

# Guidance for Flood Risk Analysis and Mapping

## Data Capture - General

May 2017



**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](http://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](http://www.fema.gov/library).

## Table of Revisions

The following summary of changes details revisions to this document subsequent to its most recent version in November 2016.

Affected Section or Subsection	Date	Description
Section 1.0	May 2017	Revised to reflect Mapping Information Platform (MIP) Studies Redesign and new data upload processes and terminology.
Section 2.0	May 2017	Revised to reflect Mapping Information Platform (MIP) Studies Redesign and new data upload processes and terminology; most upload guidance is now provided in the <u>MIP Guidance</u> .
Section 3.0	May 2017	Revised to reflect Mapping Information Platform (MIP) Studies Redesign and new data upload processes and terminology; most project set up guidance is now provided in the <u>MIP Guidance</u> .
Section 4.0	May 2017	Added Validation and Independent QA/QC sections to address MIP Studies Redesign and new data upload processes; renamed “General” folder to “Task Documentation;” added Certification of Compliance information.
Section 5.0	May 2017	Revised to reflect MIP Studies Redesign and new data upload processes for revised preliminary, appeals, and superseded data.

## Table of Contents

1.0	Data Capture Overview.....	1
2.0	MIP Upload Guidance.....	2
3.0	Special Project Set Up and Data Submittal.....	2
4.0	MIP Folder Structure Guidance.....	2
4.1.	Task Documentation Folder.....	3
4.1.1.	Project Narrative.....	3
4.1.2.	Certification.....	4
4.1.3.	Draft FIS Report Sections.....	5
4.2.	Correspondence Folder.....	5
4.3.	Spatial_Files.....	6
4.4.	Validation Folder.....	7
4.5.	Independent QA/QC Folder.....	7
5.0	Revised Data Submittal Guidance.....	7
5.1.	Revised Preliminary Data Submittal Guidance.....	7
5.2.	Appeals Data Submittal Guidance.....	7
5.3.	Replacement and Supersession of Data in the MIP.....	8

## 1.0 Data Capture Overview

This document provides guidance for submitting the data specified in the [Data Capture Technical Reference](#). Note that the guidance principles provided in this document are designed to help the users upload data during execution of the Mapping Information Platform (MIP) Data Capture tasks such that by the end of the Flood Risk Project, all study materials are searchable and discoverable via the MIP and/or the Flood Risk Study Engineering Library (FRiSEL) and that data duplication is minimized. This is an important responsibility for all Mapping Partners and Mapping Partners must certify they have successfully delivered all project documentation.

More specific information about submittals pertaining to individual MIP Data Capture tasks can be found in the [Data Capture Guidance – Workflow Details](#) document.

For the purposes of this document, the Technical Support Data Notebook (TSDN) is defined as the complete set of the most up-to-date engineering and mapping data associated with a Flood Risk Project accompanied by the applicable Flood Risk Project administration and/or process documentation (e.g. Project Narratives, project correspondence, Flood Elevation Determination Docket [FEDD] file, TSDN checklist, certification, etc.). These data form the scientific and technical basis for the flood map and are needed in the future to address challenges or changes to the maps. These data are developed throughout the duration of the project and are submitted to the MIP under the appropriate MIP Data Capture task using the folder structure and guidance contained in the [Data Capture Technical Reference](#) and this guidance document. This definition replaces the previous working definition of the TSDN as a hardcopy notebook that was submitted at the end of each mapping project. Certain TSDN data may be uploaded at the end of a Flood Risk Project using the Tools and Links/Data Upload/Load Studies Data Artifacts portlet (see the [MIP Guidance](#) document). This includes the Floodplain Boundary Standard (FBS) Report supporting documentation, any additional study correspondence or, any remaining study artifacts not associated with a MIP Data Capture task, and may include other documents describing the Flood Risk Project that include pointers to the actual data folders on the MIP. The bulk of the TSDN (i.e., the engineering and mapping data and narratives describing them) should be captured throughout the duration of the Flood Risk Project and uploaded to the MIP as the study progresses through its Data Capture tasks.

Related guidance on data capture and deliverables is provided in the following documents:

- [Data Capture Guidance – Workflow Details](#)
- [MIP Guidance](#)
- [Coastal Data Capture Guidance](#)
- [Preliminary Distribution and Revised Preliminary Guidance](#)
- [Post-Preliminary Deliverables Guidance](#)
- [Appeal and Comment Processing Guidance](#)
- [Technical Support Data Notebook and Flood Elevation Determination Docket Guidance](#)

## 2.0 MIP Upload Guidance

There are several methods available for uploading data to the MIP: using the MIP Data Capture Task Upload function, using the MIP Tools and Links/Data Upload/Load Studies Data Artifacts portlet, and on media (e.g., Compact Disc – Read Only Memory [CD-ROM], Digital Video Disc [DVD], portable hard drive) to MIP Help or the Engineering Library. The best method to use will depend on the MIP Data Capture task to which the data applies, the type of data being submitted, and the size of the dataset(s). These options are described in the [MIP Guidance](#) document. See also MIP User Care for detailed instructions on the use of the MIP.

## 3.0 Special Project Set Up and Data Submittal

There are several types of data that may require special attention during MIP set up to ensure that all the data are captured in the appropriate places during a project. For base map and elevation data these are key data sets that may be collected or generated in relation to another task, but not separately funded or itemized in project documents. It is important to consider both the data capture needs and the project budget, schedule, and status tracking when deciding which purchases and tasks need to be created. See the [MIP Guidance](#) document for additional information about setting up Discovery, Levee, General, Outreach, Due Process, and Final Mapping purchases in the MIP.

## 4.0 MIP Folder Structure Guidance

This section provides guidance related to the content of the MIP folders specified in the [Data Capture Technical Reference](#). See the [MIP Guidance](#) document for additional information regarding MIP functionality, how the MIP is used to manage Flood Risk Projects, the MIP data validation processes, and how to retrieve data from the MIP.

The folders associated with MIP Data Capture tasks are automatically generated in the MIP as the task upload button is used. As noted in Section 2.1, folders below the MIP Data Capture task level folders will need to be created by Mapping Partners as specified in the [Data Capture Technical Reference](#) and as applicable to the data being submitted. These folders should be created and populated with the data applicable to the task, zipped, and uploaded to the MIP. The uploaded data will subsequently be unzipped in the submitted folder structure on the MIP.

Typically, the spatial extents of a MIP Data Capture task will be defined by the purchase geography. If subfolders that represent subdivisions of the purchase geography would facilitate the Mapping Partner's workflow and/or future use of the data (i.e. HUC8 basins within a larger HUC4 watershed-based project), the Mapping Partner should include logically named subfolders.

Although many of the spatial files submitted under MIP Data Capture tasks and in the final Flood Insurance Rate Map (FIRM) Database share the same data structure, the spatial extent of the data required to be submitted under each MIP Data Capture task may be different. For the final FIRM Database, the Mapping Partner is generally responsible for submitting data that

cover the entire county (or community). For preceding MIP Data Capture task submittals, the spatial extent of the data required is determined by the geography of the specific purchase.

#### **4.1. Task Documentation Folder**

Most of the MIP Data Capture task folders specified in the Data Capture Technical Reference include a Task Documentation folder that includes a Project Narrative, Certification of Completeness form (if applicable), Certification of Compliance form (if applicable), and the Metadata file that is applicable to the MIP Data Capture task. The Task Documentation folder may also include additional information such as task specific reports (e.g., the Hydrology Report, Quality Assurance [QA]/Quality Control [QC] reports, etc.) and draft Flood Insurance Study (FIS) Report sections. Note that each Mapping Partner should complete and submit only one Certification of Completeness and one Certification of Compliance form when their work on a project is complete (see section 4.1.2).

##### **4.1.1. Project Narrative**

The project narrative describes the scope of work, direction from FEMA, issues, information for the next Mapping Partner, etc. The narrative should provide the reader with a general idea of what the project included and what problems arose before it was completed. A project narrative is needed for every applicable MIP Data Capture task, including Discovery Data Capture, Base Map Data Capture, New Topographic Data Capture, Existing Topographic Data Capture, Terrain Data Capture, Survey Data Capture, Hydrology Data Capture, Hydraulics Data Capture, Alluvial Fan Data Capture, Coastal Data Capture, Levee Data Capture, LAMP Data Capture, Floodplain Mapping Data Capture, Outreach Data Capture, Due Process, TSDN Data Capture, Flood Risk Products Data Capture, and General Data Capture tasks.

An example outline of a project narrative is provided below for guidance. It lists typical elements that should be included in a project narrative in an annotated outline format. Each item in the outline has a description of the item directly below it.

The project narrative for each MIP Data Capture task, in general, will be similar in nature. Therefore, the general outline below can be used for any of the MIP Data Capture tasks. The outline below is not inclusive of every item all studies should incorporate. Each study will have different aspects, so it is likely the Mapping Partner will have to incorporate and/or delete items from this outline.

- Introduction/Project Overview

Briefly describe the following:

- Objectives of the project;
- Location of the project (State, county/community, watershed);
- Land area and population;
- Miles of study (if applicable to the task);
- Effective study information (date, panel numbers, study method, etc.); and
- Source data used.

Note that the Introduction/Project Overview and the Scope of Work do not need to be repeated in each Data Capture project narrative. They should be included in the project narrative that represents the first task completed under a project and should also be included in the final task submitted by the Mapping Partner.

- **Scope of Work**

The scope of work should have been defined before any work on the project began. Generally, it is included in the Mapping Activity Statement. The scope included in the narrative should outline all project tasks that the Mapping Partner agreed to complete without including any contractual or cost information.

- **Issues**

Describe any technical and non-technical issues encountered and their resolution. Any relevant information about flood control structures such as dams and/or levees would be helpful.

- Describe all technical and non-technical issues encountered.
- Explain how issues were resolved. Provide clear description of any FEMA direction to address issues.
- Were any special problem reports generated?
- Were there any project modifications?

- **Information for the Next Mapping Partner**

Include any important information regarding the project that would benefit the next Mapping Partner who may be tasked to update the entire project or portions of the project area in the future:

- Study methodology(-ies) used, if methodology is non-standard;
- Summary of FBS compliance results (summary of audit results and provide any areas that failed FBS requirements);
- Issues not resolved that are likely to affect the next update;
- Issues that are likely to occur again and any applicable background data;
- Suggestions for consideration in the next update.

#### **4.1.2. Certification**

As per Standards #82 and #174, certification of completeness and contract or grant compliance of all submitted data for FEMA-funded studies is required. Additionally, as per Standards #42, #49, and #74, certification of compliance by a licensed professional is required for many regulatory product data submittals as follows:

- Survey data - Registered Land Surveyor or other licensed professional
- Aerial mapping - Certified Photogrammetrist or other licensed professional

- Hydrology, hydraulics, alluvial fan, coastal, and final regulatory products - Professional Engineer or other licensed professional

Each Mapping Partner should complete and submit only one Certification of Completeness form when their work on a project is complete. For example, if New Topographic Data Capture is awarded to Mapping Partner 1 as the only task, that Mapping Partner would upload a completed Certification of Completeness form at the New Topographic Data Capture task once all the requirements in that contract are fulfilled. On the other hand, if Mapping Partner 2 is assigned (contracted) to produce the preliminary FIRM, including hydrologic and hydraulic analyses, then Mapping Partner 2 would submit one Certification of Completeness form along with the submittal of the preliminary FIRM.

Through certification of completeness, the Mapping Partner is attesting that the work performed was completed in accordance with the contract and all amendments thereto and direction from the FEMA Project Officer and/or their representative and that the work is compliant with all relevant standards or has a formal exception that was granted by the FEMA Project Officer.

In addition, each Mapping Partner is certifying that the files uploaded to the MIP represent the complete and final documentation of the work performed on the Flood Risk Project. If any of the data in these files are modified during the mapping process, it is the responsibility of the Mapping Partner that made the modifications to the files to upload the revised files to the MIP using the upload process(es) described in the previous sections for the specific deliverable.

Each Mapping Partner should also complete and submit one Certification of Compliance form from each professional who is certifying applicable work on a project when the work is complete. Through certification of compliance, the appropriate professional is attesting that the work performed was completed in accordance with sound and accepted engineering, survey, or photogrammetry practices.

The Certification of Completeness form and the Certification of Compliance forms may be found in the Templates section of the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage ([www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping](http://www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping))

#### **4.1.3. Draft FIS Report Sections**

Many of the MIP Data Capture tasks include submittal of draft FIS Report sections. When these are required, they should include the non-boilerplate content including descriptions of methodology, applicable tables, any applicable graphics, and profiles. All FIS components should be submitted as editable documents (e.g., Microsoft® Word, Excel [XLS or XSLX], etc.) or editable drawings (e.g., FEMA RASLOT, AutoCAD® Drawing Exchange Format [DXF] or Drawing [DWG]) in addition to Portable Document Format (PDF). Per Standard #185, all submitted PDF documents must have extractable text.

#### **4.2. Correspondence Folder**

A file that compiles task correspondence is included in the MIP folder structure for most MIP Data Capture tasks. Correspondence is the written correspondence generated or received by

the Mapping Partner assigned to fulfill the requirements of the task. It should include any documentation generated during the task, such as letters, transmittals, memoranda, general status reports and queries, Special Problem Reports (SPRs), technical issues that need to be documented, and direction given by the FEMA Project Officer. Sensitive contractual documents with cost or other such information should not be submitted as a part of task Correspondence.

Note that certain correspondence received from communities or other stakeholders related to Discovery, Levee, Outreach, and Due Process purchases should be uploaded into specific folders as outlined in the [Data Capture Technical Reference](#).

Note also that Project Correspondence can be uploaded using the MIP Tools and Links Data Upload portlet. However, correspondence that is related to specific Data Capture tasks should be uploaded with the tasks, not to the overall project using MIP Tools and Links. See the [MIP Guidance](#) and [Data Capture Guidance – Workflow Details](#) documents for additional details about using the portlet or the Project Correspondence folder.

### **4.3. Spatial\_Files**

A folder for spatial files is included in the MIP folder structure for most MIP Data Capture tasks. Notable exceptions include Levee, Outreach, and Due Process. This folder is where the FIRM Database files that are applicable to the MIP Data Capture task should be placed. Table 2 in the [FIRM Database Technical Reference](#) provides a crosswalk of the FIRM Database tables that are applicable to each MIP Data Capture task. The [FIRM Database Technical Reference](#) also provides a complete data dictionary for the FIRM Database tables.

Note that an S\_Submittal\_Info layer that stores information about the spatial extents of each MIP Data Capture task associated with the Flood Risk Project is required. This layer includes information about the Flood Risk Project's project number, Mapping Partner, study type, its completion date, the model(s) used—hydrologic, hydraulic, and coastal, information about the underlying terrain data used for the mapping, and the effective date of the study.

Each MIP Data Capture submittal requires a corresponding S\_Submittal\_Info layer with one or more polygons that reflect the scope of the data for that specific submittal. In the final FIRM Database, the separate S\_Submittal\_Info layers for each MIP Data Capture submittal are combined into a composite layer made up of all the individual S\_Submittal\_Info polygons from each MIP Data Capture submittal. In the final FIRM Database, there will be multiple S\_Submittal\_Info polygons for the same Flood Risk Project area that represent multiple MIP Data Capture task areas.

Separate S\_Submittal\_Info polygons will be submitted for each new or existing topographic data source and for each processed terrain data source used for modeling. The result will be that for each unique elevation data source used on the project, there will be two S\_Submittal\_Info polygons – one for the footprint of the source topographic data and one for the footprint of the processed terrain data used in the final modeling. The S\_Submittal\_Info TASK\_TYP field is

used to differentiate between the New Topographic Data Capture, Existing Topographic Data Capture, and Terrain Data Capture tasks.

#### **4.4. Validation Folder**

A Validation task is available for all MIP purchases. The Validation folder should include any review documents or checklists that are used during the validation of the Data Capture submittals for that purchase or task.

#### **4.5. Independent QA/QC Folder**

An Independent QA/QC task is available for most MIP purchases. If an Independent QA/QC task is purchased, the Independent QA/QC folder should include any review documents or checklists that are used during the independent QA/QC of the Data Capture submittals for that purchase or task.

### **5.0 Revised Data Submittal Guidance**

This section addresses revised data submittals that may be required due to several factors including revised preliminaries that are issued following preliminary issuance or as a result of an appeal, or in the case of a need to upload additional or corrected data after a MIP Data Capture task has been completed and closed.

#### **5.1. Revised Preliminary Data Submittal Guidance**

Typically, a revised preliminary will result in revisions to Flood Risk Study deliverables such as the hydrologic or hydraulic modeling, FIS Report, one or more FIRM panels, and the FIRM Database. Introduction of new base map imagery or elevation data may also result in changes to the Base Map or Elevation data deliverables. There may also be revisions to the non-regulatory Flood Risk Products. Ultimately the revised preliminary data will be incorporated into the final effective deliverables including the FIS Report, FIRM panels, and the FIRM Database.

If the issuance of a Revised Preliminary is needed a Preliminary purchase will be created and identified with the purchase type indicator of 'Revised Preliminary' within an existing project. Additional purchases to support the Revised Preliminary (e.g., Hydrology, Hydraulics, Terrain, etc.) will also be created as applicable. Additional information about revised preliminary issuance can be found in the [Preliminary Distribution and Revised Preliminary Guidance](#) document.

#### **5.2. Appeals Data Submittal Guidance**

The data submitted by the appellant should be uploaded under the project's Due Process purchase under the Record Appeal/Comment task. This would also include submitted appeals data that do not result in revised data. Any correspondence related to the appeal should also be uploaded under the original project's Due Process purchase under the Record Appeal/Comment task.

If the appeals data are accepted and a Revised Preliminary is needed, a Preliminary purchase will be created and identified with the purchase type indicator of 'Revised Preliminary' within an existing project. Any other applicable purchases (e.g., Terrain, Hydraulics, Coastal, etc.) for which data are revised will also need a new 'Revised Preliminary' purchase type. All revised final data should be uploaded to the Data Capture tasks flagged as 'Revised Preliminary.' A readme file is placed in the original Data Capture tasks impacted by the Revised Preliminary. See the [Preliminary Distribution and Revised Preliminary Guidance](#) document for additional information.

### **5.3. Replacement and Supersession of Data in the MIP**

From time to time it may become necessary to replace and supersede data previously submitted to the MIP. Proper care needs to be taken to ensure that the best available data are made available to the public, while invalid or outdated information is either removed or properly annotated so that it is not misconstrued or misused.

As long as a MIP Data Capture task is open, new data can be easily uploaded to the MIP and superseded data can be removed using the available MIP Data Capture Task Upload or File Explorer options. If the required MIP Data Capture task is closed, A Project level access user will need to be contacted to reopen the task so that data can be replaced. The replaced data will also need to be revalidated before the task can be completed again.

If it is not practical to reopen the purchase and/or task, MIP Help can be contacted to add and register the new data, as well as make any necessary changes to the old data. The MIP Help ticket must contain the following information:

- Location - The location (whether it is being shipped physically or is being temporarily stored on the J: Drive) and contents of the new data. The Mapping Partner may create a subfolder under the "MIP Help Temp" folder on the J: Drive, using the MIP case number as the subfolder name, and use this subfolder as the location to which the data are uploaded.
- Data Type - The data type with which the submission should be tagged (e.g., Hydraulics, Base Map, Coastal, etc.) and entries for any MIP fields that normally accompany the upload of that data type. This ensures that all the MIP metadata normally associated with a type of upload is also available for the new replacement data. Depictions of all the various MIP screens can be found in MIP User Care.

Note that replacement submissions for which the MIP normally requires Federal Geographic Data Committee (FGDC)-compliant metadata *must* be accompanied by an updated metadata Extensible Markup Language (XML) file that conforms to the [Metadata Profiles Technical Reference](#).

Please note: the data type determines what public access rules will apply to that data in the Flood Risk Study Engineering Library. For a listing of public access rules by data type, please see the [MIP Guidance](#) document. Additional restrictions may be placed on data using the 'ACCONST' field in FGDC-compliant metadata files or the three Access

Restriction questions on the MIP data upload screen. Mapping Partners should include appropriate access control attributes in the metadata information provided for the new data.

- Filepath - The intended filepath on the K: Drive where the data should be placed.
- Disposition of Original Files - What should be done with the original files already on the K: Drive. The options are described below.
  - Substituted: If the number of files being replaced is limited *and the filenames are identical*, it is possible to replace the original files with the new ones without altering the existing registration in the Flood Risk Study Engineering Library. A registration can be thought of as a “data package” of one or more files; registrations are what make up the search results in the Flood Risk Study Engineering Library. Generally, each distinct upload into the MIP constitutes a separate registration (files uploaded together within a zip file are thus packaged together in a single registration).
  - Deleted: If there is a significant number of files being replaced, or the original files have different filenames than the new files, then the originals will need to be deleted, and their associated registrations will need to be modified. Identify what files should be deleted.
  - Superseded: If the original files should be retained for archival, documentary, or other purposes, please indicate what should be done with the superseded files. One option is to re-register the old files as “Supporting Artifacts” – in the case of Data Development engineering data (e.g., Mapping Hydraulics, Base Map, Coastal Analysis, etc.). This will remove the data from being publicly downloadable. A second option is to re-register the old files separately, under their original data type. In either instance, a readme file should be submitted for inclusion with the files, explaining that the data have been superseded and pointing users to the updated/corrected data.
- Included Parties - The Regional MIP Champion, Black Belt, and/or Regional Program Management Lead (RPML) *must* be copied on the ticket.

MIP Help will not process requests to add new data to the K: Drive and register it with the Flood Risk Study Engineering Library, or to delete and unregister previously submitted data, without authorization from a Regional Champion, Black Belt, or RPML. This requirement is in place to ensure that updated submissions have been accounted for and approved by the project’s leadership, as well as to maintain traceability and version control.

Once the authorizing party has replied to the ticket (and once the data have been received, if it is being delivered to Customer and Data Services physically), MIP Help will process the request. The original submitter is responsible for validating that the request has been completed as requested and that the data appear properly in the Flood Risk Study Engineering Library.