to the table, and allows the lessons, data, and relationships developed through a Risk MAP project to be integrated into a range of community processes and operations. For example, information on natural hazard risk can inform comprehensive planning, capital improvement planning, building and site development, zoning ordinance amendments, and emergency management plans.

Local, state, and federal stakeholders should remain actively engaged throughout each step of a Risk MAP project. Engagement with these stakeholders will enable the FEMA Project Officer and other Project Team members to accomplish the following:

- Further engage with community officials and stakeholders to identify areas of emphasis for public outreach, and develop outreach strategies that reflect the latest available information on natural hazard risk and appropriate mitigation measures.
- Further educate community officials and stakeholders about the types of flood risk datasets and FRPs that are available and how they can be used to increase flood risk awareness and encourage flood risk reduction activities.
- Further educate community officials and stakeholders about funding and other support resources available through FEMA (or others) to help implement mitigation measures.
- Encourage community officials to take the lead in communicating to the public about natural hazard risks and mitigation actions that they can take to reduce their risks.
- Increase the propensity of a community and/or its residents to plan for and implement mitigation actions.

### **3.3. Technical Assistance Opportunities within the Risk MAP Lifecycle**

As described in Section 1.1, each of the six steps of the Risk MAP project lifecycle produces a distinct set of products and tools related to natural hazard risk. Technical assistance can help community officials apply these products and tools to assess, communicate, and mitigate natural hazard risk. As noted in Section 3, Project Teams should adopt a customer-centric approach, integrating formal and informal technical assistance throughout the Risk MAP lifecycle. This section focuses on opportunities for formal technical assistance activities, and is organized according to the six steps of the Risk MAP project lifecycle. For each step, this section identifies the touchpoint(s), products, and tools upon which technical assistance activities can be built. This section also identifies the phases of hazard mitigation planning that can be advanced by Risk MAP technical assistance.

### **3.3.1. Project Planning**

Risk MAP Project Teams engaged in the Project Planning step can build mitigation planning technical assistance into the Discovery process. Technical assistance activities can support three phases of the hazard mitigation planning cycle: the Organize Resources phase, the Assess Risks phase, or the Implement the Plan and Monitor Progress phase.

For communities in the Organize Resources phase, Project Teams can assist local officials in using the Discovery products to prioritize areas for further study. For example, flood risk may be poorly known in areas with dated risk assessments or areas that have experienced significant changes in land use. The Discovery Map and Report should include data that can help communities identify these poorly characterized areas, such as data on mapping needs, population projections, and land use trends. Project Teams can help communities use these products to define the data and analysis needs for mitigation planning. The Discovery process is also an opportunity to identify technical assistance needs for hazards other than flooding. In Bannock County, Idaho, for example, the Discovery process led to requests for multi-hazard outreach materials and risk assessments. Community stakeholders requested more information on the risk of avalanche, drought, earthquake, landslide, liquefaction, rail lines and hazardous cargo, severe storms, and wildfires. By discussing community priorities during the Discovery process, Project Teams can position the Risk MAP project to address the project area's most pressing needs.

For communities in the Assess Risks phase of mitigation planning, Project Teams can assist local agencies and officials in using the Discovery Map and Report to enhance risk assessments. These Discovery products can help locate the areas that are likely to be affected by different hazards, and identify the people, property, and assets that are likely to be most vulnerable to these hazards.

Finally, for communities in the Implement the Plan and Monitor Progress phase, Project Teams can assist local agencies and officials in using Discovery products to track progress on previously identified mitigation actions and assess changing risks and priorities. To help communities track progress, Project Teams can request information on mitigation successes and challenges in Discovery questionnaires, or build discussion of mitigation priorities and needs into Discovery meetings. To help communities assess changing risks and priorities, Project Teams can help local officials utilize the data compiled in the Discovery Map and Discovery Report.

### **3.3.2. Mapping**

Risk MAP Project Teams engaged in the Mapping and Data Development step can build mitigation planning technical assistance activities into the Flood Risk Review meeting. Technical assistance activities can support the Assess Risks phase or the Mitigation Planning phase.

For communities in these phases, technical assistance can help local officials develop more robust assessments of risks and priorities. Technical assistance can help communities couple the digital data in the draft FRD with local datasets to increase understanding of flood risk, identify areas of vulnerability, and prioritize mitigation actions. For example, technical assistance can help communities identify any overlap between flood-prone areas and areas targeted for future development in the comprehensive plan. If significant overlap is identified, communities can update their future land use map and zoning ordinances to limit development in flood-prone areas. Technical assistance can also help identify areas of the community in need of flood risk outreach and help develop outreach tools. For example, Project Teams can help communities use the data in the draft FIRM to identify residential, commercial, and industrial structures located in flood-prone areas. Project Teams can then work with local officials to develop outreach messages and materials that are tailored to the residents and business owners in these areas.

### **3.3.3. Preliminary Issuance**

Risk MAP Project Teams engaged in the Preliminary Issuance step can build mitigation planning technical assistance into both the CCO Meeting and the Flood Risk Open House. Regardless of a community's mitigation planning timeline, technical assistance activities can support public outreach. At the CCO Meeting, Project Teams can help local officials evaluate and improve outreach activities. Technical assistance may include providing access to FEMA resources and materials, helping identify areas of emphasis for public outreach, and helping develop strategies for effective communication. At the Flood Risk Open House, Project Teams can help local officials engage and communicate with community members. Before the open house begins, technical assistance can help local officials use the preliminary FIRM and draft FRD to target meeting invitations to the properties most likely to be affected by updated floodplain maps. At the open house, technical assistance can help local officials communicate with attendees about what the new floodplain boundaries mean for them, and how they can access resources to identify and implement mitigation measures.

Technical assistance built into the CCO Meeting and Flood Risk Open House can also address three phases of the hazard mitigation planning cycle: the Assess Risks phase, the Develop a Mitigation Strategy phase, or the Implement the Plan and Monitor Progress phase. For communities in the Assess Risks phase, Project Teams can assist local officials in using the preliminary FIRM and FIS report to assess changing risks and priorities. Communities can either use the risk assessments presented in the FIRM and FIS report, or build their own enhanced assessments using the data in the FIRM Database. For example, communities can use the updated floodplain boundaries in the FIRM Database to identify structures, critical facilities, bridges, and roadways located in the Special Flood Hazard Area (SFHA).

For communities in the Develop a Mitigation Strategy phase, technical assistance can help local officials prioritize mitigation actions and develop targeted outreach. To help prioritize mitigation actions, Project Teams can assist local agencies in using preliminary and draft products to assess

relative risks and vulnerability. For example, Project Teams can help communities use the data in the FIRM Database to identify the areas with the highest concentrations of flood-prone structures, or the critical facilities most vulnerable to flooding. Technical assistance can also assist local agencies in conducting comprehensive cost-benefit analyses for proposed mitigation projects. Communities often struggle to quantify the long-term social, economic, and environmental benefits of proposed infrastructure investments. Green infrastructure, for example, provides many environmental and public health benefits that may be difficult to translate into dollars and cents. By developing a methodology to quantify the multiple benefits of proposed mitigation projects, Project Teams can help communities more effectively allocate limited resources.

Finally, for communities in the Implement the Plan and Monitor Progress phase, Project Teams can assist local officials in using the preliminary FIRM and FIS report to update or validate their risk assessment or enhance their plan maintenance process.

Project Teams may find that some communities in the project area lack the technical expertise to benefit from all the technical assistance activities described for this step. For these communities, technical assistance can also be provided to enhance the capabilities of local officials, planners, and GIS staff. For example, if a community lacks the capability to conduct its own GIS analyses, Project Teams can provide staff with access to GIS training opportunities (as described in Section 3.1), or provide GIS data in an online map viewer that does not require GIS capabilities (such as the GeoPlatform). Other communities may have GIS capabilities, but lack experience with methodologies for estimating potential losses, such as Hazus. Project Teams can provide staff in these communities with access to Hazus training opportunities, as described in Section 3.1.

#### **3.3.4. Risk Assessment**

The Risk Assessment step of the Risk MAP project life cycle refers to the development of comprehensive natural hazard information for the project area, including the non-regulatory FRPs and information on multi-hazard risks. This subsection focuses on the FRPs. With appropriate technical assistance, communities can use the wealth of information embedded in the FRPs to more effectively assess, communicate, and mitigate risk. Technical assistance activities can be integrated into the CCO Meeting (see Section 3.3.3) and/or the Resilience Meeting (see Section 3.3.5)

##### *Flood Risk Products*

The FRPs include the FRM, Flood Risk Report, and FRD. Each product presents the flood risk information generated by a Risk MAP study in a different format. The FRM presents key flood risk information in a visual format; the Flood Risk Report summarizes flood risk information in a narrative format; and the FRD presents comprehensive flood risk information in GIS format. The Flood Risk Report may include risk information for hazards other than flooding as well, such as

earthquakes, tsunamis, and wildfires. This information may include qualitative information on past occurrences as well as quantitative information on potential losses as estimated by HAZUS.

Technical assistance should be tailored to the capabilities of the communities in a Risk MAP project area. For communities that have limited GIS capabilities, Project Teams can provide technical assistance that builds on the Flood Risk Report and FRM. These products can be used to enhance outreach and communication and to improve risk assessments. For communities that have some GIS capabilities, however, Project Teams should provide technical assistance to help communities interpret and analyze the datasets in the FRD. The standard datasets that are stored in the FRD include the Changes Since Last FIRM (CSLF) dataset, Flood Depth and Analysis Grids, Flood Risk Assessment dataset, and AoMI dataset. The remainder of this subsection focuses on these standard datasets – providing a brief overview of each and describing opportunities for technical assistance.

#### *Changes Since Last FIRM*

The CSLF dataset provides information on the changes made to the mapped floodplain, floodway boundaries, and flood zone designations since the prior FIRM. Figure 3 is a sample visualization of this dataset.

Figure 3: Sample Changes Since Last FIRM



Technical assistance related to the CSLF dataset can help communities:

- Update areas at risk in flood zones.
- Determine where flood mitigation may be needed.
- Inform development decisions and land use and transportation planning.
- Update evacuation plans.
- Communicate changes in flood risk and mitigation priorities to homeowners and other property owners.

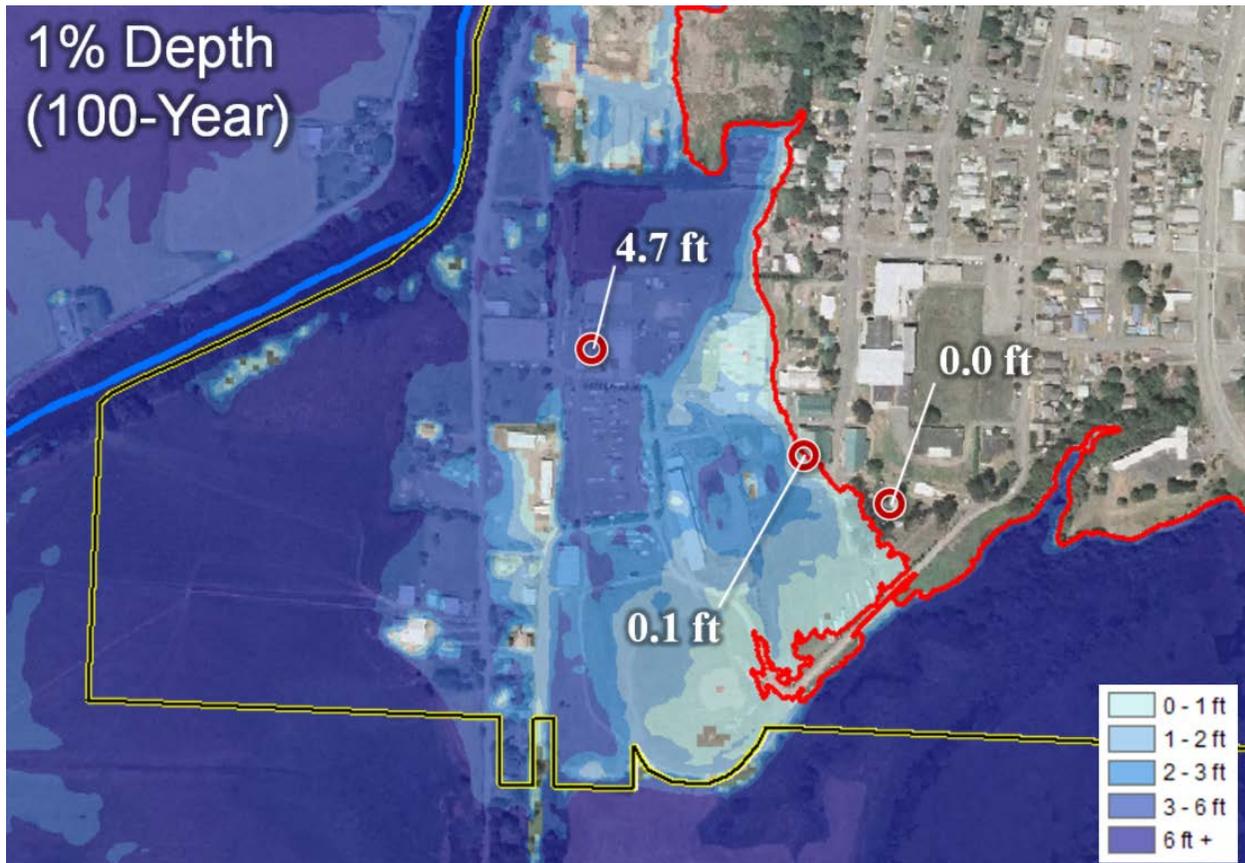
#### *Flood Depth and Analysis Grids*

This dataset helps communities develop a better understanding of flood hazards by providing information on many different characteristics of flooding at many different probability levels. In addition to the standard 1-percent-annual-chance flood zone information, the Flood Depth and Analysis Grids include estimates of the depth and velocity of floodwaters at different recurrence

intervals, estimates of the percent-*annual*-chance of flooding for all areas within the floodplain, and estimates of the percent *30-year* chance of flooding for all areas within the floodplain (corresponding to the length of a typical mortgage term).

Figure 4 is a sample visualization of one of the many datasets in this grouping.

Figure 4: Sample Depth Grid



Technical assistance related to the Flood Depth and Analysis Grid dataset can help communities:

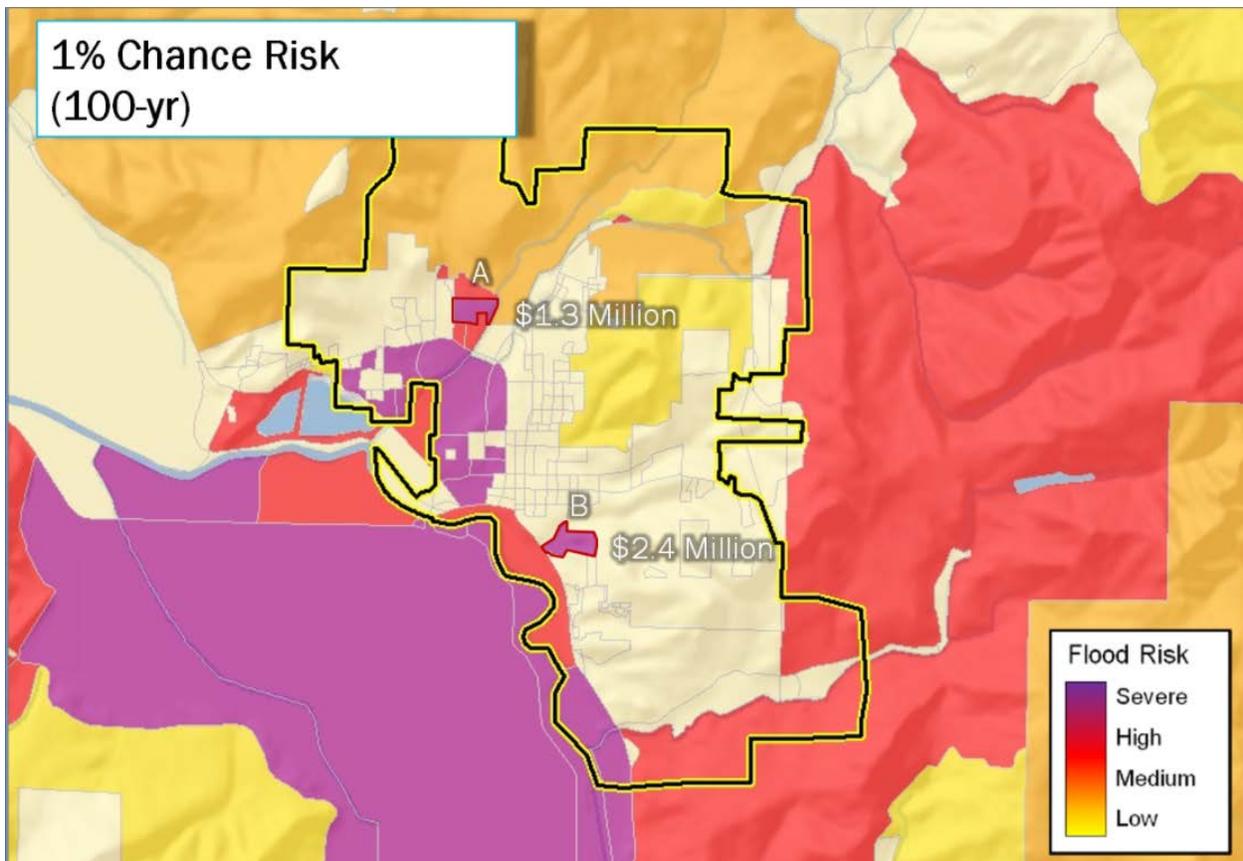
- Integrate flood risk data with local data on structures and residents to prioritize mitigation actions based on risk.
- Couple flood risk data with local data on transportation facilities to develop evacuation plans and prepare for road closures.
- Communicate flood risk to elected officials and key local leaders to enlist support for possible mitigation actions.

- Communicate elevation requirements for specific sites to building officials, property owners, and developers.
- Integrate flood risk information into local permitting decisions.
- Provide data to help screen for cost-effectiveness of potential mitigation projects.

#### *Flood Risk Assessment Dataset*

This dataset provides potential flood damage estimates resulting from an analysis of flood depth within the built environment. These estimates are meant to show not just where flooding can occur, but also how flooding can affect structures and cause social and economic losses. The flood risk assessment dataset includes information on a community's building stock, exposure (i.e., total building and content value), and potential losses for different flood frequencies. This information is delivered at the Census block scale (the smallest Census geometry) and can be aggregated to larger scales if needed. Figure 5 is a sample visualization of average annual losses (AAL) which is one component of this dataset.

*Figure 5: Sample AAL Map*



Technical assistance related to the Flood Risk Assessment dataset can help communities:

- Quantify potential future flood losses to existing structures.
- Identify areas where mitigation activities may produce the greatest return on investment.
- Identify areas requiring higher building code requirements or use of flood-resilient designs and construction materials.
- Provide data to help screen for cost-effectiveness of potential mitigation projects.
- Provide data for Loss Avoidance Studies.

While the focus of Risk MAP is flooding, Hazus software may be used to identify high-risk locations and provide potential loss estimates for earthquakes, hurricanes, and tsunamis as well. For all of these hazards, the types of loss estimates provided may include physical damage (e.g. buildings and infrastructure), economic loss (e.g. job loss and business interruptions), and social impacts (e.g. shelter requirements and displaced households). These loss estimates can be used to inform a community's risk assessment and mitigation strategy.

#### *Areas of Mitigation Interest*

The AoMI dataset identifies physical factors that may contribute (positively or negatively) to flooding and flood losses (see FEMA Guidance on Areas of Mitigation Interest). These may include flood control structures, at-risk essential facilities and emergency routes that could be overtopped, stream flow constrictions, previous disaster assistance and flood insurance claims hotspots, significant land use changes, significant riverine or coastal erosion, and locations of successful mitigation projects. These factors are highlighted to raise awareness among local stakeholders about the areas within and upstream of their community that may contribute to flood risk.

Technical assistance related to the AoMI dataset can help communities:

- Prioritize mitigation actions.
- Identify and prioritize capital improvement projects.
- Visually communicate flood risks to the public.
- Promote watershed-scale approaches to hazard mitigation.

#### **3.3.5. Effective Issuance**

Given that the products published during the Effective Issuance step represent the final iteration of preliminary products, most of the technical assistance activities described in the earlier steps

are applicable to the Effective Issuance step as well. Two touchpoints can be introduced into the Effective Issuance step, however, that provide additional opportunities for mitigation planning technical assistance. Before the FIRM effective date, Project Teams can organize discussions with local officials on the adoption of local floodplain ordinances that meet or exceed minimum NFIP and state standards. During this first touchpoint, Project Teams can assist communities in updating their floodplain management ordinances to include higher standards. Adopting higher floodplain management standards is one of the most effective flood hazard mitigation techniques communities can implement, and can advance mitigation planning in any phase of the hazard mitigation planning cycle. Higher floodplain management standards can include freeboard requirements for residential construction, prohibiting development in the floodway, incorporating a flood-protected setback, incorporating a community-identified Special Flood Hazard Area (SFHA), requiring a Non-Conversion Agreement, requiring a Certificate of Compliance, placing restrictions on hazardous materials storage, and lowering substantial damage ratios.

Before or after the effective date, the optional Resilience Meeting represents an opportunity for a second touchpoint. The goal of the Resilience Meeting is to build local capacity for implementing priority mitigation actions within the study area. Depending on the needs and interests of watershed stakeholders, the Project Team may structure the meeting to emphasize flood risk, strategies for reducing flood risk, resources available to help implement mitigation strategies, and/or strategies for effectively communicating with constituents. For meetings emphasizing flood risk, technical assistance related to the FRPs may be appropriate. For meetings emphasizing mitigation strategies, technical assistance addressing funding opportunities or best practices for floodplain management may be most appropriate. Relevant funding opportunities include FEMA's HMA programs and FEMA's Public Assistance grant program. Relevant best practices include those encouraged by the NFIP's Community Rating System. This program recognizes 19 floodplain management activities that exceed minimum NFIP standards in four categories: public information, mapping and regulation, flood damage reduction, and warning and response. Communities that engage in these activities not only improve community resilience, but can earn their residents discounted flood insurance premiums as well.

During the Resilience Meeting, technical assistance related to the enforcement of floodplain management ordinances or the implementation of watershed-scale approaches may also be appropriate. For example, Risk MAP Project Teams could provide examples of local or regional success stories to build watershed-scale collaboration. Local examples are more likely to generate buy-in and promote implementation in neighboring jurisdictions, and the combined actions of neighboring communities will have a greater impact on resiliency. Finally, for meetings emphasizing communication with constituents, technical assistance related to flood risk visualization and effective messaging may be most appropriate.

### **3.3.6. Planning for Mitigation Action**

Planning for mitigation action is a continuous activity that should occur in each step of the Risk MAP lifecycle. Whereas the preceding sections approached this activity primarily through the lens of the Risk MAP lifecycle, this section acknowledges the importance of the local hazard mitigation planning cycle. The status of local mitigation planning will determine which technical assistance activities will be most effective. To remain informed of the status of local mitigation planning, Project Teams should consult two FEMA resources: the Mitigation Planning Portal (MPP) and the Mitigation Action Tracker (MAT).

The MPP is the system for tracking FEMA-approved mitigation plans and provides users an opportunity to view which communities have a FEMA-approved plan that is formally adopted by the jurisdiction. Understanding a community's status is important, as an approved mitigation plan determines eligibility for a number of grant opportunities that are often vital for the funding and completion of larger mitigation projects. Although the Risk MAP project does not often align with the five-year HMP cycle, new information can be included in the next plan update. Other local plans and ordinances could also incorporate these new findings. It is important for the Risk MAP Project Team to develop information to align with the HMP updates and provide technical assistance to communities to analyze the new data.

The MAT is FEMA's system for tracking local mitigation efforts and actions influenced by Risk MAP. Understanding the completed and planned mitigation projects within a watershed is important to build on previous projects, connect upcoming projects, and identify training and technical assistance needs. If local mitigation planning progress reports are available, Project Teams should consult these as well. Entering mitigation actions or needs into the MAT at every step of a Risk MAP project also prevents staff turnover or extended periods between touchpoints from slowing resiliency efforts. The Risk MAP coordinator, SHMO, or Regional Planner is typically charged with entering these actions, highlighting the importance of coordination and communication across the team. The MAT can also help communities scope potential mitigation projects and apply for funding. Entering a project as an Action Measure within the MAT can attract State attention and resources.

## 4. Outcomes

This document presents a menu of structured technical assistance activities that Project Teams can integrate into Risk MAP projects to advance local mitigation planning. Technical assistance may also be provided, however, through informal interactions with SHMOs, state planners, and local planning teams. Throughout the Risk MAP lifecycle, Project Teams should adopt a customer-centric approach, emphasizing their interest in understanding and resolving community challenges. This emphasis on communities will reveal unanticipated opportunities for technical assistance, and will allow for sustained progress in mitigation planning throughout the Risk MAP lifecycle.

Whether formal or informal, integrating mitigation planning technical assistance into the Risk MAP lifecycle can amplify the impact of a flood risk project by leaps and bounds. Communities that have received effective technical assistance can use Risk MAP data and tools to enhance their HMPs, shape decisions about community planning, land use regulation, and/or floodplain management; and communicate with citizens about options to reduce flood risk. Ultimately, communities that have received effective technical assistance are better positioned to reduce loss of life and property from flooding events.