Guidance for Flood Risk Analysis and Mapping

Discovery

November 2019

FEMA

Requirements for the Federal Emergency Management Agency (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 (www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping). 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 at www.fema.gov/library.

Document History

Affected Section or Subsection	Date	Description
Sections 1 - 13	November 2019	This guidance has been revised and updated to clarify and refine Discovery Meeting needs for data and stakeholder engagement, and to better define needs for replacing outdated legacy modeling data with available modern modeling and mapping data. Specifically, updates and clarifications have been added regarding the ability to scale Discovery efforts according to the Flood Risk Project and Project Area needs, and to clarify Project Stakeholder information.
Section 5.0, Section 7.0, and Subsections 9.2 and 10.5	November 2019	This guidance document has been updated to reference disaster-related documents; expand on consensus-based disaster-resistant building codes and standards; and Building Science Branch resources available, including funding and other resources available under the Disaster Recovery Reform Act of 2018 and the Bipartisan Budget Act of 2018.

Table of Contents

List of Figures

1.0 Introduction

This document describes the activities involved in the "Discovery" of flood hazards and associated flood risk and mitigation activities in regionally prioritized areas. Discovery activities include data and information collection, engagement and coordination with appropriate stakeholders for one or more Discovery Meetings, post-meeting activities, and requisite follow-up. During pre-Discovery activities, the appropriate stakeholders are identified. These stakeholders may involve entities on the local, state, or federal level, including local community entities, regional entities, state agencies, tribal nations (when appropriate), other federal agencies (OFAs), non-profit entities, and other individuals, communities, and organizations. The level of engagement for these stakeholders is scalable based on the type of Flood Risk Project and specific needs identified within the regionally prioritized area. Throughout this document, this scalable group of stakeholders is referred to overall as "Project Stakeholders."

The Discovery process occurs after the Federal Emergency Management Agency (FEMA) planning and budgeting cycle, when the project area and/or watersheds of interest have been identified and selected for further examination in coordination with Project Stakeholders. While this guidance does not describe the activities that occur as part of the planning and budgeting cycle, as these are part of national planning activities that may be revised each fiscal year, activities and needs defined during the Discovery process align with the Risk, Need, Equity, and Data categories described in Table 1, "Flood Risk Study Prioritization Considerations," of Guidance Document No. 96, Project Planning. Guidance Document No. 96 is accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage.

The primary audiences for this guidance document are staff from the 10 FEMA Regional Offices, FEMA Headquarters, and the Project Team formed to carry out Discovery. The Project Team can include:

- State National Flood Insurance Program (NFIP) Coordinators
- State Hazard Mitigation Officers (SHMOs)
- Management and staff from Cooperating Technical Partners (CTPs) and their subcontractors
- Risk Mapping, Assessment, and Planning (Risk MAP) program providers that support the FEMA Regional Offices and Headquarters
- OFAs, such as the U.S. Army Corps of Engineers (USACE), U.S. Geological Survey (USGS), and National Oceanic and Atmospheric Administration (NOAA)
- Others, such as regional planning agencies and water management districts

The Project Team is led by Regional Office Risk Analysis Branch staff members who serve as the FEMA Project Officers. Other FEMA Regional staff from the Risk Analysis, Floodplain Management and Insurance, Hazard Mitigation Assistance (HMA), and/or Public Assistance Branches, as well as the FEMA Contracting Officer, also may participate on the Project Teams.

The successful execution of the Discovery process is essential to the development of judicious Flood Risk Projects. The process provides for the exchange of information between FEMA and the Project Stakeholders involved; includes one or more Discovery Meetings with Project Stakeholders to discuss conditions in the watershed; and provides informed recommendations for a Flood Risk Project scope to be used by FEMA staff in future planning and budgeting efforts. In addition, should a Flood Risk Project move forward, the Discovery Phase represents the beginning of the partnership between FEMA and the communities (including tribal entities, when appropriate) within the watershed. The relationships that are formed and the groundwork that is laid during Discovery are important to the ultimate success of the project.

This document provides guidance for conducting Discovery Phase activities; describes recommended and required elements; describes additional elements that may be desirable depending on state, regional, or community preferences or requirements. It also summarizes the interim and final outputs of the Discovery process, which include an optional Discovery Map, a required Discovery Report, and recommendations for a Flood Risk Project scope.

This document also provides a basic overview of what may be included on the Discovery Map and what will be included in the Discovery Report. The data, analysis, reporting, and other points noted in this document are presented as a foundation or starting point of information that might be included in the Discovery documents.

When developing Discovery materials, the Project Team is encouraged to consider any number of subjects that could or may impact the evaluation of watershed mapping or flood hazard mitigation needs. Possible data include political boundaries, socioeconomic needs, media, other scientific datasets, watershed infrastructure, and any other topic deemed relevant to explaining the circumstances, realities, and priorities of the watershed.

1.1 Discovery Process Steps and Objectives

The steps in the Discovery process are outlined in the Risk MAP Project Lifecycle shown in Figure 1. As the figure shows, Discovery is the second phase in the Risk MAP lifecycle.

The primary objectives of the Discovery process are:

- Engage Project Stakeholders.
- Understand the needs of the communities in a watershed or project area.
- Introduce or enhance flood risk and mitigation discussions.
- Balance local needs with FEMA resources and inform the scope for a possible Flood Risk Project.

Discovery activities include developing a Project Stakeholder engagement plan, gathering data and information, developing an optional Discovery Map and a required Discovery Report, developing a new or updated Areas of Mitigation Interest (AoMI) dataset, and engaging Project Stakeholders at the Discovery Meeting(s). Discovery activities may also include engaging with communities regarding expected changes to flood hazard information, defining the scope of the Flood Risk Project, and outlining the expected next steps with Project Stakeholders (e.g., products and services to be provided, timeline, outcomes, roles/responsibilities, and data sources).

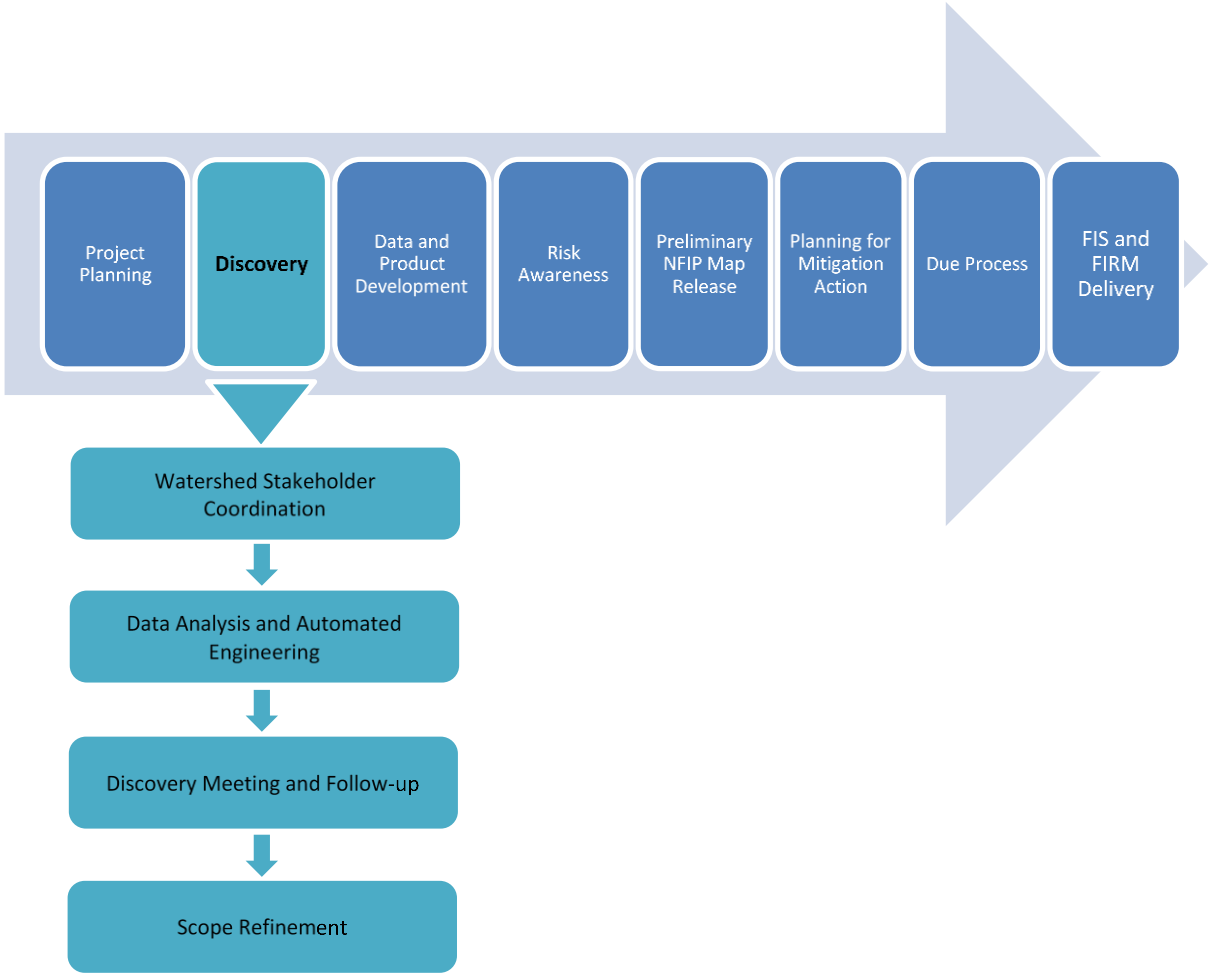

Figure 1. Risk MAP Project Life Cycle

Additional information on stakeholder engagement during the Discovery Phase is provided in FEMA Guidance Document No. 102, Guidance for Stakeholder Engagement: Project Planning and Discovery Process. Guidance Document No. 102 is also accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage.

1.2 Impacts of Recent NFIP Reform Legislation

Through enactment of the Biggert-Waters Flood Insurance Reform Act of 2012 (BW12) and the Homeowner Flood Insurance Affordability Act of 2014 (HFIAA), the U.S. Congress established a number of new mapping-related requirements for FEMA. For a complete breakdown of the new regulatory requirements, visit the Flood Insurance Reform at https://www.fema.gov/flood-insurance-reform. several of the new legislative requirements from BW12 and HFIAA are addressed in this guidance document.

As part of the reform legislation, the U.S. Congress also required the establishment of a new Technical Mapping Advisory Council (TMAC) to advise FEMA on certain aspects of the national flood mapping program. Additional information is accessible on the TMAC page of the FEMA website at https://www.fema.gov/technical-mapping-advisory-council.

FEMA continues to work with the TMAC on fully implementing the NFIP reform legislation and the recommendations from TMAC. As new FEMA standards for the Discovery Phase are established, FEMA will update and re-issue this guidance document.

2.0 Initiating a Discovery Project

When a community is initially considered for a Flood Risk Project involving a new or revised flood hazard and risk analysis, FEMA must establish and maintain a community case file in compliance with the NFIP regulations cited at Title 44, Chapter 1, Section 66.3 of the Code of Federal Regulations (44 CFR 66.3). Therefore, at the start of a Discovery project, the Project Team will create a project record in the Mapping Information Platform (MIP) with a Discovery Purchase and task. The MIP will automatically create a project number, along with associated budgets and start and end dates. More detailed information is provided in Guidance Document No. 46, Guidance for Flood Risk Analysis and Mapping: Data Capture - General; Guidance Document No. 51, Guidance for Flood Risk Analysis and Mapping: Data Capture - Workflow Details; Guidance Document No. 54, Guidance for Flood Risk Analysis and Mapping: Mapping Information Platform; and the "MIP User Care" section of the MIP website. The guidance documents are accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage.

The FEMA Project Officer will form a Project Team based on the anticipated needs of the project as soon as the Discovery process is initiated. As mentioned in Section 1.0 of this document, the Project Team will include a FEMA Risk Analysis Branch staff member to serve as the FEMA Project Officer; representatives of CTP(s), if appropriate; representatives of Risk MAP provider(s) supporting FEMA (i.e., Production and Technical Service (PTS) provider(s), Community Engagement and Risk Communication (CERC) provider, Program Management (PM) provider); subcontractor(s) supporting state mapping partner(s); state NFIP Coordinator(s); SHMO(s); representatives of OFAs, as appropriate; and others, such as regional planning agencies and water management districts.

While the Project Team members listed above may be included, they may not necessarily fill "traditional" or predetermined roles. Rather, each team member's level and extent of involvement will be based on the needs of the specific project. The FEMA Project Officer will oversee the project scope, schedule, and budget and coordinate the activities of the various Project Team members. As part of overseeing the project scope, the FEMA Project Officer will assign tasks to Project Team members.

For some projects, a Project Management Team consisting of the FEMA Project Officer, the FEMA Regional Contracting Officer, the State NFIP Coordinator, and project managers or senior-level staff from CTP(s) and the PTS, CERC, and PM providers will be formed to provide overall direction and management for the entire project lifecycle. The FEMA Regional Contracting Officer will oversee and administer project-related contract documents and agreements. The CTP, PTS, CERC, and PM provider representatives on the Project Management Team will assist in identifying and resolving technical issues, identifying and resolving potential obstacles in an effort to learn of any issues that could delay the project, providing subject matter expertise, and supporting project management.

The FEMA Coordinated Needs Management Strategy (CNMS) is the repository for current, needed, and requested areas of mapping updates. Results from both flood hazard validation and needs assessment processes are stored within the national CNMS database. The Project Team will use the CNMS database for updated engineering reference information, validation status, and map issues throughout all pertinent phases of a Flood Risk Project. Furthermore, the Regional Office staff will report New, Validated or Updated Engineering (NVUE) status to FEMA Headquarters at least quarterly.

When reviewing or cataloging flooding sources, if the status date within S_Studies_Ln exceeds 5 years from the current date, FEMA Headquarters staff or designee(s) will change the validation status to "UNKNOWN" and the flooding source will require reassessment. For the status of a studied flooding source to be changed from "UNVERIFIED" to "VALID" within the CNMS database, the flooding source must be reanalyzed.

Through the CNMS validation process, a flood risk study for a riverine area will be evaluated for a variety of possible changes that may have occurred since the date of the effective study/FIRM, including:

- Changes in land use in the watershed or project area
- New or removed bridges and culverts
- Age of the analyses
- Recent flood events captured by gage data
- Publication of new regional regression equations
- Changes in design storm data
- Changes in stream morphology

- Newly constructed flood-control structures
- Existence of updated topographic data

In coastal study areas, the Project Team will evaluate a flood risk study for other possible changes, including:

- Magnitude of recent major storm events and their effect on the beach profile
- Increases in the length of tide records
- Age of previous wave height analyses
- Age of previous erosion analyses.
- Construction of seawalls or other coastal structures
- Significant beach or dune erosion
- Existence of updated topographic data

As part of this process, the Project Team also will evaluate ways to address areas that were not studied previously and/or areas that were studied using approximate methods for which new detailed analyses may be appropriate.

Frequent and accurate updates to the CNMS database are critical, as all Regional Project Officer decisions to prioritize, assess, and perform engineering analyses along various flooding sources must be supported by the data contained in the CNMS database. As noted above, each necessary flooding source (i.e., UNKNOWN, VALID), must be evaluated in the CNMS database at least once within a 5-year period. For that reason, each fiscal year, each Regional Office has a plan to evaluate all CNMS flooding sources within a 5-year period.

A CNMS database that is compliant with the Coordinated Needs Management Strategy (CNMS) Technical Reference will be updated and submitted at the completion of the Discovery process or at initiation of the Flood Risk Project based on the information and data collected. Please refer to the CNMS Technical Reference for full details on the submittal process. The CNMS Technical Reference and other Technical References are accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage.

3.0 Timing and Geographical Extent of Discovery

Completion of the Discovery process is required for all new and updated Flood Risk Projects and information generated during the Discovery process informs the decision as to whether a Flood Risk Project is appropriate. In addition, the Discovery process provides Project Stakeholders an opportunity to partner and collaborate with FEMA, CTPs, state mapping and mitigation agencies, and Risk MAP providers on questions about flood risk determinations, mitigation, and the benefits of a potential Flood Risk Project. The Discovery process will be

completed before a Flood Risk Project is initiated. Flood Risk Projects will not necessarily be appropriate in all watersheds in which the Discovery process occurs.

A Flood Risk Project includes any combination of the following activities: flood hazard mapping, such as the production of new Flood Insurance Rate Maps (FIRMs) and Flood Insurance Study (FIS) reports; Flood Risk Assessments, such as Hazus analysis; and/or mitigation planning technical assistance, such as training, outreach, and assistance in understanding risk assessment and mitigation strategies.

Except for coastal and limited-area levee accreditation status change projects, the Discovery process can be applied on a project area and/or watershed basis. The area covered by the Discovery process will most commonly consist of an entire USGS Hydrologic Unit Code 8 (HUC-8) level watershed, regardless of political or other regional, state, county, municipal, or other borders; however, FEMA Regional Offices may select other watershed sizes, which will define the project area, as outlined in Risk MAP Standard ID (SID) 17. Information on HUC watersheds may be found at www.water.usgs.gov/GIS/huc.html.

Because coastal and levee projects are not performed on a watershed basis, the guidance presented herein is to be applied at an appropriate geographic extent for those types of projects. See Subsection 5.1, “Coastal and Levee Considerations”, of this document for other requirements associated with coastal and levee projects. The FEMA Project Officer, in coordination with other members of the Project Management Team when appropriate, will determine how to handle watersheds that cross state or regional boundaries.

4.0 Scalability

The Discovery process is intended to be flexible and scalable to the watershed under review. For example, in watersheds with urban areas, Discovery may be completed differently than in rural watersheds. The Project Stakeholders involved will vary based on state, region, and community type. In addition to local floodplain administrators, SHMOs, and other traditional Risk MAP stakeholders, Project Stakeholders may include representatives of community groups; partner organizations, such as nongovernmental organizations (NGOs), professional associations, colleges, and universities; local special interest groups; businesses; and others. The data and information collected by the Project Team, which will reflect the types of data and information that are appropriate to the watershed, will also vary by project area.

The implementation of the Discovery process is likewise flexible to accommodate the varied political and physical landscapes across the nation and within the watershed/project area. The objectives and outcomes of the Discovery process are provided in this document, and flexibility in implementing the Discovery process for each project will be allowed as long as the intent of the objectives and outcomes are met.

5.0 Discovery Process Overview

The Discovery process allows FEMA and Project Stakeholders to obtain a more comprehensive and holistic understanding of the flood risk and flood mitigation capabilities and opportunities of communities within a watershed. Data gathered during the Discovery process includes information that currently influences flood risk decision-making, historical flooding information, existing flood hazard data and information, mitigation activities/projects, and AoMIs.

Among other data and information, the Project Team will obtain and review state, local, and tribal hazard mitigation plans; disaster recovery-related documents, if applicable (e.g., Mitigation Assessment Team reports, Recovery Advisories, Case Studies); Emergency Action Plans (EAPs) for dams; and previously developed AoMI datasets to document existing flood risk; mitigation interests and capabilities; hazard risk assessments; and mitigation strategies that are planned, underway, or completed within the watershed. When available, the Project Team will use Base Level Engineering (BLE) data to engage Project Stakeholders. Data and information collected should also include information about projects, programs, and data that may support flood risk communications, outreach, and flood mitigation actions.

As indicated in FEMA Guidance Document No. 16, Guidance for Flood Risk Analysis and Mapping: Areas of Mitigation Interest, the purpose of the AoMI dataset is to capture the mitigation interests of the community and provide targets for future mitigation action. Through the AoMI dataset:

- The Project Team is able to identify and document areas that may be suited for mitigation action.
- Project Stakeholders are able to exchange information with the Project Team about local mitigation plans and datasets.
- Data relevant to mitigation are integrated, thereby facilitating further planning and action.

The purpose of the AoMI dataset is twofold: (1) provide a tool that FEMA, the Project Team, and the communities can use to discuss mitigation planning and action throughout the project lifecycle; and (2) leave the communities a record that they can use and enhance for future mitigation planning and implementation. The discussion of the new or updated AoMI dataset that takes place during the Discovery Phase is the first step in an exchange of information that should last through to project completion. The Project Team will work with the communities to assure that additional data created during the project that may indicate a need for mitigation are added to the AoMI dataset.

Guidance Document No. 16, which also is accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage, provides additional information on AoMI datasets.

For some Flood Risk Projects, the FEMA Regional Office may have tasked a Project Team member with undertaking a BLE analysis and mapping effort during the Planning Phase of the

project. BLE is riverine hydrologic and hydraulic modeling conducted at the minimum engineering standard necessary to support regulatory mapping of the 1-percent-annual-chance flood. BLE is, as its name implies, the base level that FEMA would provide as a flood hazard study for a given area. When available, the Project Team may use the BLE data to support the other engagement and communication activities taking place during the Discovery Phase. BLE data and mapping can be effective in the following ways:

- Addressing Project Stakeholders interests, including, where flood hazard information might exist that had not previously been mapped
- Clarifying what exposure to risk looks like and, when compared with the effective flood hazard information, identifying where potential mitigation projects could exist
- Providing "best available information" for floodplain management purposes and the post-disaster environment where a need for updated and/or enhanced flood hazard information is warranted
- Depicting where 1-percent-annual-chance floodplain boundaries and/or Base (1-percent-annual-chance) Flood Elevations (BFEs) may change (e.g., an increase or decrease in depth or spatial extent of the 1-percent-annual-chance floodplain) and what areas of a community/watershed will be impacted by those changes

FEMA Guidance Document No. 99, Guidance for Flood Risk Analysis and Mapping: Base Level Engineering (BLE) Analyses and Mapping, provides detailed information on BLE analyses and mapping. Guidance Document No. 99 is accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage.

Based on the particular needs of a watershed, the Project Team should hold one or more Discovery Meetings after an analysis of the collected information and data is completed. This analysis will be summarized in a Discovery Report. Details on the compilation of draft and/or final versions of the Discovery Report are discussed in more detail in Section 10 of this document.

During the Discovery Meeting(s), the Project Team works with Project Stakeholders to pursue a common understanding of changes to the environment, areas of risk and mitigation interest and capabilities, local priorities for further study, and a common path forward. This information helps determine whether a Flood Risk Project is appropriate. If a Flood Risk Project is found to be appropriate and flood hazard mapping will be included, the data and information collected during the Discovery process is used to evaluate the potential effects of the project.

To set expectations about the outcomes of the Flood Risk Project, the Project Team members discuss the results of their evaluation with the Project Stakeholders. This conversation is of critical importance to establishing the trust and transparency required for a successful Flood Risk Project. The Project Team also coordinates recommendations for a project scope with the Project Stakeholders. A Project Charter is one tool that may be used by the Project Team during the stakeholder engagement phase. If used, the Project Charter describes a potential project

scope; summarizes the expected results; defines the roles and responsibilities of all parties involved; identifies mitigation opportunities, including mitigation planning technical assistance to be provided; and describes other assistance (e.g., stakeholder engagement, outreach, communication) that is needed. A Project Management Plan, if requested by the FEMA Project Officer, establishes protocols and management objectives for the project.

The project scope, Project Charter, and Project Management Plan are discussed in more detail in Section 13 of this document.

5.1 Coastal and Levee Considerations

The Discovery process for coastal study areas and for levee projects may be conducted differently than the Discovery process for watershed projects. Coastal projects and levee projects may have longer timelines than watershed-based Flood Risk Projects, separate prioritization protocols, widely varying Project Stakeholder audiences, and other differences. For example, levee projects require the formation of a Local Levee Partnership Team that includes a diverse group of Project Stakeholders.

Project Team members involved in Flood Risk Projects involving coastal analyses or levees should refer to separate guidance related to coastal projects and levee projects provided on the FEMA website. Additional resources related to coastal analyses and mapping are available on the FEMA coastal flood webpage at https://www.fema.gov/coastal-flood-risks-achieving-resilience-together. Additional resources related to levee analysis and mapping are available from the FEMA online library at https://www.fema.gov/fema-levee-resources-library.

5.2 Tribal Considerations

Because of the special relationship that federally recognized tribal nations have with the federal government, when tribal lands are included in a watershed under evaluation, special considerations will apply. Consultation and engagement with tribal nations must be coordinated with the FEMA Regional Office Tribal Liaison to ensure that an effort is made, during the Discovery process, to determine if the tribal nation has the land-use authority necessary; desire; state or federal status; or any other issue that may cause the tribal nation to not participate in the NFIP or otherwise decline to participate in a Discovery effort.

The Project Team must consult the Regional Office Tribal Liaison as to whether or not tribal nation should be included in the watershed-wide Discovery efforts and in general Discovery Meetings, or if there should be separate Discovery efforts and meeting(s) with the appropriate tribal entities. This will depend on established working relationships between the Regional Offices and the tribes within that region.

Due to the complexity and varied nature of federal/tribal agreements concerning the ownership of property on tribal lands, extra effort must be made to obtain data for tribal land boundaries during Discovery. Tribal and surrounding territorial boundaries may be difficult to determine and Regional Offices must use the best information that is available, with the understanding that some tribal lands will inadvertently be shown in unincorporated areas of

counties or vice versa. Counties and tribal nations must be given an opportunity to make any corrections necessary to their territorial boundaries.

Only the FEMA Regional Office Tribal Liaison or other approved Regional Office staff members are to work directly with federally recognized tribes and tribal entities. Therefore, if a tribal entity contacts a Project Team member about participation in the NFIP or participation in the ongoing Flood Risk Project, that Project Team member is to notify the FEMA Project Officer and the Regional Office Tribal Liaison immediately.

6.0 Project Stakeholder Coordination

Project Stakeholder outreach, engagement, and coordination must occur throughout the Discovery process to build positive working relationships and to collect pertinent flood risk and mitigation data and other community information to help inform and ensure a productive Discovery Meeting. This engagement may take the form of face-to-face meetings, conference calls, web-enabled meetings, or other means of two-way communication.

The Project Team should consult the FEMA Community Information System (CIS) to obtain community contact information. However, the Project Team will need to verify and update the data found in the CIS as required to ensure the information is accurate and up to date.

This section discusses potential Project Stakeholders. How stakeholders are engaged based on Need and Risk is an important piece of the Discovery Phase as it relates to project planning. Additional detailed information on stakeholder engagement during the Discovery Phase is provided in Guidance Document No. 102, Guidance for Stakeholder Engagement: Project Planning and Discovery Phase. Additional detailed information on project planning prioritization is available in Guidance Document No. 96, Project Planning. Guidance Document Nos. 96 and 102 are accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage.

6.1 Watershed Stakeholders

The types of stakeholders engaged in a Flood Risk Project will vary for different watersheds and regions. Community floodplain administrators and Chief Executive Officers, who have traditionally been engaged for FEMA flood hazard mapping projects, will continue to be included in Flood Risk Project engagement efforts. However, the Project Team should engage a much wider array of community, county, and regional stakeholders—public, private, and non-profit—for Discovery. These include, but are not limited to, the following:

- State or regional groups with a vested interest in water resources (e.g., levee boards, regional partners, conservation districts, watershed/river basin commissions)
- Geographic Information System (GIS) managers and specialists
- Community and regional planners

- Local and state water authorities
- Levee and dam owners, operators, sponsors, and review boards
- Community and county land use departments
- Community and state emergency management officials, such as county offices of emergency management, fire districts, fire departments, and fire chiefs
- County and local building officials
- County and local engineering departments
- State, county, and local highway and transportation departments
- Members of tribal communities, as defined by the Regional Office Tribal Liaison through consultation and coordination with tribal officials
- Representatives of any appropriate NGOs (e.g., professional associations, environmental groups, recreational groups)
- Representatives of the National Partnership Network, if the organization has a local office
- Economic development and chamber of commerce representatives
- Other key stakeholders, as appropriate (e.g., developers, real estate professionals, insurance agents, lenders, infrastructure specialists)

Additional information on the National Partnership Network referenced above is provided in FEMA Guidance Document No. 102, Guidance for Stakeholder Engagement: Project Planning and Discovery Process. Guidance Document No. 102 is accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage.

The Project Team should contact representatives from each community impacted and in relevant areas of influence within the watershed. The community officials contacted should represent a holistic view of flood risk management and flood risk mitigation in the community. Additional information on the Project Stakeholders to be engaged also is provided in Guidance Document No. 105, Guidance for Stakeholder Engagement: Introduction and Key Words, and Guidance Document No. 102, Guidance for Stakeholder Engagement: Project Planning and Discovery Process.

6.2 Other Federal Agency, State, and Local Coordination

Unnecessary duplication of federal, state, or local mapping efforts must be avoided. Therefore, coordination with federal, state, and local partners, including those listed below, should occur on a state or regional level, where possible, and inform the Discovery process.

- Federal Highway Administration (FHWA)
- USACE
- U.S. Bureau of Land Management (BLM)

- U.S. Environmental Protection Agency (EPA)
- USGS
- Natural Resources Conservation Service (NRCS)
- NOAA, including the National Weather Service and the Office for Coastal Management
- Other federal dam safety regulators (e.g., Federal Energy Regulatory Commission [FERC], National Park Service (NPS), U.S. Forest Service (USFS), U.S. International Boundary and Water Commission [IBWC], U.S. Fish and Wildlife Service [USFWS])
- State dam safety officials
- State highway and transportation departments
- State or regional authorities and entities
- Non-municipal local authorities and boards

In addition, the Project Team may consider whether it would be valuable to involve large state government or federal government landholders, such as the USFS, NPS, and branches of the military with significant landholdings (such as a large base) in the project coordination. While flood hazards for these state or federal lands may not be mapped, they are integral to the watershed and often cover large areas of a watershed. These entities are FEMA partners; therefore, the coordination is ongoing. In this cooperative spirit, Project Team members may be called on to support FEMA with providing technical and programmatic assistance and prepare responses to inquiries received from interested Project Stakeholders.

Many of the agencies and entities listed above also have databases/datasets that should be consulted in developing the AoMI dataset for the watershed or project area. Section 4.0 of FEMA Guidance Document No. 16, Guidance for Flood Risk Analysis and Mapping: Areas of Mitigation Interest, elaborates on data sources for AoMIs, including, but not limited to, nonaccredited levees, dams, coastal structures, undersized culverts, and undersized bridge openings.

7.0 Data Collection

The types of data and information obtained during the Discovery process should demonstrate a holistic picture of flooding issues, flood risk, and flood mitigation needs and capabilities within a watershed. The data and information gathered should also provide an understanding of the geography, demographics, and willingness to address risks, infrastructure presence, underlying building codes, and other critical elements that will provide a full understanding of the watershed.

The data and information collected must be both sufficient and firmly understood by the Project Team before possible elements of a Flood Risk Project - including flood hazard mapping, community engagement and outreach, mitigation planning technical assistance, and flood risk

assessments - are suggested. The Project Team should also seek and obtain data during Discovery that will be needed to perform subsequent analysis and mapping during the project, such as base map data, elevation data, and data needed to support flood hazard modeling and risk assessments.

FEMA Geospatial Data Coordination Procedures outline sources of geospatial data and contact information, preferences for base map data in flood risk studies, information for the Discovery process, and other useful information. To implement the Geospatial Data Coordination Procedures, each region maintains state Standard Operating Procedures (SOPs) that document in detail how specific datasets within each state will be used for flood hazard mapping and Discovery projects. Some of the data to be used in those projects can be retrieved from national data suppliers, which are typically OFAs.

To supplement the Discovery element of the Geospatial Data Coordination Procedures, the Project Team will follow the guidance in the National Discovery Data Coordination Procedure document, which provides instruction on the most appropriate data to collect on a national scale for the Discovery process. This information, in conjunction with the state SOPs, is intended to help reduce the level of effort needed to find appropriate data and respect the ongoing geospatial data coordination efforts at federal, state, and local agencies.

The Project Team communicates to Project Stakeholders which data and information can be used for a Flood Risk Project, including the appropriate formats and specifications. In conjunction with required data from CNMS (such as “mapping needs” information as shown in Figure 2 below), the Project Team may use the data and information obtained during this process to make the optional draft Discovery Map, regulatory products (i.e., FIRMs, FIS reports, FIRM databases), and Flood Risk Products (i.e., Flood Risk Reports, Flood Risk Maps, Flood Risk Databases). Flood Risk Products are described further in Guidance Document No. 8, Guidance for Flood Risk Analysis and Mapping: Flood Risk Database; Guidance Document No. 9, Guidance for Flood Risk Analysis and Mapping: Flood Risk Map; and Guidance Document No. 10, Guidance for Flood Risk Analysis and Mapping: Flood Risk Report. These guidance documents are accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage.

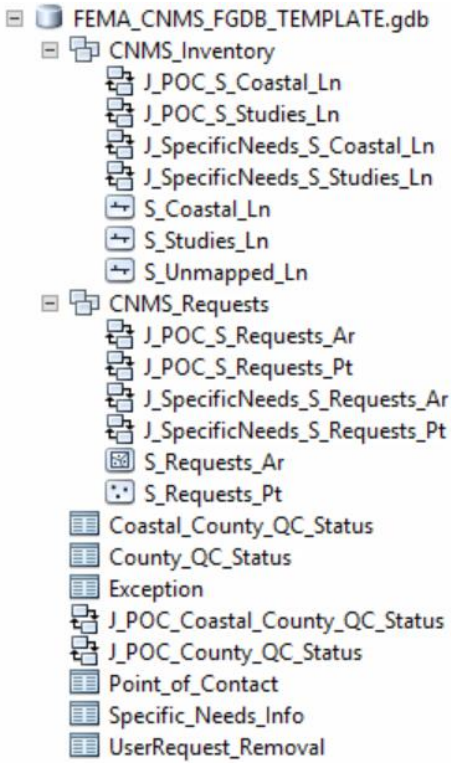

Figure 2. Mapping Needs Layers

The types of information that the Project Team will consider collecting before the first Discovery Meeting include, but are not limited to, information about the following:

- Community or tribe planning capabilities and the timing and level of any needed technical assistance for mitigation planning
- Regional and/or National Geospatial Data Coordination datasets
- Status of local or tribal hazard mitigation plans
- NFIP status, including mapping status (effective dates)
- NFIP Insurance (e.g., policy count, total coverage, number of Repetitive Losses)
- Demographics
- Current stormwater activities, such as culvert or ditch cleaning
- Current outreach programs to residents about flooding/stormwater issues
- Stormwater Best Management Practices, programs for reducing flows, etc.
- Community-identified risk and flood study needs
- Coastal inundation (from OFAs)

- Awareness and attitudes about flood risk in the area, as available through open sources such as media scans and social media posts
- History of storms that have affected the area, with summary information about the extent of damage and recovery
- Key influencers in the region who may support flood mapping activities
- Status of ongoing mitigation actions or those under consideration
- Disaster and non-disaster grant activities (including grants for rehabilitation of eligible high hazard potential dams as part of the Rehabilitation of High Hazard Potential Dam Grant Program)
- Mitigation Assessment Team reports, Recovery Advisories, and Case Studies (if applicable)
- Existing partnerships between watershed communities and non-traditional organizations, such as NGOs, colleges and universities, and members of the National Partnership Network
- Areas of increasing population and/or development within the 1-percent and 0.2-percent-annual-chance floodplains
- Nonstructural flood mitigation features, and their design level of flood hazard reduction (if applicable/available)
- Flood-control structure locations, and their design level of flood hazard reduction (if applicable/available)
- Flooding issues, including (where applicable) ice jams, historical flooding, and declared flood disasters
- Community participation in the Community Rating System (CRS)
- Actionable projects, as identified in hazard mitigation plans
- Community development plans and comprehensive plans
- Prior proactive mitigation actions and planning efforts resulting in reduced losses
- Community interest/ability to provide elevation data or pursue partnership opportunities
- Community priorities to focus mitigation discussions through knowledge of what is important to the public
- Community-identified mitigation opportunities and priorities
- Communication capability assessment; use of social media, websites, and online tools
- Flooding within a watershed, such as information from Community Assistance Visits (CAVs) or Community Assistance Contacts (CACs)

- Community correspondence and other data that the FEMA Regional Office, state NFIP Coordinator, or SHMO possesses
- Information from OFAs, NGOs, and other Project Stakeholders, as referenced in Section 216 of BW12
- Coastal inundation (In Section 216 of BW12, as amended by HFIAA, the U.S. Congress directed FEMA to include any relevant information from the following in updating flood hazard maps: [1] an applicable inundation map prepared by the USACE; and [2] NOAA data related to storm surge modeling.)
- Streamflows and watershed characteristics (In Section 216 of BW12, as amended by HFIAA, the U.S. Congress directed FEMA to include any relevant USGS information on streamflows and watershed characteristics that is useful in the identification of flood hazard areas in updating flood hazard maps.)
- Land subsidence, coastal erosion areas, changing lake levels, and other flood-related hazards (In Section 216 of BW12, as amended by HFIAA, the U.S. Congress directed FEMA to include any relevant information on land subsidence, coastal erosion areas, changing lake levels, and other flood-related hazards in updating flood hazard maps. Federal agency partners would be the primary sources of this information.)
- Other FEMA data sources, such as the Building Science Branch staff at FEMA Headquarters, Building Science staff in the FEMA Regional Office, and the FEMA Engineering Library
- Available elevation data
- Available base map data
- Available soils data; climate data; high-water mark data; bridge, dam, levee, coastal structure, and culvert data; and other technical data supporting flood hazard and flood risk analysis
- Community Building Code Effectiveness Grading Schedule (BCEGS) ratings, a classification system for building departments
- Current building code, including the name and date the model code was adopted, date of last update, references to sections with modifications to flood provisions, and additional flood requirements
- History of other major hazards
- Building Science resources (e.g., flyers, presentations, publications, webpages) that would be useful for the affected communities
- Resources available through the Disaster Recovery Reform Act of 2018 (DRRA 2018), part of the Federal Aviation Administration Resource Act of 2018 (Public Law 115-254). For example, Section 1206 of DRRA 2018 authorizes FEMA to provide assistance to state and local governments for building code and floodplain management ordinance

administration and enforcement, including inspections for substantial damage compliance. Section 1234 of DRRA 2018 authorizes the National Public Infrastructure Pre-Disaster Mitigation fund, which allows for greater investment in mitigation before a disaster.

- Resources available through Section 20606 of the Bipartisan Budget Act of 2018 (Public Law 115-123), which authorizes an increase in the federal cost share up to 85 percent as an incentive for investment in measures that increase readiness for and resilience from a major disaster

The Project Team also will evaluate local hazard mitigation plans and prior local mitigation projects for insight into the Project Stakeholders' participation in proactive mitigation initiatives, and information on community or tribe capability, capacity, and/or desire to implement mitigation actions and to communicate flood risk to citizens.

Because the above noted data may be included on the draft Discovery Map (if one is needed), if a data-sharing (release) agreement is required for use of community, tribal, or other thirdparty data, the Project Team will discuss this issue with appropriate Project Stakeholders before producing a final Discovery Map.

Geospatial data collected by the Project Team may be used in the Discovery Map. In some cases, the Project Team may wish to convert data not provided in geospatial format by communities to a geospatial format for visualization on the Discovery Map. For example, the status of a community or tribal hazard mitigation plan is not geospatial data; however, the area covered by the plan can be shown on a map and highlighted appropriately to show the plan status.

The Project Team will compile the information that is not displayed on a map (such as information about flood/stormwater ordinances) into a Discovery Report, along with a listing of all data collected, the Project Stakeholders, and other information. The Project Team will use the draft Discovery Map as a reference and as a discussion starter during the Discovery Meeting(s). One objective of the Discovery Meeting(s) is to validate the information collected and determine whether a Flood Risk Project is appropriate for the watershed under consideration.

8.0 Data Analysis

To prepare for and facilitate the Discovery Meeting(s), the Project Team will complete a robust, thoughtful analysis of the data and information obtained during stakeholder coordination. The Project Team will distribute the collected information to Project Stakeholders before the Discovery Meeting. This advance distribution will enable meeting attendees to focus on discussions about the watershed characteristics, flood risk, flood hazard communication, hazard mitigation, stakeholder engagement, and outreach.

As part of the analysis, the Project Team will evaluate the data and information collected for potential use in the AoMI dataset. Information on the process to be followed in performing this

evaluation is provided in Section 6 of Guidance Document No. 16, Guidance for Flood Risk Analysis and Mapping: Areas of Mitigation Interest.

While additional data and information may be discussed at the Discovery Meeting(s), and some post-meeting data and information collection may take place as a result of meeting discussions, the Discovery Meeting(s) will be an opportunity for the Project Team to confirm the data and information gathered during their initial pre-meeting research. FEMA does not have a mandatory format or guidance for analyzing the data and information collected, as each set of collected data and information will differ based on several factors and is dependent on the watershed.

9.0 Discovery-Related Data

The Project Team will provide Discovery-related data using the information collected during the Discovery process. This draft data will be shared with Project Stakeholders to facilitate further discussion and collaboration about future mapping and mitigation actions in the watershed. The Project Team will provide the draft Discovery-related data to the Project Stakeholders before the Discovery Meeting(s) and will present it at the Discovery Meeting as a facilitation tool.

The Project Team may present the data and information electronically or as a printed map or set of maps. Recommended data and information to show on the optional draft Discovery Map is listed in Subsection 9.1. An example Discovery Map is shown below. The Project Team may show other data and information collected on the map at Regional Office (or, in some cases, CTP) discretion if it would benefit the discussion within the watershed. Some examples of this other data and information is listed in Subsection 9.2.

The amount of data and information collected will likely not be reasonably shown on one map. This would require map layers, which can be manipulated and depicted electronically. The Project Team may develop multiple maps at various scales and bring them to the Discovery Meeting(s) for readability and to facilitate discussion.

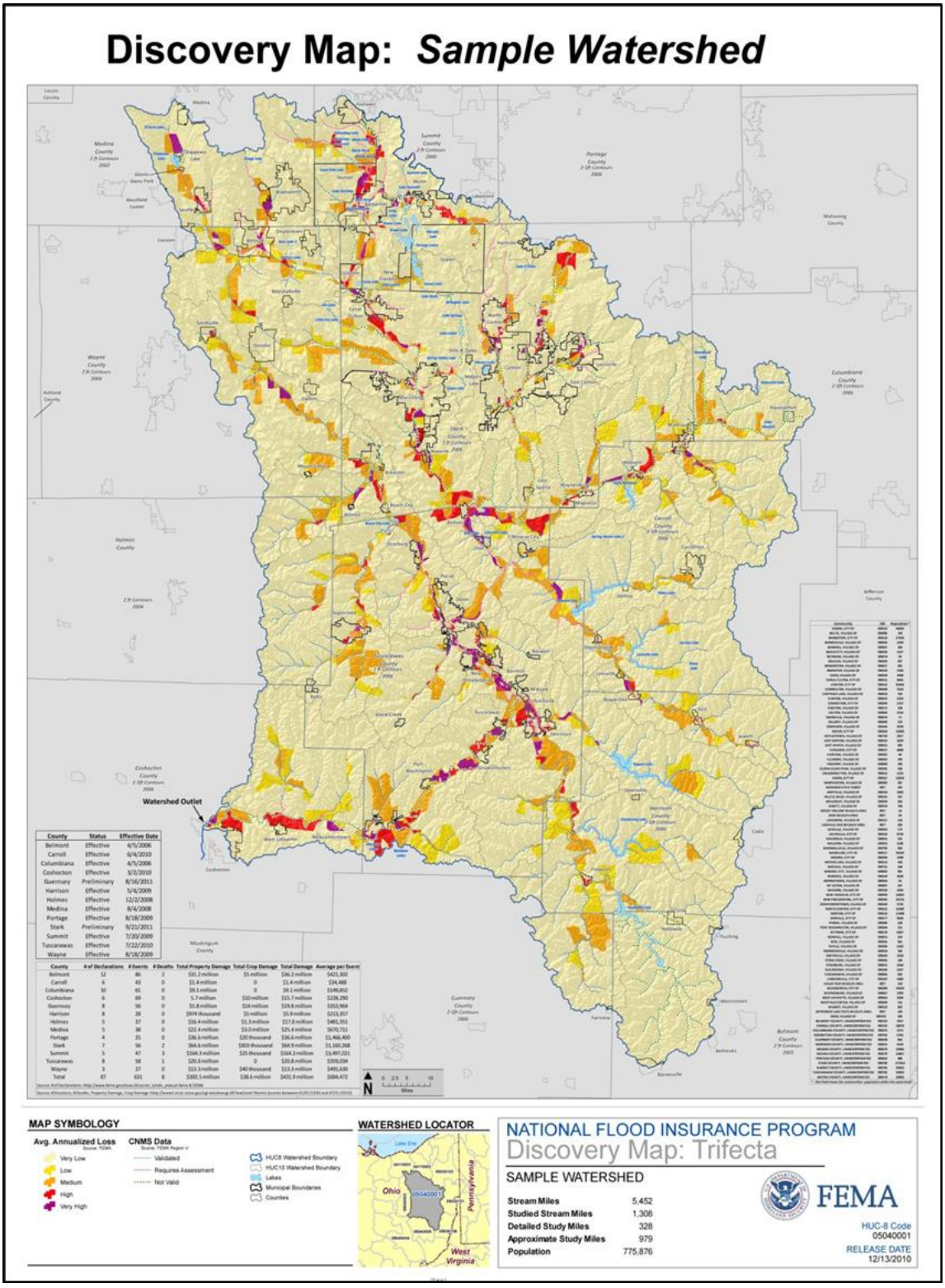

Figure 3. Sample Discovery Map

The Project Team will prepare users' notes or other documentation that help community members understand and interpret information included on the Discovery Map(s). The Project Team will create these notes for a nontechnical audience.

The Project Team will create a final Discovery Map following the last Discovery Meeting(s) to illustrate the decisions that were made during the Discovery Meeting. The Project Team will provide the final Discovery Maps to all meeting attendees as well as invitees that were not able to attend the meeting(s).

To ensure privacy, sensitive data, such as data that may name a unique address or person, will be aggregated and/or generalized at the centroid of the census block and represented as a point or generalized area.

Two FEMA documents provide additional information regarding the formatting and submittal of data at the Discovery phase: Data Capture Technical Reference, and Guidance Document No. 46, Guidance for Flood Risk Analysis and Mapping: Data Capture – General Guidance. These documents are accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage.

In addition, the Project Team will deliver both the draft and final Discovery Maps to the final MIP location for future reference and for future update. See Guidance Document No. 46 and the "MIP User Care" section of the MIP website for more detailed information.

9.1 Discovery Map Information

If a Discovery Map is produced, the information and data that are beneficial to be shown (if applicable to watershed) on the draft Discovery Map may include:

- Base data reflecting watershed boundaries, jurisdictional boundaries, tribal land boundaries, state lands, federal lands, major roads, and stream lines
- Coastal Barrier Resources System (CBRS) and Otherwise Protected Areas (OPAs) from U.S. Fish and Wildlife Service (USFWS)
- S_Request_Ar and/or S_Request_Pt (mapping needs)
- Topographic and bathymetry data status and availability, locations of future topographic and/or bathymetric data acquisition
- Flood risk assessment data
- Coverage areas of known community or tribal risk assessment data
- Flood-control structure location data from national or regional inventories (e.g., National Inventory of Dams, National Levee Database, other levee inventories) and accreditation status information, including information from dam EAPs (if available)
- Locations of stream gages

- Locations of past flood claims and repetitive loss properties (to be shown using the centroid of the census block to maintain privacy requirements)
- Locations of clusters of Letters of Map Change
- Areas of known flooding issues not represented on effective FIRMs or listed in the CNMS database
- Areas of ongoing or planned development
- Areas of high growth or other natural land changes (e.g., wildfires, landslides, subsidence)
- Locations of other ongoing studies or projects and studied stream reaches that have been modified since the effective date of the map and require an updated study (e.g., highway improvements)
- In coastal areas, locations of wave and tide gages; wind stations; proposed inland limit of the Primary Frontal Dune, if present; location of any beach nourishment or dune restoration projects; a comparison of preliminary stillwater elevations with effective stillwater elevations
- Available effective study data
- Available orthophotography
- Proposed discussion areas, problem areas, areas of proposed mitigation projects, and other areas of interest to discuss based on Regional Office knowledge and analysis of the data collected during the Discovery process
- Information on community BCEGS ratings, including information from such resources as the BCEGS Questionnaire for communities that have not received BCEGS ratings and the "Inspect to Protect" website (https://inspecttoprotect.org)
- Information on current building code, including the name and date the model code was adopted, date of last update, references to sections with modifications to flood provisions, and additional flood requirements
- History of other major hazards
- Information on Building Science resources (e.g., flyers, presentations, publications, webpages) that would be useful for the affected communities

9.2 Other Data and Information

A variety of data and information may be shown on the draft Discovery Map at regional (or, in some cases, CTP) discretion provided it can be presented legibly on the Discovery Map. In cases where the data or information cannot be presented legibly, the FEMA Project Officer may opt to have the information included in the accompanying report or database or in a GIS-produced presentation of the AoMI dataset generated from the Flood Risk Database. Additional information on the presentation of the AoMI dataset is provided in FEMA Guidance Document No. 8, Guidance for Flood Risk Analysis and Mapping: Flood Risk Database. Guidance

Document No. 8 also is accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage.

Data and information that may be presented includes, but is not limited to, the following:

- Land use and soil information (such as information from the Urban Change Land Use Map, existing or future land use maps, zoning maps, or other sources)
- Land ownership in the watershed
- Reference points to locate areas with flooding issues
- Locations of hydraulic structures, such as bridges or culverts, with inspection status, if available
- Locations of coastal structures, including flood hazard reduction structures (e.g., levees), shoreline structures (e.g., jetties, groins, seawalls), manmade embankments (e.g., elevated roads, railroads), surge conveyance pathways, and shoreline change data
- Locations of identified nonstructural flood mitigation features
- Local structure and topographic data from hazard mitigation plans, if applicable (The data that may be available for use in risk assessment products and enhanced Hazus analysis include GIS-formatted building stock/inventory information, tax assessor records, high-quality terrain data, local building footprint or parcel data, essential facility data, number of stories, usage, and assessed value)
- Inundation areas of historic major flood events and declared disasters and high-water marks clusters or locations of Individual Assistance/Public Assistance grants and locations of grant projects completed, planned, or underway; locations of projects and structures completed or planned for FEMA HMA grant programs or mitigation funds from other agencies or entities, such as the Small Business Administration
- Information on whether the community or tribe has received, is currently using, or intends to apply for federal grants to achieve mitigation planning or mitigation projects, including whether applications for mitigation planning or project grants are under review and any grant resources made available through DRRA 2018 and Section 20606 of the Bipartisan Budget Act of 2018
- Information on whether a community or tribe that is using federal funds hires a contractor to assist with the development of hazard mitigation plans or whether they need FEMA or CTP assistance
- Information on whether the previously approved hazard mitigation plans indicated any data deficiencies for flood hazards that could be addressed through a flood risk study
- Information from the NFIP on market penetration of insurance policies in force
- Locations and outcomes of recent CAVs or CACs, especially noted violations
- CRS class information

- Information from OFAs (e.g., USFWS, NOAA, USGS, NRCS, EPA, FERC, USACE, USFS, BLM, FHWA, NGS, IBWC, U.S. military bases)
- Information from state agencies (e.g., Department[s] of Transportation, Department[s] of Natural Resources)
- Information from non-profit organizations (including grass-roots watershed groups)
- Information from other professional associations (e.g., Association of State Floodplain Managers, Association of State Dam Safety Officials, American Water Resources Association, American Society of Civil Engineers) and other NGOs
- Information from colleges and universities
- Information on current community plans, ordinances, or programs to alleviate flooding or manage storm water
- Information on other known hazards with geographical boundaries (e.g., earthquake faults, landslide hazard areas, storm surge inundation zones, wildfire hazard areas), to review hazard risk assessments and mitigation strategies that have already been completed within the watershed, slosh zones, and wildland-urban interface areas
- Information on active disasters in the watershed
- Locations of campgrounds/recreational areas and emergency access routes
- Information on community BCEGS ratings
- Current building codes, including the name and date the model code was adopted, date of last update, references to sections with modifications to flood provisions, and additional flood requirements
- Information on Building Science resources (e.g., flyers, presentations, publications, webpages) that would be useful for the affected communities
- Any other information or data that may be appropriate

10.0 Discovery Report

The Project Team prepares a Discovery Report, which includes findings of the Discovery process, identified mapping needs, and areas of desired mitigation technical assistance or future projects. The Discovery Report is intended to help FEMA and the communities involved determine whether to conduct additional Flood Risk Project activities. In addition, the information within the Discovery Report can and will be used by communities to help further discussions of mitigation action.

For both the draft version (if created) and the final version, the Project Team will verify that the completed Discovery Report includes a section listing the data and information collected including what data and information were received, when they were received, data sources, and an analysis of the data and information. The final version of the Discovery Report will

include meeting documents, such as meeting notes and attendee list, and the Project Team will provide them to communities (and tribes, if appropriate) after the Discovery Meeting. A Discovery Report example template and a prototype Discovery Report are accessible through the "Templates and Other Resources" section of the online FEMA Library. The Project Team will confirm with the FEMA Project Officer whether the Regional Office has different templates to use.

While the template in the FEMA Library is not a submittal formatting requirement, this provides a useful format and instructions for preparation of the Discovery Report, while the prototype serves as an example of how the addition of data and the unique characteristics of a particular watershed can be assembled to create a final product. The Discovery Report template was developed to allow the Project Team flexibility in reporting. The Discovery Report template contains numerous sections for the compilation of particular community facts and data findings throughout the Discovery process. The sections listed will be included and thoughtfully expanded by the Project Team, as required, to present a complete profile of the watershed, its communities, needs, and expectations in the final Discovery Report. Keep in mind that while the template and prototype represent a useful toolkit available to help standardize Discovery-related materials, these tools are not a submittal formatting requirement and are not intended to be prescriptive.

The Project Team will provide the appropriate versions of the Discovery Report to all project participants. The versions will reflect the following:

- First Iteration (Draft): During the Project Stakeholder Coordination and Data Analysis phases of Discovery, the draft Discovery Report should house all information and data compiled by the Project Team in preparation for the Discovery Meeting(s). If such a draft Discovery Report is created, the Project Team should share this first version of the Discovery Report with the Project Stakeholders before the Discovery Meeting(s). This draft Discovery Report would act as a companion to the draft Discovery-related data and information compiled for delivery to the Project Stakeholders.
- Final Iteration: The final Discovery Report is a result of the successful completion of the Discovery Meeting(s) held in the watershed. The Project Team will finalize this final iteration following a review of an interim draft report by Project Stakeholders who attended the Discovery Meeting(s). The Project Team will provide the final Discovery Report to Project Stakeholders, and it will include information about the Discovery Meeting(s), including the meeting agenda, meeting announcement and publication, sign-in sheets, discussion topics, and decisions made.

The Project Team will deliver each version of the Discovery Report to Project Stakeholders as a Portable Document Format (PDF). In addition, the Project Team will deliver the draft and final Word File Document, and final PDF, including appendices, to the final MIP location for future reference and for future update. See the Data Capture Guidance (General and Workflow Details), and the "MIP User Care" section of the MIP website for more detailed information.

The Discovery Report Prototype provides an example of watershed (non-coastal) Discovery, which includes watershed, county, and community details for Project Team member reference. The Discovery process for coastal projects is not typically watershed based; therefore, this prototype may be refined further at Regional Office discretion and direction for coastal projects. Subsections 10.1 through 10.7 provide additional guidance per report element.

10.1 Discovery Report Elements and General Format

The information in this section applies to the draft Discovery Report, if it is created, and applies to the required final Discovery Report. The following guidance is a useful way to standardize the presentation of information in the Discovery report, but is not meant to be prescriptive.

The Project Team will prepare the Discovery Report at the project area level or at the Regional Office's discretion for coastal projects. The Discovery Report template is designed to be flexible to the needs of the watershed. At the beginning of each report section, the template includes instructions in bold italic font. Before distributing the Discovery Report, the Project Team must remove the italic text. The Discovery Report sections and subsections (as applicable) are described in the subsections that follow.

10.2 Report Cover

The report cover shown in the template is considered the standard cover for the Discovery Report and it lists the communities in the watershed. If the Project Team wishes to list the communities, but there are too many communities to list on the cover, then the Project Area Community List, found on the first inside page of the report, can be populated.

The cover will include the watershed name and HUC-8 code for the watershed area for which the Discovery effort is being performed. The Project Team will use the Watershed Boundary Dataset naming convention to name the Discovery Report to maintain geographic clarity as future watersheds are developed.

The Project Team will:

- List, in alphabetical order, the counties within the watershed/project area. Then, list the independent communities and incorporated jurisdictions within the watershed/project area in alphabetical order. If spanning states, identify state(s) in alphabetical order. Specific characteristics of a community, such as non-participation in the NFIP, or other information deemed relevant to the Flood Risk Project may be noted with this table of jurisdictions.
- Include the Draft or Final version, as appropriate.
- Update the report date to indicate the following dates:
  - Draft – Date initial Discovery-related data is sent out to Project Stakeholders in advance of the Discovery Meeting
  - Final – Date of final Discovery Report sharing the Discovery Meeting findings with Project Stakeholders

10.3 General Information

In this section, a watershed or project area description is to be included, including, for instance, physical land description, major lakes and rivers, large communities, and other topics of interest, as applicable, and deemed necessary.

Additional data for informational and educational purposes with audiences in addition to the Project Stakeholders in mind may be provided.

Most end users of the Discovery Report will not be experts in floodplain mapping or mitigation; therefore, FEMA processes will be described in simple, nontechnical terms. A table explaining acronyms and abbreviations and/or a Glossary of Terms may be appropriate to aid the end user in understanding the language and overall themes of the Discovery Report.

10.4 Project Stakeholder Coordination

This section of the Discovery Report details the activities that occurred during the Stakeholder Coordination phase.

The template allows the assigned Project Team member to provide headings as appropriate. Section titles may include a description of how the data and information were collected, who was contacted, and may include a list of watershed contacts for possible future Risk MAP project use.

This section, based on the number of contacts, will include a list of stakeholders contacted. The stakeholders can be included as a table, as a reference to a Discovery Report appendix, as an attached list, or by referencing a table in the (optional) Discovery Map.

The Project Team will include scanned or photocopied records of conversations, email messages, call logs, and other communications as an appendix.

10.5 Data Analysis

If a draft version is created, the Project Team will populate this section for the draft version. It will be divided into two subsections: (i), Data That Can Be Used for Flood Risk Projects, and (ii), Other Data and Information.

Subsection I, Data That Can Be Used for Flood Risk Projects, used for listing topographic data availability and other data that can be used in Flood Risk Projects (such as building footprints that can be used for refined Hazus analysis).

Subsection ii, Other Data and Information: will be different for each watershed, and will contain thoughtful analysis of the data and information, as opposed to lists of data and information. Types of information include economic, demographic, growth, and industry, which may be helpful to inform a communication and/or outreach strategy.

Some section examples are provided below. The list is not exhaustive, nor does it imply a requirement of topics that must be addressed in a Discovery Report. Rather, it is intended to demonstrate the breadth of subjects that may be appropriate to discuss within the Discovery Report. Therefore, this section will be different for each project area.

- Communities and tribal entities within the Watershed/Project Area
- NFIP Participation
- Effective FIS Reports and FIRMs
- Demographics
- CRS Participation
- Flood Insurance Policies and Repetitive Loss
- Levees (include description of adjacent floodplain areas)
- Flood-Control Structures
- Endangered Species Act Considerations
- Emergency Action Plans (Dams, Levees)
- Topographic Data Availability
- Hazus Data and Building Stock Information
- BCEGS Program and Community Rating
- Historical Construction Type and Information on Loss Avoidance from Past Events
- CBRS Areas and OPAs
- Flood Hazard Mitigation and All-Hazard Mitigation Plan Information
- AoMI Dataset Availability
- BLE Data and Mapping Availability
- Historical Flooding/High-Water Marks
- Other Historical Hazards
- Declared Disasters
- Recovery Activity Documentation (i.e., Mitigation Assessment Team reports, Recovery Advisories, Case Studies)
- CAVs/CACs
- Stream Gages
- CNMS Information

- Ordinances and Building Codes (including weakening of flood provisions or provisions for other hazards)
- Areas of Growth in 1- and 0.2-percent-annual-chance floodplains
- Information Regarding Federal, State, and Local Representation (i.e., names, offices, district maps, other relevant information)

10.6 Discovery Meeting(s)

For the final version of the Discovery Report, the Project Team will include the Discovery Meeting date(s), location(s), organizations represented, agenda, and meeting notes (located in this section or as an appendix) in this section. If a draft version of the Discovery Report is created, a note indicating that a review of the Discovery Meeting(s) will be included in the final Discovery Report may be placed in this section.

The Project Team also may include a description of the Discovery Map (if a Discovery Map is created) with a table or list showing the data included and pre- and post-Discovery Meeting notes and analysis. At a minimum, the final Discovery Report will include action items and decisions made during the meeting.

10.7 Appendix and Tables

This section is to be used at the Project Team's discretion. This is also an opportunity to include items such as stakeholder lists and individual/community contact preferences (e.g., email message versus telephone call), meeting notes, data tables, and other items that are referenced in the report without duplicating the effort made during the other phases of the Discovery process.

11.0 Discovery Meeting

As discussed in Section 6 of this document, stakeholder outreach, engagement, and coordination occurs throughout the Discovery process to build positive working relationships and to collect pertinent flood risk and mitigation data and other community information to help inform and ensure a productive Discovery Meeting. The earlier engagement may have taken the form of face-to-face meetings, conference calls, web meetings, or other means of two-way communication.

The Discovery Meeting(s) may be the first formal face-to-face meeting(s) that the Project Team will have in which most key Project Stakeholders participate. To achieve a better understanding of the needs of the watershed, Project Team members may wish to hold a planning meeting or conference call with Project Stakeholders before a Discovery Meeting to discuss and review what material is already available and what strategies may be useful in optimizing the success of the Discovery Meeting(s) with Project Stakeholders. This planning meeting/conference call might also give the Project Team an opportunity to work with the watershed communities to choose the time(s) and place(s) to hold the Discovery Meeting(s) that encourage maximum attendance and active stakeholder participation.

In the best-case scenario, information previously collected through communication with Project Stakeholders is validated and expanded on at the Discovery Meeting. This will not be a forum for hearing the bulk of necessary information for the first time. Rather, it is an opportunity to increase understanding, confirm priorities, and identify any remaining knowledge gaps.

A broad representation of Project Stakeholders will be invited to each Discovery Meeting. For some project areas, it may be desirable or necessary to hold multiple Discovery Meetings to encourage stakeholder attendance. Reasons for multiple Discovery Meetings might include, but are not limited to, the following:

- Watersheds with a large number of communities
- Geographically large watersheds
- Watersheds that have topographic impediments (e.g., large lakes)
- Watersheds that encompass multiple states (requiring out-of-state travel)

As mentioned earlier, the Project Team will analyze all data and information collected before the Discovery Meeting which may be summarized in a draft Discovery Report and which is included in the required final Discovery Report. The Discovery Report (along with the optional Discovery Map, if created) are used to aid discussions of the data and provide meeting attendees an overview of flood risk in the watershed.

Decisions to perform additional analyses, data development activities, and/or community engagement within the project area must be supported by the outcomes from the Discovery process. These decisions are communicated to project stakeholders before executing those activities.

Information on the objectives of the Discovery Meeting and who should be involved is provided in Guidance Document No. 102, Guidance for Stakeholder Engagement: Project Planning and Discovery Phase. Guidance Document No. 102 is accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage.

In addition, data specific to the Discovery Meeting, such as, meeting date, location, meeting invitations, sign-in sheet, and meeting minutes, will be included in the Discovery task.

12.0 Finalizing Discovery

If a Flood Risk Project is not necessary for the watershed, the Discovery process is complete once the final, post-Discovery Meeting versions of the Final Discovery-related data, optional Discovery Map, and Final Discovery Report have been received by the Project Stakeholders.

FEMA may determine that a Flood Risk Project including a flood hazard mapping element is appropriate for the watershed during a future planning and budgeting phase. To prepare and

inform that decision, FEMA will review pertinent data and information in coordination with communities (and, when appropriate, tribal entities) to discuss expectations of the results.

Project Stakeholders will be interested in knowing where Special Flood Hazard Areas (SFHAs) and BFEs will change and how (increase or decrease), what areas of the community will be impacted, and other information. To provide this information to communities, the Project Team will conduct an Automated Engineering Analysis. FEMA has not issued any mandatory standards for how the analysis is to be conducted. FEMA has issued Guidance Document No. 27, Guidance for Flood Risk Analysis and Mapping: Automated Engineering, which documents guidance and best practices for non-coastal areas. Guidance Document No. 27 also is accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage.

The Project Team's decision will depend on the availability and format of the engineering data, topographic information, and other inputs. For example, if the information collected during the Discovery process and discussed at the Discovery Meeting(s) reveals that significant development has occurred since the original flood study that has increased discharges, then the Project Team will discuss the results of the automated engineering with the communities during the Discovery Meeting, or shortly thereafter.

Project Team members may also be tasked with developing BFE data and mapping for a riverine flooding source or using BLE data developed by a Risk MAP provider that is not represented on the Project Team. The intent of BLE is to develop technically credible flood hazard information and models that reasonably establish floodplain boundaries (and in some cases, water surface grids) at a low cost, which have supporting information that can be used for determining a BFE. BLE is the preferred method of initial investigation and base level determination of flood hazard identification in watersheds and other study areas. As specified in Guidance Document No. 99, it is intended to be built upon to create enhanced (Zone AE) studies, as warranted. The benefits of having BFE data available during the Discovery process are discussed in Section 6.0 of this document.

The post-Discovery Meeting coordination occurs before initiating a Flood Risk Project and will help determine whether the impacts are significant enough that new regulatory products are necessary. The discussions must include an explanation of the expected impacts of potential study results (i.e., increase/decrease in SFHA delineations, increase/decrease in BFEs). The Project Team will also document those expectations in the Project Charter, if one is used. The Project Team will develop the project scope and Project Charter (if used) concurrently through coordination with communities (and tribes, if appropriate).

In coastal areas where an updated surge model is available, the Project Team will use data from the model to foster these discussions with communities. The surge study occurs in advance of the Discovery effort and this information is reviewed and discussed at the Discovery Meeting.

If the model or models that will be used to update the flood hazard information shown on the FIRM are known at this stage, then each community affected by the update must be notified of the planned model(s) to be used and provided with: (1) an explanation of the appropriateness of using the model(s) and (2) a 30-day period, beginning upon notification, to consult with FEMA regarding the appropriateness of the mapping model(s) to be used. Additional information is provided in FEMA Guidance Document No. 102, Guidance for Stakeholder Engagement: Project Planning and Discovery Process. Guidance Document No. 102 is accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage. Templates to support the implementation of this requirement are available in the Flood Mapping Letter Repository on the password-protected Risk Management Directorate SharePoint Portal or by contacting the FEMA Project Officer.

12.1 Scope Refinement

After the discussions on study expectations, the Project Team will develop a scope of work in coordination with communities, tribal entities (if appropriate), and state partners. Working together with Project Stakeholders, the Project Team will refine the scope of the Flood Risk Project, including a decision about the regulatory products and Flood Risk Products to be provided, the mitigation planning technical assistance that may be offered, and the communication and outreach assistance to be provided.

The guidelines and considerations to take into account when determining the flooding sources to study within a watershed, and the type of study within that same area, are defined below.

Location of Study

1. Stream segments with engineering data validated through the NVUE process in CNMS are not required to be restudied, unless they either do not tie-in or they have inconsistent hydrology. Reaching compliance with the NVUE metrics for all mapped flood studies is to be a driving factor in this consideration, as well.
2. Stream segments with unverified engineering data and high risk levels should be considered for restudy. Segments with unverified engineering data and low risk levels may be addressed in later studies, and they should be listed in CNMS for future study.
3. Existing levee analysis and mapping procedural guidance should be used to determine which segments containing levees should be studied.
4. While the level of need for a stream segment will be defined by CNMS data, Regional Offices have discretion in prioritizing those needs within a specific project area based on things learned during the Discovery process.
5. Areas with low risk, no needs defined, and minimal potential for future development should not be studied, unless necessary to address gaps in flooding or to correct inconsistent hydrology.

6. Areas with low risk, less than four secondary needs defined in CNMS, and minimal potential for future development do not need to be studied, unless necessary to address gaps in flooding or to correct inconsistent hydrology.
7. Where hydrology between adjacent stream segments does not agree within the 95-percent confidence limits of the applicable USGS regression equations, one or both stream segments will be revised to correct the mismatch.
8. Where water-surface elevations (WSELs) between contiguous stream segments do not agree within 0.5 foot, one or both stream segments should be revised to correct the mismatch.
9. Where floodplain or regulatory floodway widths between adjacent stream segments do not agree within 5 percent of the total width, one or both stream segments should be revised to correct the mismatch. Special considerations related to this rule may be required where the stream is a boundary between two jurisdictions with different floodway surcharges.
10. It may be necessary to review adjacent watersheds for tributary inflows, bordering floodplains from other sources, and other considerations that would affect flow in the subject watershed.
11. Any new study that is performed to provide continuity between existing mapped study areas or to address discrepancies shall be accomplished using the most basic study method that is appropriate based on the risk and need of those connecting areas.

Type of Study

1. The level of detail for the existing effective study should act as the baseline for a future study. For example, if an area has published BFEs, it should continue to do so. Likewise, once a floodway has been defined, it should not be eliminated. The floodway analysis should be evaluated if making any changes to the floodway. The application of new automated engineering results can replace an older AE with floodway, assuming the modeling and analysis supports the appropriate level of technical information to create a detailed-level study with a floodway that meets FEMA's hydrologic requirements. Such an upgraded BLE study using an appropriate hydraulic analysis option is appropriate. Special situations should be discussed in consultation with the FEMA Project Officer.
2. Along a stream segment, varying hydraulic methods (within the FEMA Acceptable Models list) may be used; however, the continuity of WSELs should be maintained within the required tie-in of 0.5 foot for all recurrence intervals in the models.
3. As noted above, any new study that is performed to provide continuity between study areas, or to address hydrologic discrepancies, should be accomplished using the most basic study method that is appropriate based on the risk and need of those connecting areas.

Regulatory Products and Flood Risk Products

The FEMA Project Officer will make decisions regarding the types of products (regulatory products and/or Flood Risk Products) to scope as part of the Flood Risk Project in discussions with the other Project Team members, taking into consideration requirements mandated by the

Flood Risk Analysis and Mapping standards, and while navigating the Key Decision Point process.

In addition, the FEMA Project Officer and Project Team will discuss datum conversion (if needed) at this point in the Discovery process. FEMA's goal is to have the entire inventory of flood hazard products referenced to the North American Vertical Datum of 1988 (NAVD88).

The Project Team will discuss the datum conversion process with communities including information about the benefits of converting to NAVD88. Communication will also note that full documentation of the datum conversion will be shared with communities during the process.

Additional details on the information to be shared with stakeholders regarding datum conversion are provided in Section 9 of Guidance Document No. 102, Guidance for Stakeholder Engagement: Project Planning and Discovery Process. Guidance Document No. 102 is accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage

12.2 Project Determination

When considering final project parameters, it is important to note that FEMA standards require that no flooding source receives a lower level of regulatory product than what currently exists on effective maps. The Project Team will consider the demands of this standard in discussions of the final project scope. This includes the application of new automated engineering results, such as an upgraded BLE study using one of the appropriate hydraulic analysis options. Refer to Guidance Document No. 99 for information on the application of BLE hydraulic analysis options.

More detailed information about working with communities and other stakeholders to define the project scope is provided in Section 9 of Guidance Document No. 102, Guidance for Stakeholder Engagement: Project Planning and Discovery Process.

At the close of Discovery, the Project Team will ensure that the following take place:

- Update or populate CNMS.
- Add community-requested project or flooding areas to CNMS.
- Populate or update National Digital Orthophoto Program information.
- Update and upload final versions of the appropriate data (e.g., Final Discovery Map, Final Discovery Report) to the MIP. (More detailed information is provided in FEMA Guidance Document Nos. 46, 51, and 54 and the "MIP User Care" section of the MIP website.)
- Consider evaluating areas of population growth in the 1-percent-annual-chance and 0.2-percent-annual-chance floodplains.
- Consider evaluating areas protected by nonstructural flood mitigation features based on the information collected during the data collection effort as discussed in Section 7 of this document.

13.0 Final Outputs

The final outputs of Discovery are finalized Discovery-related data; an optional Discovery Map; the Final Discovery Report; and, if requested by the FEMA Project Officer, a Project Charter and Project Management Plan.

If a Flood Risk Project is appropriate for the watershed, a project scope will document the products and data that the community will receive and will specify the mitigation technical assistance to be provided. Recommendations for a project scope may be documented in a Project Charter to be developed in coordination with Project Stakeholders.

A Project Charter, if used, can also be used to identify and clarify roles and responsibilities for the Project Team and Project Stakeholders; to list the data to be provided with associated deadlines and expectations of the study results; and to provide a projected timeline and an explanation of what would be expected from FEMA or CTPs and communities or tribes at each major milestone.

A Project Charter provides documentation of FEMA commitment to the watershed and the commitments of the Project Stakeholders at each major milestone of a Flood Risk Project. If communities or tribes express interest in natural hazard data in addition to flood data, appropriate sources of such data will be identified. In addition, if funding is needed to generate such data, leverage opportunities should also be identified. A Project Charter represents a Best Practice and may be supplemented by the required Stakeholder Engagement Plan that is designed to keep Project Stakeholders informed of key decisions, draft findings, and finished outputs.

If a Flood Risk Project will include flood hazard mapping, the charter can document the desired study areas, and the impact these changes will have on the communities or tribes. This outline of expected conditions can support the need for a community outreach plan early in the process to ensure that the final product delivered meets the community expectations.

When a Project Charter is to be created, the Project Team should create the Project Charter in partnership with communities (and tribes, if appropriate) in the watershed. The Project Charter should be sent for their review, collectively revised, finalized, and signed. The Project Charter may have to include a draft or recommended scope of work.

The Project Charter is not a binding agreement, but rather a tool to convey a clear understanding of the scope and its impact in a community. The charter is also a way for the Protect Team to assist communities in developing a sense of “ownership” in the project. Therefore, while not required, the Project Team will encourage communities to sign and return a final Project Charter. If used, Project Charters will be signed by as many impacted communities as possible.

Regardless of whether a Project Charter is developed, the Project Team shares the final scope with watershed communities, tribes (if appropriate), and other Project Stakeholders, at the time that the Flood Risk Project is funded.

Once recommendations for a scope of work have been defined and discussed with the affected communities, FEMA Project Officer and Contracting Officer may create a CTP Mapping Activity Statement or Task Order for a Risk MAP provider to formally initiate the analysis and mapping work portion of the Flood Risk Project. They may also develop, or request the development of, a preliminary Project Management Plan. The plan establishes certain coordination protocols and management objectives for the entire project. The plan, once finalized, contains some or all of the following:

- Project description
- List of Project Management Team members
- Description of the Project Team that lists the primary Risk MAP providers and their roles, discusses whether CTPs are an option, and notes that the Project Management Team is a subset of the Project Team
- Communication protocols between Project Team members (e.g., email, telephone, social media)
- Major milestones and intermediate reporting requirements
- An external communication outreach strategy or community engagement plan

14.0 Additional Consultation and Documentation Guidance

14.1 Consultation Coordination Officer

In accordance with Section 66.4 of the NFIP regulations (44 CFR 66.4), FEMA is to designate a federal employee as the Consultation Coordination Officer (CCO) for each community when an analysis is undertaken to establish or modify flood elevations and other flood hazard information. When FEMA appoints a CCO, that person becomes responsible for consultation and coordination activities. If the CCO is not the FEMA Project Officer for the project, the FEMA Project Officer is responsible for communicating with the CCO, and the other Project Team members are to support the CCO when appropriate.

14.2 Community Case Files

To be compliant with Section 66.3 of the NFIP regulations (44 CFR 66.3), the Project Team will maintain community case files for the communities affected by the project. The required community case files for all affected communities will be set up during the Discovery Phase following protocols established by the Regional Office. The Project Team will place in the community case files records of engagement activities (e.g., letters, email messages, memorandums, meeting notes) that take place during the Discovery Phase. The Project Team will add the meeting notes and other Discovery Meeting information distributed to Discovery process participants, along with a community contact list that includes contact information for the county and every incorporated community in the watershed/project area, in the community files.