Review of New Standards for Flood Hazard Mapping

The Federal Emergency Management Agency (FEMA) maintains a set of documents called the *Guidelines and Specifications for Flood Hazard Mapping Partners* to support flood risk mapping for the National Flood Insurance Program (NFIP). These documents define technical requirements, product specifications for Flood Hazard Maps and related NFIP products, and requirements associated coordination and documentation activities. As part of a broad review of FEMA policy, FEMA has reviewed all of these requirements and developed a set of about 450 standards for the program as a replacement for all of the standards in the current documents.

FEMA intends to publish these standards as a FEMA policy. The draft standards are being made available for public review to provide an opportunity to comment prior to the finalization of the policy.

What Are the New Standards?

These standards, with a few exceptions, are consistent with the previous requirements for FEMA flood risk mapping. However, they represent a significant change in the way the requirements are organized. The existing *Guidelines and Specifications* documents present mandatory and recommended elements integrated together in a narrative format. The new approach presents the standards as a separate document to avoid any ambiguity with respect to what is truly mandatory and what is recommended. The standards are classified into two groups aligned to the level of approval required for an exception. The standards most critical to program success are designated as Program Standards. These will require HQ approval for exceptions. The remaining standards are classified as working standards and exception will be approved at the Regional Branch Chief level.

These new standards represent a major step in the transition from the narrative approach of the old Guidelines and Specification documents to the new approach with more formal divisions between standards and the associated guidance. Standards are mandatory requirements. They must be followed unless a specific exception is granted. Guidance provides more details on appropriate methodologies or techniques for FEMA's Risk MAP program. Guidance supports FEMA standards and facilitates effective and efficient implementation of these standards. Although the processes described in guidance are recommended, they are not mandatory. Alternate approaches that comply with standards that effectively and efficiently support program objectives are also acceptable.

Again, the vast majority of these standards are simply restating long-standing requirements of the mapping program, specifically identifying those that are mandatory. But, throughout the process of compiling these standards, a few changes were identified. Some of these were already being implemented through the routine program processes to update requirements and a few were identified opportunistically during review as needed an update.

What Was Changed?

The following is a summary of the changed standards:

- The standards for vertical datum procedures (previously Appendix B) were updated
- The project certification requirements were realigned to separate certifications by licensed professionals of the technical adequacy of covered work products from certifications of project completeness and compliance with program requirements
- Updated requirements for new elevation data production funded by FEMA to comply with the USGS National Geospatial Program Base Lidar Specification Version 1.0. Changed the point density requirements for the highest specification level for existing elevation data
- Removed the mandatory requirement for Risk MAP project charters
- Modified the basic project requirements for Risk MAP to make the Areas of Mitigation Interest Dataset a mandatory project element
- Modified rules related to map updates initiated by changes to the Coastal Barrier Resource System to allow for some updates to take place via the "Notice to Users" process
- Created a standard to limit the maximum size of map changes process under the Letter of Map Revision process to one effective flood map panel
- Created a standard to publish a notice of the eligibility of new communities under the NFIP in the Federal Register
- Formalized business rules around processing of "physical map revision" were only a fraction of the panels making up and entire flood map are updated.
- While the details of the database schemas for the Flood Insurance Rate Map database and the Flood Risk Database are not part of the standards, there are some slight technical modifications of these schemas to align them better and address issues identified with the current designs

How to Submit Comments to FEMA

You can access the draft standards on the second tab of this workbook file. You may provide comments via email at:

FEMA.GS@riskmapcds.com

Comments received prior to March 8, 2013, will be reviewed and addressed as appropriate before the policy is finalized. In addition, FEMA will be implementing a semi-annual maintenance cycle for these standards to provide the ability to regularly update the standards as needed.

SID #	Keyword Tags	Primary Keyword	Standard
67	;#Hydraulics;#2-D Riverine;#3-D Riverine;#	2D Models	Grids or cells must not be artificially removed when two- or three-dimensional models are used.
128	;#Hydraulics;#2-D Riverine;#3-D Riverine;#Regulatory Products;#Flood Profiles;#Flood Theme;#Profile Baseline;#	2D Models	For floodplains mapped from 2-D models, the Mapping Partner should create separate flood profiles for significant flow paths.
131	;#Hydraulics;#2-D Riverine;#3-D Riverine;#Flood Theme;#Floodplain Mapping;#	2D Models	All non-conveyance areas considered in the model must be mapped.
55	;#Hydraulics;#Hydrology;#Riverine;#Alluvial Fan;#Field Survey & Reconnaissance;#Project Scope;#	Alluvial Fan	For all areas scoped for alluvial fan analyses, adequate field inspections with regard to geomorphology must be conducted. The level of field inspection may vary based on details of project scope.
56	;#Hydraulics;#Hydrology;#Riverine;#Alluvial Fan;#Discovery;#Project Scope;#Stakeholder;#Field Survey & Reconnaissance;#Coordination;#Outreach;#	Alluvial Fan	The Mapping Partner who undertakes alluvial fan analyses must obtain written approval of the methodology from the FEMA Regional Risk Analysis Branch Chief before the commencement of the flood risk project production. To inform this decision, the Mapping Partner shall provide sufficient field data and analysis, where to apply it and records of community engagement relative to the scope and methodology.
419	;#Flood Risk Database (FRD);#Water Surface Grids;#Flood Risk Data;#Non-Regulatory Products;#	Analysis Grids	The extent of water surface elevation change grids shall only reflect those areas that were both SFHA before and after the revision.

421	;#Flood Risk Database (FRD);#Flood Risk Data;#Non-Regulatory Products;#	AoMI	To ensure privacy, sensitive claims data will be aggregated and/or generalized at the centroid of the census block and represented as a point.
388	;#Appeals;#Expanded Appeals Process (EAP);#Scientific Resolution Panel (SRP);#Post-Preliminary;#	Appeals	The statutory 90-day appeal period cannot be extended; no appeals will be accepted after the 90-day appeal period.
390	;#Letter of Map Revision (LOMR);#	Appeals	When performing new analyses and developing revised flooding information, appellants must tie the new BFEs, base flood depths, SFHA boundaries, SFHA zone designations, and/or regulatory floodway boundaries into those shown on the maps and in FIS report for areas not affected by the appeal.
391	;#Appeals;#Expanded Appeals Process (EAP);#Scientific Resolution Panel (SRP);#Post-Preliminary;#	Appeals	FEMA shall evaluate appeal submittals, and prior to LFD, FEMA or its designee must provide the community with a resolution letter and must provide a copy of the revised FIRM if changes were made as a result of the appeal.
392	;#Scientific Resolution Panel (SRP);#	Appeals	The Scientific Resolution Panel process must be made available.
147	;#Raster;#	Base Map	The minimum resolution requirement for raster data files (orthoimagery) is 1-meter ground distance.
148	;#Base Map;#Vector;#Raster;#Ortho;#Geospatial Data Coordination (GDC);#	Base Map	The minimum horizontal positional accuracy for new FIRM base map hydrographic and transportation features is the NSSDA radial accuracy of 38 feet.

149	;#Base Map;#Vector;#Raster;#Ortho;#Geospatial Data Coordination (GDC);#Map Notes and Labeling;#Projections and Coordinate Systems;#	Base Map	The base map used for the Flood Insurance Rate Map must enable unambiguous interpretation of the flood hazard data.
304	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Base Map;#Raster;#Ortho;#FIRM Graphic Standards;#	Base Map	All raster base maps used for FIRM panel preparation must be accurately georeferenced and orthorectified.
307	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Base Map;#Raster;#Ortho;#FIRM Graphic Standards;#	Base Map	Raster base map image(s) used for FIRM panel preparation shall cover the entire jurisdiction being analyzed except in the cases of open water areas and/or areas that may be restricted due to security concerns.
308	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Base Map;#Vector;#Raster;#Ortho;#FIRM Graphic Standards;#	Base Map	The assigned Mapping Partner shall depict the following types of base map features on the FIRM panel if they occur within the community: • transportation features, including roads and railroads, hydrographic features, hydraulic structures • boundaries that identify county and State boundaries, corporate limits, extraterritorial jurisdiction (ETJ) areas, military lands, and tribal lands, and • U.S. Public Land Survey System (PLSS) features.
65	;#Hydraulics;#Shallow Flooding;#Ice Jam;#1-D Steady;#1-D Unsteady;#2-D Riverine;#3-D Riverine;#Floodway;#Closed Basin;#Alluvial Fan;#Split Flow;#Flood Theme;#Floodplain Delineation;#	BFEs	BFEs must agree with those of other contiguous flood risk projects of the same flooding source within 0.5 foot, unless it is demonstrated that it would not be appropriate. Please see 44 CFR 65.6a(2).
105	;#Base Flood Elevation (BFE);#FIRM Graphic Standards;#Map Notes and Labeling;#	BFEs	BFE placement standard exceptions may be made where BFEs are expressed in metric increments, such as in Puerto Rico.

106	;#Coastal;#Base Flood Elevation (BFE);#Ponding;#Lacustrine;#	BFEs	Whole-foot rounded BFEs must be used in ponding, coastal, or lacustrine flood hazard zones.
107	;#Preliminary FIRM;#Final FIRM;#FIRM Graphic Standards;#Floodplain Mapping;#Base Flood Elevation (BFE);#	BFEs	1% annual chance flood elevations must be shown within 1% annual chance floodplains; the exception shall be for Zone A, Zone V, Zone AO and Zone A99.
341	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Flood Theme;#Map Notes and Labeling;#Base Flood Elevation (BFE);#FIRM Database;#	BFEs	All BFE lines stored in the FIRM Database must be shown on FIRM panels.
374	;#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#Flood Theme;#Base Flood Elevation (BFE);#Cross-sections;#	BFEs	BFE lines must be placed in the FIRM Database S_BFE feature class for any area where the cross section maximum vertical rise requirement of one foot is not met. As mentioned in the description for S_XS, if there is not at least one cross section in S_XS for every 1-foot vertical rise in the 1-percent annual chance flood elevation, intervening BFE lines must be placed at their nterpolated whole-foot location along the profile baseline only when there are not enough cross sections.
6	;#Coordinated Needs Management System (CNMS);#	CNMS	Results from both flood hazard validation and needs assessment processes must be stored within the CNMS database
7	;#Discovery Meeting;#Discovery Report;#Coordinated Needs Management System (CNMS);#	CNMS	Community-specific requests to update the FIRM outside of the NVUE validation process must be documented in the CNMS database as mapping requests for FEMA Regional review and consideration.
8	;#Coordinated Needs Management System (CNMS);#	CNMS	The CNMS database shall be updated for flood risk project engineering reference information, validation status, and map issues throughout all pertinent phases of the Risk MAP project timeline.

9	;#Coordinated Needs Management System (CNMS);#	CNMS	The CNMS database shall be the sole source for reporting flood map update needs.
10	;#Coordinated Needs Management System (CNMS);#	CNMS	For flood risk projects to go from the 'UNVERIFIED' to '"VALID" status within the CNMS database, they must be re-analyzed.
11	;#Coordinated Needs Management System (CNMS);#	CNMS	When the last assessment date of the Modernized or Paper Inventory exceeds 5 years, the Validation Status shall be changed to 'Unknown' and shall require reassessment.
13	;#Coordinated Needs Management System (CNMS);#	CNMS	NVUE status must be reported to FEMA HQ at least quarterly.
36	;#Data Capture;#Discovery;#Coordinated Needs Management System (CNMS);#Regulatory Products;#FIRM Database;#Preliminary FIRM Database (Deliverables);#	CNMS	Mapping Partners must update and submit a Coordinated Needs Management Strategy (CNMS) database that is compliant with the CNMS technical reference at the completion of Discovery or Project Initiation and at Preliminary, and Revised Preliminary if applicable, based on the information and data collected.
189	;#Coordinated Needs Management System (CNMS);#	CNMS	The designated Mapping Partner shall ensure that the effective and revised flood hazard data are tied in with no discontinuities. Where discontinuities cannot be resolved, they should be documented in the CNMS database.
64	;#Coastal;#Letter of Map Change (LOMC);#Letter of Map Revision (LOMR);#Regulatory Products;#	Coastal	For map revision requests in coastal areas based on more up-to-date, site-specific topographic information, a transect and a wave-height analysis based on the profile must be provided.

86	;#Coastal;#Wave Runup;#Water Levels;#	Coastal	For coastal flood risk projects, wave runup analysis shall compute the wave runup elevation as the value exceeded by 2 percent of the runup events, $R_{2\%}$.
87	;#Coastal;#Submittal Requirements;#	Coastal	For coastal flood risk projects, intermediate data submissions are required at key milestones during the coastal analysis process.
88	;#Coastal;#Hydrology;#Hydraulics;#	Coastal	All coastal processes and flooding sources that contribute to the 1-percent-annual-chance flood condition both at a regional and local scale must be considered.
89	;#Coastal;#Coastal Structures;#Floodplain Mapping;#Floodplain Delineation;#Flood Control Structures;#	Coastal	For coastal flood risk projects, non-levee coastal structures must be evaluated and the profile adjusted as necessary to reflect expected storm impacts on the structure for the purpose of establishing appropriate risk zone determinations for NFIP maps.
90	;#Coastal;#Hydrology;#Hydraulics;#Riverine;#	Coastal	For coastal flood risk projects, the Mapping Partner must choose methods that are technically sound and consistent, are applicable for the flood risk project setting, and have been validated to the extent possible for Great Lakes coastal settings. Decisions regarding which methods and methodology to apply must consider the importance of, and the relative contributions of, various coastal processes to the BFEs.

91	;#Coastal;#Storm Surge;#Wave Runup;#Wave Setup;#Wave Overtopping;#Water Levels;#Coastal Zones;#	Coastal	For Pacific coastal flood risk projects, VE Zones are identified using one or more of the following criteria for the 1% flood conditions: 1. The wave runup zone occurs where the (eroded) ground profile is 3.0 feet or more below the TWL. 2. The wave overtopping splash zone is the area landward of the crest of an overtopped barrier, in cases where the potential wave runup exceeds the barrier crest elevation by 3.0 feet or more(ΔR>3.0 feet). The landward extent is defined by yG,outer (Section D.4.5.2) 3. The high-velocity flow zone is landward of the overtopping splash zone (or area on a sloping beach or other shore type), where the product of depth of flow times the flood velocity squared (hv2) is greater than or equal to 200 ft3/sec2. 4. The breaking wave height zone occurs where 3-foot or greater wave heights could occur (this is the area where the wave crest profile is 2.1 feet or more above the static water elevation). 5. The primary frontal dune zone, as defined in 44 CFR Section 59.1 of the National Flood Insurance Program (NFIP) regulations.
92	;#Coastal;#Storm Surge;#Wave Runup;#Wave Setup;#Wave Overtopping;#	Coastal	For coastal flood risk projects, regional surge and wave model performance shall be successfully validated for the flood risk project area.
93	;#Coastal;#Discovery;#Base Map;#Topographic Data;#Hydrology;#Hydraulics;#Project Scope;#	Coastal	For coastal flood risk projects, Mapping Partners shall always locate the best and most reliable measured data for their project site.
94	;#Coastal;#Hydrology;#Hydraulics;#	Coastal	For coastal flood risk projects, analyses should produce risk information that reflects existing hazard conditions.

95	;#Coastal;#Hydrology;#Hydraulics;#Riverine;#	Coastal	For coastal flood risk projects with wave runup analyses, the Mapping Partner shall document the procedures and values of parameters employed to establish the wave runup on the various transects on natural beaches and barriers, which could include steep dunes and structures. In particular, the basis for establishing the runup reduction factors and their values shall be documented. The documentation shall be especially detailed if the methodology deviates from that described herein. Any measurements, observations and/or anecdotal information regarding previous major storm-induced runup shall be recorded and documented. Any notable difficulties encountered and the approaches to addressing them shall be described clearly.
96	;#Coastal;#Coastal Erosion;#Hydraulics;#	Coastal	Coastal analyses should not account for long term erosion. Episodic, storm-induced erosion should be included in the flood hazard analysis.
97	;#Coastal;#Floodplain Mapping;#Floodplain Delineation;#Coastal Zones;#Coordination;#	Coastal	For coastal flood risk projects on the Great Lakes, Mapping Partners shall not map VE zones without prior FEMA approval.
98	;#Coastal;#Wave Runup;#Wave Setup;#Wave Overtopping;#Water Levels;#	Coastal	For Atlantic and Gulf of Mexico flood risk projects, VE zones shall be mapped when one or more of the following criteria for the base flood conditions exist: 1. The wave runup zone occurs where the (eroded) ground profile is 3.0 feet or more below the 2-percent wave runup elevation; 2. The wave overtopping splash zone is the area landward of the crest of an overtopped barrier, in cases where the overtopping rate exceeds 1 cfs/ft; 3. The breaking wave height zone occurs where 3-foot or greater wave heights could occur; 4. The primary frontal dune zone, as defined in 44 CFR Section 59.1 of the NFIP regulations.
137	;#Coastal;#Redelineation;#Floodplain Mapping;#Floodplain Delineation;#Coastal Zones;#	Coastal	For redelineation of coastal flood hazard areas that do not require a vertical datum conversion, the Mapping Partner shall only revise the 1-percent-annual-chance SFHA boundary and primary frontal dune delineation.
138	;#Coastal;#Floodplain Mapping;#Base Flood Elevation (BFE);#Floodplain Delineation;#Submittal Requirements;#Wave Runup;#Wave Setup;#Wave Overtopping;#	Coastal	Coastal flood risk projects shall produce, at a minimum, a 1%-annual-chance and 0.2%-annual-chance floodplain and base flood elevations that include the contribution of wave effects.

139	;#Coastal;#Topographic Data;#Elevation Data;#Coastal Erosion;#Hydraulics;#	Coastal	For coastal flood risk projects, where topographic data reflects recent beach nourishment projects, and beach berms or dunes do not reflect equilibrium conditions, the Mapping Partner shall adjust the data to reflect equilibrium conditions prior to conducting the storm-induced erosion and onshore wave hazard analyses.
171	;#Coastal;#Coordination;#Stakeholder;#Letter of Final Determination (LFD);#Floodplain Mapping;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Floodplain Delineation;#FIRM Database;#Preliminary FIRM Database;#Final FIRM	Coastal	For coastal flood risk projects, all community requests to have the LiMWA removed from the FIRM must be received prior to the issuance of the Letter of Final Determination.
412	;#Coastal;#Floodplain Mapping;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Floodplain Delineation;#FIRM Database;#Preliminary FIRM Database;#Final FIRM Database;#Submittal Requirements;#Coastal Zones;#	Coastal	For all coastal flood risk projects, the limit of moderate wave action (LiMWA), will be delineated on the FIRMs and included in the FIRM database at the boundary of the area where the effects of wave hazards will be similar to, but less severe that those in the VE Zone.
170	;#Coastal;#Coastal Barrier Resources System (CBRS);#Flood Insurance Rate Map (FIRM);#Regulatory Products;#	Coastal Barrier Resources System	CBRS units shown on all new and revised FIRMs must be endorsed by the Fish and Wildlife Service.
212	;#Coastal;#Coastal Barrier Resources System (CBRS);#Flood Insurance Rate Map (FIRM);#Regulatory Products;#	Coastal Barrier Resources System	If CBRS boundaries are modified, FEMA will initiate a new map action or incorporate the boundaries into an ongoing map action or update through the Notice-to-User process.
353	;#Coastal;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#FIRM Database;#Coastal Barrier Resources System (CBRS);#	Coastal Barrier Resources System	On FIRM panels and in FIRM Databases, each unique CBRS area shall be bounded on all sides.
354	;#Coastal;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#FIRM Database;#Coastal Barrier Resources System (CBRS);#	Coastal Barrier Resources System	Coastal barrier and Otherwise Protected Areas shall be symbolized on the FIRM panel as shown in the FIRM Panel Technical Reference.

355	;#Coastal;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#FIRM Database;#Coastal Barrier Resources System (CBRS);#Map Notes and Labeling;#	Coastal Barrier Resources System	All barriers must be labeled or identified on the FIRM panel by notes that list the CBRS classification of each area.
356	;#Coastal;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#FIRM Database;#Coastal Barrier Resources System (CBRS);#Map Notes and Labeling;#	Coastal Barrier Resources System	All separate CBRS areas on a FIRM panel shall be labeled with the appropriate identification note in the map collar showing the prohibition date associated with that CBRS area. This note must contain a legend.
15	;#Coordination;#	Coordination	Mapping Partners shall provide technical and programmatic assistance and prepare responses to inquiries recieved from Mapping Partners and other NFIP constituents.
146	;#Letter of Map Revision (LOMR);#Physical Map Revision (PMR);#Floodplain Mapping;#	Coordination	The FEMA Regional Office must be notified of any potential floodplain management violations identified through the submittal of new or revised flood hazard data.
188		Coordination	FEMA must be able to distribute the base map data and floodplain information (hardcopy and digital) freely to the public.
224	;#Coordination;#	Coordination	For all Special Conversion procedures, the processing Mapping Partner shall perform the coordination and documentation activities required to convert the community to the Regular Phase of the NFIP, in accordance with the detailed procedures documented in FEMA's Document Control Procedures Manual.
225		Coordination	For Special Conversions the assigned Mapping Partner shall ensure FEMA management system databases are maintained

383	;#Post-Preliminary;#	Coordination	After preliminary issuance of the FIS and FIRM, any major changes must be coordinated with the FEMA Regional office.
191		Correspondence	The designated Mapping Partner shall follow the required procedures for preparing and distributing new and revised FIS reports and FIRMs, standard correspondence, and enclosures as documented in Section 1 and Appendix A of the Document Control Procedures Manual (FEMA, 2000).
381	;#Coordination;#Outreach;#	Correspondence	Controlled correspondence must be approved by FEMA before release.
382	;#Coordination;#Outreach;#	Correspondence	FEMA correspondence must be prepared in accordance with DHS / FEMA style guidance and processing procedures developed within the Federal Insurance and Mitigation Administration.
384	;#CCO Meeting;#Stakeholder;#	Correspondence	In the absense of a final CCO meeting FEMA shall send a letter to the community and interested stakeholders to document the decision.
389	;#Appeals;#Expanded Appeals Process (EAP);#Scientific Resolution Panel (SRP);#Post-Preliminary;#	Correspondence	FEMA shall provide written acknowledgement to an affected community of all data submitted during the statutory appeal period.
409	;#Map Adoption Period;#	Correspondence	FEMA will distribute suspension notification letters to communities that have not yet adopted NFIP compliant ordinances within 90 and 30 days prior to the FIRM effective date.

410	;#Map Adoption Period;#	Correspondence	The assigned Mapping Partner shall review NFIP eligibility and prepare related correspondence for newly-eligible communities.
54	;#Field Survey & Reconnaissance;#LiDAR / Mass Points;#Terrain Data;#Contours;#Digital Elevation Models (DEMs);#Triangular Irregular Networks (TINs);#Breaklines;#Bathymetry;#Hydraulics;#Shallow Flooding;#Ice Jam;#1-D Steady;#1-D Unsteady;#2-D Riverine;#3-D Riverine;#Floodway;#Closed	Cross-Sections	For flood risk projects with published flood elevations, survey data must be used to determine the geometry for the portions of cross sections that are underwater during normal flow conditions. The means and data used to calculate losses through hydraulic structures must be provided.
342	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Flood Theme;#Map Notes and Labeling;#Cross-sections;#FIRM Database;#	Cross-Sections	Cross sections stored in the FIRM Database must be shown on the FIRM panels if they are attributed as one of the following line types: LETTERED, MAPPED and NOT LETTERED, MAPPED.
343	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Flood Theme;#Map Notes and Labeling;#Cross-sections;#FIRM Database;#	Cross-Sections	On FIRM panels and in FIRM Databases, lettered or numbered cross sections for each stream analyzed by detailed methods shall be labeled alphanumerically from the downstream to the upstream limits of the flood risk project.
344	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Flood Theme;#Map Notes and Labeling;#Cross-sections;#FIRM Database;#	Cross-Sections	On FIRM panels and in FIRM Databases, only one cross-section labeling method shall be used: either alphabetical or numeric along a single stream within a flood risk project.
345	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Flood Theme;#Map Notes and Labeling;#Cross-sections;#FIRM Database;#	Cross-Sections	On FIRM panels, lettered or numbered cross sections shall be labeled with a hexagon on the cross-section line or leadered to it.
346	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Flood Theme;#Map Notes and Labeling;#Cross-sections;#FIRM Database;#Water Levels;#FIS Tables;#FIS Format;#Flood Insurance Study (FIS);#	Cross-Sections	On FIRM panels, all LETTERED, MAPPED and NOT LETTERED, MAPPED cross sections will be labeled with the regulatory Water Surface Elevation (WSEL) value, rounded to the nearest tenth of a foot. All lettered or numbered cross section WSEL values must match the FDT in the FIS report.

347	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Flood Theme;#Map Notes and Labeling;#Cross-sections;#Base Flood Elevation (BFE);#FIRM Database;#FIS Format;#Flood Insurance Study (FIS);#	Cross-Sections	If unlettered cross sections and BFEs cannot be shown on the FIRM panel because of crowding due to steep terrain, a note shall be placed referring the user to the flood profiles in the FIS report.
348	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Flood Theme;#Map Notes and Labeling;#Cross-sections;#FIRM Database;#	Cross-Sections	In the event that a cross section contains multiple water surface elevations the cross section shall be segmented and each segment labeled on the FIRM panel with its corresponding WSEL value and a hexagon.
413	;#Changes Since Last FIRM (CSLF);#Flood Risk Data;#Flood Risk Database (FRD);#Non-Regulatory Products;#	CSLF	Local building footprint and/or associated population data shall be the only acceptable data source to be used to populate structure and population attributes within the CSLF dataset.
422	;#Flood Risk Database (FRD);#Flood Risk Data;#Changes Since Last FIRM (CSLF);#Non-Regulatory Products;#	CSLF	The CSLF dataset shall not contain flood hazard polygons previously mapped as unshaded Zone X which still remain unshaded Zone X or those polygons previously mapped as Zone D which still remain Zone D.
21	;#Data Capture;#Tribal;#Mitigation Actions;#Discovery;#	Data Capture	At a minimum, the following list of data and information must be collected during Discovery if available: • The community or Tribe's planning capabilities, and the timing and level of any needed technical assistance for mitigation planning; Tribal lands and community boundaries • The status of a local or Tribal Hazard Mitigation Plan; • Current stormwater activities such as culvert or ditch cleaning; • Current outreach programs to residents about stormwater issues; • Stormwater Best Management Practices, programs for reducing flows, etc.; • Risk and flood risk project needs; • Flooding issues, historical flooding, and declared flood disasters; • Information regarding participation in the Community Rating System (CRS); • Actionable projects identified in the Hazard Mitigation Plan;

21 continued	;#Data Capture;#Tribal;#Mitigation Actions;#Discovery;#	Data Capture	• Community development plans and comprehensive plans; • Prior proactive mitigation actions and planning efforts resulting in reduced losses; • Interest in providing elevation data or pursuing partnership opportunities; • Information about community priorities in order to focus mitigation discussions through knowledge of what is important to the public; • Community-identified mitigation opportunities; • Regional or state information about communities and flooding within a watershed, such as information from Community Assistance Visits (CAVs); • Community correspondence, and other data that the FEMA Regional Office, State NFIP Coordinator, or SHMO possesses; • Information from OFAs, NGOs, and other watershed stakeholders; and • Data from the Mapping Information Platform (MIP), the FEMA library, etc.
37	;#Data Capture;#	Data Capture	If additional data are collected during DCS tasks that are not specifically mentioned but are significant to the project, those data must also be submitted in the format collected as part of the DCS deliverables as supplementary data.
159	;#Data Capture;#	Data Capture	Mapping Partners must use the Data Capture Standards (DCS) Technical Reference and FIRM Database Technical Reference for all new FEMA-funded flood risk projects except data obtained from existing flood risk projects, which can be submitted in native format and do not have to comply with these standards.
161	;#Data Capture;#	Data Capture	Mapping Partners must submit the DCS data specified in their SOW to the MIP as they complete their scope at each workflow step they are assigned to perform. If any of these data are modified subsequently, the revised data must be uploaded to the MIP before their effective date by the Mapping Partner assigned to perform that work.
176	;#Data Capture;#Regulatory Products;#FIRM Database;#Submittal Requirements;#	Data Capture	All DCS spatial data must be georeferenced, have a standard coordinate system and projection defined and documented, and specify the horizontal and vertical datums used.
178	;#Data Capture;#Regulatory Products;#FIRM Database;#Submittal Requirements;#	Data Capture	Mapping Partners must submit the spatial data applicable to each task as shown in the FIRM Database Submittal Table and using the schema found in the FIRM Database Technical Reference with each DCS submittal.

180	;#Data Capture;#	Data Capture	Mapping Partners must submit DCS data in one of the acceptable file format(s) and in the directory structure found in the DCS technical reference.
184	;#Data Capture;#	Data Capture	Any DCS data that are tiled must have an accompanying index spatial file. Tiles must be topologically correct and have only one part, and cannot self-intersect (must be simple). Adjacent tiles must not overlap or have gaps between them.
430	;#Data Capture;#Non-Regulatory Products;#	Data Capture	All Flood Risk Product deliverable files must meet the standards set forth by the Map Service Center.
23	;#Discovery Map;#Discovery Meeting;#Tribal;#Discovery;#	Discovery Map	A pre-meeting Discovery Map and Report will be provided to the communities and Tribes prior to the Discovery Meeting and presented at the Discovery Meeting to facilitate discussions
24	;#Discovery Map;#Discovery Meeting;#Tribal;#Discovery;#	Discovery Map	A post-meeting Discovery Map and Report will be provided to the communities and Tribes after the Discovery Meeting
25	;#Discovery Map;#Discovery Meeting;#Tribal;#Discovery;#	Discovery Map	Mandatory elements of the Discovery Map (if available) include: • Base data reflecting watershed boundaries, jurisdictional boundaries, Tribal land boundaries, State lands, Federal lands, major roads, and stream lines; Illustration of Discovery Meeting Outcomes and decisions; • Coastal Barrier Resource Areas and Otherwise Protected Areas from U.S. Fish and Wildlife Service (USFWS); • Mapping needs from Coordinated Needs Management System (CNMS) or Community Information System (CIS); • Topographic and Bathymetry data status and availability, locations of future topographic and/or bathymetric data acquisition; • Hazus-based annualized loss estimates from the Average Annualized Loss analysis; • The coverage areas of known community or Tribal risk assessment data; • Status of local, state, and Tribal Hazard Mitigation Plans (status of plan in mitigation cycle); • Flood control structure location data from national or regional inventories (e.g., the National Inventory of Dams, levee inventories, etc.) and accreditation status information, including information from dam Emergency Action Plans, if available;

25 continued	;#Discovery Map;#Discovery Meeting;#Tribal;#Discovery;#	Discovery Map	• Locations of stream gauges; • Location of past flood claims and repetitive loss properties; • Location of clusters of Letters of Map Change; • Known flooding issues not represented on effective FIRMs or listed in CNMS; • Areas of ongoing or planned development and areas of high growth or other natural land changes (e.g., wildfires, landslides, or subsidence); • Locations of other ongoing flood risk projects and stream reaches that have been modified since the effective map and require an updated flood risk project (e.g., highway improvements); • For coastal areas, the locations of wave and tide gauges; • For coastal areas, the locations of wind stations; • For coastal areas, the proposed inland limit of the Primary Frontal Dune, if present; • For coastal areas, the location of any beach nourishment or dune restoration projects; • For coastal areas, a comparison of preliminary stillwater elevations with effective stillwater elevations; • Available effective flood risk project data; • Available orthophotography; and • Proposed discussion areas, problem areas, areas of proposed mitigation projects, and other areas of interest to discuss based on regional knowledge and analysis of the data collected during Discovery.
27	;#Discovery Meeting;#Stakeholder;#Discovery;#	Discovery Meeting	A Discovery Meeting must be conducted with project stakeholders.
26	;#Discovery Report;#Discovery Meeting;#Discovery;#	Discovery Report	A Discovery Report must include a section listing the data and information collected, when they were received, data sources, and an analysis of the data and information. The Post-Meeting Report must include the outcomes and decisions made at the Discovery Meeting.
40	;#Elevation Data;#LiDAR / Mass Points;#Terrain Data;#Topographic Data;#	Elevation Data	New elevation data purchased by FEMA must comply with the current USGS National Geospatial Program Base Lidar Specification Version 1.0, except where specifically noted in other FEMA standards
41	;#Elevation Data;#Field Survey;#Topographic Data;#	Elevation Data	For areas within the Continental United States field surveys and aerial data acquision must be referenced to the North American Vertical Datum of 1988 (NAVD88) and the North American Datum 1983 (NAD83) and connected to the NSRS.

42	;#Elevation Data;#Field Survey;#Topographic Data;#	Elevation Data	All land surveys must be certified by a licenced professional.
43	;#Elevation Data;#Contours;#Terrain Data;#Topographic Data;#	Elevation Data	Existing topographic data leveraged by FEMA must have documentation that it meets vertical accuracy requirements in Table 2.2. Table 2.2. Vertical Accuracy Requirements based on Flood Risk and Terrain Slope within the Floodplain being mapped Level of Flood Risk ; Typical Slopes ; Specification Level ; "Vertical Accuracy, 95% Confidence Level FVA/CVA "; Lidar Nominal Pulse Spacing (NPS) High (Deciles 1,2,3) ; Flattest ; Highest ; 24.5 cm/36.3 cm ; ≤2 meter High (Deciles 1,2,3) ; Rolling or Hilly ; High ; 49.0 cm/72.6 cm ; ≤2 meters High (Deciles 2,3,4,5) ; Hilly ; Medium ; 98.0 cm/145 cm ; ≤3.5 meters Medium (Deciles 3,4,5,6,7) ; Flattest ; High ; 49.0 cm/72.6 cm ; ≤2 meters Medium (Deciles 3,4,5,6,7) ; Rolling ; Medium ; 98.0 cm/145 cm ; ≤3.5 meters
44	;#Elevation Data;#LiDAR / Mass Points;#Terrain Data;#Topographic Data;#	Elevation Data	FEMA requires all elevation data to be processed to the bare earth terrain in the vicinity of floodplains that will require hydraulic modeling.
45	;#Elevation Data;#Topographic Data;#	Elevation Data	FEMA does not require the elevation data to be hydro-flattened, as specified in USGS Lidar Specification
46	;#Data Capture;#Elevation Data;#Topographic Data;#	Elevation Data	When bare earth post-processing is included in the project the SVA for up to three significant land cover categories, in terms of percentage of the project area covered, shall be tested in addition to the open/bare ground areas already tested for FVA Land cover categories making up 10% or more of the project area should be included in the SVA testing
47	;#Data Capture;#Elevation Data;#Topographic Data;#	Elevation Data	Terrain processing areas greater than 2,000 square miles must be divided into smaller blocks of 2,000 square miles or less and tested as individual areas.

<table>
<tr><td>48</td><td>;#Data Capture;#Elevation Data;#Terrain Data;#</td><td>Elevation Data</td><td>Checkpoints used for testing SVA of the bare earth elevation product must be located in the areas where bare earth post-processing was performed, distributed to avoid clustering, and support vertical accuracy reporting that is representative of the post processed areas.</td></tr>
<tr><td>50</td><td>;#Hydraulics;#2-D Riverine;#3-D Riverine;#Terrain Data;#LiDAR / Mass Points;#Digital Elevation Models (DEMs);#Triangular Irregular Networks (TINs);#Bathymetry;#</td><td>Elevation Data</td><td>The digital terrain model input for a two-dimensional model must cover the entire project area and the derivation or development of the grid must be clearly documented.</td></tr>
<tr><td>156</td><td>;#Data Capture;#Base Map;#Geospatial Data Coordination (GDC);#Topographic Data;#Elevation Data;#Terrain Data;#</td><td>Elevation Data</td><td>It is the Mapping Partner’s responsibility to certify that the elevation data used for the project complies with the G&S and industry best practices.</td></tr>
<tr><td>158</td><td>;#Base Map;#Geospatial Data Coordination (GDC);#Topographic Data;#Elevation Data;#Terrain Data;#</td><td>Elevation Data</td><td>Elevation data created using FEMA funding must allow unlimited free distribution by FEMA and partners.</td></tr>
<tr><td>112</td><td>;#Floodplain Boundary Standard (FBS);#</td><td>FBS</td><td>For all projects contracted in 2006 and beyond, it is the mapping partner’s responsibility to fix maps that do not pass the audits to ensure compliance with the Floodplain Boundary Standard.</td></tr>
<tr><td>113</td><td>;#Flood Risk Report (FRR);#Mitigation Actions;#Risk Assessment;#Flood Risk Map (FRM);#Flood Risk Database (FRD);#Flood Risk Data;#</td><td>FBS</td><td>Flood risk must be determined for each flooding source to identify what Floodplain Boundary Standard must be met and what level of analysis is required.
<table>
<tr><th></th><th></th><th colspan="2">Delineation Reliability of the floodplain boundary per study methodology[1]</th></tr>
<tr><th>Risk Class</th><th>Characteristics</th><th>Detailed</th><th>Approximate</th></tr>
<tr><td>A</td><td>High population and densities within the floodplain, and/or high anticipated growth</td><td>+/- 1.0 foot/ 95%</td><td>+/- 1/2 contour 95%</td></tr>
<tr><td>B</td><td>Medium population and densities within the floodplain, and/or modest anticipated growth</td><td>+/- 1.0 foot/ 90%</td><td>+/- 1/2 contour 90%</td></tr>
<tr><td>C</td><td>Low population and densities within the floodplain, small or no anticipated growth</td><td>+/- 1.0 foot/ 85%</td><td>+/- 1/2 contour 85%</td></tr>
<tr><td>D</td><td>Undetermined Risk, likely subject to flooding</td><td>NA</td><td>NA</td></tr>
<tr><td>E</td><td>Minimal risk of flooding; area not studied</td><td>NA</td><td>NA</td></tr>
</table>
[1]The difference between the ground elevation (defined from topographic data) and the computed flood elevation.</td></tr>
<tr><td>114</td><td>;#Risk Assessment;#Flood Risk Data;#</td><td>FBS</td><td>A horizontal accuracy of +/- 38 feet will be used to determine the compliance with the vertical tolerances defined for each risk class. This horizontal tolerance will address varying floodplain delineation techniques (automated versus non-automated) and map scale limitations.</td></tr>
</table>

115	;#Floodplain Boundary Standard (FBS);#	FBS	For the FBS audit, the same terrain data source that was used to create the flood hazard boundary should be used to conduct the audit.
385	;#Post-Preliminary;#	Fed Register	The designated Mapping Partner shall develop and ensure that the News Release and Federal Register Proposed Flood Hazard Determination Notice are correct and that they include all communities affected by new or modified flood hazard information. The designated Mapping Partner shall ensure the newspaper notice is published twice within the 10-days of notification of the community CEO, after publication of the Federal Register Proposed Flood Hazard Determination Notice.
386	;#Post-Preliminary;#	Fed Register	The designated Mapping Partner shall notify the community and other Mapping Partners involved in the Flood Map Project when corrections to the News Release or Federal Register are required.
387	;#Post-Preliminary;#	Fed Register	The designated Mapping Partner shall compile the proposed Federal Register Flood Hazard Determination Notices for all communities affected by the addition or modification of flood hazard changes for concurrence and signature by FEMA and publication in the Federal Register. The designated Mapping Partner shall then submit the Proposed Notice to the designated FEMA coordinator for routing, concurrence, and signature. The FEMA coordinator shall coordinate with Office of Federal Register (OFR) to ensure timely publication of the Proposed Notice in the Federal Register. The FEMA coordinator and the designated Mapping Partner shall review the published Proposed Notice to ensure it is accurate, and shall coordinate correction of the Proposed Notice when appropriate, and shall notify other Project Team members as appropriate.
411	;#Map Adoption Period;#	Fed Register	FEMA will publish a notice of community eligibility in the Federal Register.
371	;#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#FIRM Database Metadata;#Submittal Requirements;#	Final FIRM Database (Regulatory Deliverables)	The Final FIRM Database must be delivered to the FEMA Map Service Center (MSC) in the proper formats, as specified in the *MSC Deliverable Guide* .

299	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#	FIRM Database	The assigned Mapping Partner shall prepare FIRM panels that are derived directly from the FIRM database.
358	;#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#FIRM Database Metadata;#Submittal Requirements;#	FIRM Database	The FIRM Database tables specified in the FIRM Deliverables Table in the FIRM Database Techical Reference must to be submitted to FEMA via the Mapping Information Platform (MIP) workflow at the corresponding MIP step.
359	;#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#FIRM Database Metadata;#	FIRM Database	Data sources in the FIRM Database must be documented with Source Citations in the database and the metadata.
360	;#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#Projections and Coordinate Systems;#	FIRM Database	A FIRM Database must have only one horizontal and one vertical datum.
361	;#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#Submittal Requirements;#	FIRM Database	The mapping partner must submit the FIRM Database digital data in a series of thematic files that cover the entire geographic area being mapped and not in individual small tiles that cover limited geographic areas. For partial countywide updates, the data must be clipped to the nearest panel or county boundary.
362	;#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#	FIRM Database	The FIRM Database horizontal cluster tolerance must be set for 0.25 feet (0.0762 meters).
364	;#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#	FIRM Database	The FIRM Database must not contain duplicate elements.

365	;#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#FIRM Database Metadata;#Submittal Requirements;#	FIRM Database	The mapping partner that creates the FIRM database shall document all included tables of the FIRM Database in the metadata using the metadata profile and document the version of personal geodatabase submitted.
367	;#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#	FIRM Database	In the FIRM Database, all revised FIRM panels shall get new FIRM Panel Map Number suffixes and effective dates in the S_FIRM_Pan feature class.
369	;#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#	FIRM Database	Lines in the FIRM Database must be generalized to no more than one vertex every 10 feet while still meeting FBS standards.
370	;#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#Flood Theme;#Floodplain Delineation;#Base Map;#Vector;#	FIRM Database	FIRM Database Flood Theme and Base Map features shall not have disconnects, jogs, or missing features during edgematching.
372	;#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#	FIRM Database	Coincident features must share the same geometry, vertex for vertex, within the FIRM database files.
373	;#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#	FIRM Database	The FIRM Database must be produced using the FIRM Database Technical Reference.
181	;#Data Capture;#Regulatory Products;#FIRM Database;#FIRM Database Metadata;#	FIRM Database Metadata	Mapping Partners must submit a metadata file in XML format that complies with the NFIP Metadata Profile for the applicable task with each DCS submittal. If metadata is available from an agency or organization that provided data for use in the flood risk project, it should be included in the DCS submittal in addition to the NFIP Metadata Profiles.

282	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Map Format and Layout;#FIRM Graphic Standards;#Map Notes and Labeling;#	FIRM Graphic Standards	All FIRM panel symbology and labels must be clear and readable and clearly communicate the flood hazard information needed for insurance and mitigation purposes.
283	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Base Map;#Map Format and Layout;#Flood Insurance Study (FIS);#	FIRM Graphic Standards	The FIRM panel "Notes to Users" section must contain notes referring the user to the FIS report for a detailed legend and index map, to the MSC website for other digital products providing the NFIP contact information, and to the base map data source.
284	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Map Format and Layout;#Coastal;#	FIRM Graphic Standards	The Limit of Moderate Wave Action (LiMWA) note in the FIRM panel "Notes to Users" section shall include a legend.
285	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Map Format and Layout;#Map Notes and Labeling;#	FIRM Graphic Standards	The FIRM panel title block shall contain those items that identify the community and provide panel-specific information, including the panel number and effective date of the FIRM panel. Communities shall be listed in alphabetical order.
286	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Map Format and Layout;#Map Notes and Labeling;#	FIRM Graphic Standards	The community names in the FIRM panel title block must include, at a minimum, the community prefix (e.g., city, town, or village), community name, and full State name. FIRM panels for individual communities shall also include the name of the county, except for jurisdictions that are officially classified as “Independent.”
287	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Map Format and Layout;#Map Notes and Labeling;#FIRM Index;#FIRM Database;#	FIRM Graphic Standards	When each new edition of a FIRM panel is prepared, the suffix for each revised FIRM panel is changed to the next alphabetical letter, with the letters “I” and “O” being skipped. For first-time countywide FIRMs, the suffix will be the next letter following the highest suffix letter of any FIRM panel that maps land within the extents of countywide mapping. Likewise, any FIRM panel being revised to reflect a completely new panel layout will have suffixes one letter higher than the highest of any previously published panel.

288	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Map Format and Layout;#FIRM Index;#FIRM Database;#Flood Insurance Study (FIS);#Preliminary FIS (Deliverables);#Final FIS (Regulatory Deliverables);#	FIRM Graphic Standards	The following Product ID standards shall be followed when preparing and releasing any new products: FIRM Flat Maps: ID: 2-digit state FIPS + 4-digit FEMA CID + Suffix (if available; FIRM Z-Folds: ID: 2-digit state FIPS + 4-digit FEMA CID + 4-digit panel number + Suffix ; FIRM Indexes: ID: 2-digit state FIPS + 4-digit FEMA CID + INDx (IND0, IND1…) + Suffix - Single page indexes are identified as IND0 with the suffix. In the case of multiple index pages, the counting begins at 1, where x is the number of the index sheet for a particular community. For new and revised indexes, a suffix will be added after the INDx, beginning with suffix A; Countywide Z-Fold FIRMs: ID: 2-digit state FIPS + 3-digit county FIPS Code + C + 4-digit panel number + Suffix; Countywide Indexes:ID: 2-digit state FIPS + 3-digit county FIPS Code + C + INDx (IND0, IND1…) + Suffix
288 continued	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Map Format and Layout;#FIRM Index;#FIRM Database;#Flood Insurance Study (FIS);#Preliminary FIS (Deliverables);#Final FIS (Regulatory Deliverables);#	FIRM Graphic Standards	Countywide indexes follow the same conventions as indexes for the conventional community-based index maps. The traditional community-based naming convention was also modified with this product class. Since the index represents more than one community, a single community ID could not be used. In its place, the county FIPS code was used along with the letter “C” to indicate the index is a countywide. The Product ID will also appear in the panel layout grid of the index. For new or revised indexes, a suffix will be added after the INDx, beginning with suffix A; Community-based FIS report: ID: 2-digit state FIPS + 4-digit FEMA CID + V + 00x (V000, V001…) + Suffix - For new or revised flood risk projects, a suffix should be added after the V00x beginning with suffix A; Countywide-based FIS report: ID: 2-digit state FIPS + 3-digit FIPs + C + V + 00x (V000, V001 …) + Suffix - For new or revised flood risk projects, a suffix should be added after the V00x beginning with suffix A; Supplements must have "Supplement Wave Height Analysis" printed on cover: ID: 2-digit state FIPS + 4-digit FEMA CID + S + 00x (S000).
297	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Map Format and Layout;#FIRM Graphic Standards;#Map Notes and Labeling;#Levee;#Coastal Structures;#Flood Control Structures;#Hydraulic Structures;#	FIRM Graphic Standards	On FIRM panels, levee and other hydraulic structure symbolization must be standardized as shown in the FIRM Panel Technical Reference.
298	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Map Format and Layout;#FIRM Graphic Standards;#Map Notes and Labeling;#	FIRM Graphic Standards	On FIRM panels, all flood zone area symbolization must be standardized as shown in the FIRM Panel Technical Reference.
302	;#Coastal;#Base Flood Elevation (BFE);#Flood Theme;#Cross-sections;#Floodway;#Floodplain Mapping;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Map Format and Layout;#FIRM Index;#Coastal Barrier Resources System (CBRS);#FIRM Graphic Standards;#Map Notes and	FIRM Graphic Standards	On FIRM panels, cross section and coastal transect lines and labels, Base Flood Elevation (BFE) labels, flood zone and floodway boundaries and labels, and CBRS boundaries must not be overprinted.

303	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Base Map;#Vector;#FIRM Graphic Standards;#	FIRM Graphic Standards	On FIRM panels, graphical mismatches between communities, where roads or other features cross community boundaries, must be resolved.
309	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Base Map;#Vector;#Raster;#Ortho;#FIRM Graphic Standards;#	FIRM Graphic Standards	Any transportation feature shown and labeled on a Flood Profile shall be labeled on the FIRM panel.
310	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Base Map;#Vector;#Raster;#Ortho;#FIRM Graphic Standards;#	FIRM Graphic Standards	Primary roads, as defined by the MAF/TIGER data, shall be labeled on the FIRM panel.
311	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Base Map;#Vector;#Raster;#Ortho;#FIRM Graphic Standards;#	FIRM Graphic Standards	On FIRM panels, all hydrographic features (streams, lakes, ponds, bays, and oceans) that have an identified flood hazard associated with them shall be labeled and contained completely within the SFHA.
313	Riverine;#Profile Baseline;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Map Notes and Labeling;#Base Map;#Vector;#	FIRM Graphic Standards	In areas where no profile baseline is available but a flood hazard has been identified, the bank or centerline representation of the hydrographic feature must be shown on vector-based FIRM panels.
316	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Map Format and Layout;#FIRM Graphic Standards;#Map Notes and Labeling;#Levee;#Coastal Structures;#Flood Control Structures;#Hydraulic Structures;#Flood Profiles;#Floodway;#Flood Insurance	FIRM Graphic Standards	Hydraulic structures other than levees shall be labeled on the FIRM panel only if shown on the Flood Profile of the FIS report. The label name must match what is shown on the Flood Profile. If 1%, 0.2%-annual-chance-flood discharge, and/or floodway are contained in the structure, a note must be placed on the FIRM panel to refer to the highest contained discharge.

317	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Base Map;#Vector;#FIRM Graphic Standards;#Map Notes and Labeling;#	FIRM Graphic Standards	All political entities shall be depicted and labeled on the FIRM panel with the appropriate jurisdiction names and CIDs or area designator.
318	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Base Map;#Vector;#FIRM Graphic Standards;#Map Notes and Labeling;#	FIRM Graphic Standards	Extra-Territorial Jurisdiction areas areas shall be shown on the FIRM panel.
319	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Base Map;#Vector;#FIRM Graphic Standards;#Map Notes and Labeling;#	FIRM Graphic Standards	Any area shown on the FIRM panel as an Area Not Included (ANI) shall be labeled with the entity's name and the notation "Area Not Included."
320	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Base Map;#Vector;#FIRM Graphic Standards;#Map Notes and Labeling;#	FIRM Graphic Standards	Vector data shall not be depicted on the FIRM panel for areas defined as an "Area Not Included".
321	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Base Map;#Vector;#FIRM Graphic Standards;#Map Notes and Labeling;#Map Format and Layout;#	FIRM Graphic Standards	This community and CID will also appear in the title block of the FIRM panel to represent a park area. No specific park or forest information will appear in the title block.
322	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Base Map;#Vector;#FIRM Graphic Standards;#	FIRM Graphic Standards	On FIRM panels, when boundaries of different types are coincident with each other or with base map features, the Mapping Partner shall show only one using the highest priority feature.
332	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Map Format and Layout;#FIRM Database;#	FIRM Graphic Standards	If a printed FIRM panel falls within the area of a smaller-scale panel that is also printed, the smaller-scale panel shall show a breakout note in the blank area represented by the larger-scale panel (the breakout panel area). This note is placed in the center of the breakout panel area and specifies the larger-scale panel's map number and scale. The suffixes shall not be used in breakout panel notes (to avoid unnecessary updates in Physical Map Revisions).

333	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Map Notes and Labeling;#Map Format and Layout;#Flood Theme;#	FIRM Graphic Standards	All flood insurance risk zones must be shown on the FIRM and symbolized as in FIRM Panel Technical Reference.
334	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#FIRM Database;#Flood Theme;#	FIRM Graphic Standards	Each flood risk zone shall be bounded by an OTHER BOUNDARY line type when adjacent to another flood hazard area of a different type or elevation.
336	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Floodway;#Flood Theme;#Map Notes and Labeling;#	FIRM Graphic Standards	On FIRM panels, the Colorado River Floodway, Density Fringe Areas, and Areas of Special Consideration must be symbolized and labeled with the Special Floodway symbology as shown in the FIRM Panel Technical Reference.
337	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Floodway;#Flood Theme;#Map Notes and Labeling;#	FIRM Graphic Standards	Administrative Floodways, State Encroachment Areas, Community Encroachment Areas, and Flowage Easement Areas must use the regular floodway symbol with a note identifying the type of floodway as shown in the FIRM Panel Technical Reference.
349	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#FIRM Database;#Flood Theme;#	FIRM Graphic Standards	On the FIRM Panels and in the FIRM Database, LIMIT LINES shall be placed at the beginning and at the end of flow in every area analyzed by detailed methods.
350	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#FIRM Database;#Flood Theme;#	FIRM Graphic Standards	When SFHAs are adjacent to the terminus of the detailed flood risk project area, the terminus shall be depicted as a white line with a red halo.
351	;#Coastal;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#FIRM Database;#Flood Theme;#	FIRM Graphic Standards	If transect lines are shown in the FIRM database they must be delineated and labeled on the FIRM panels.

352	;#Coastal;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#FIRM Database;#Flood Theme;#	FIRM Graphic Standards	Limits of Moderate Wave Action (LiMWA) lines must be shown on FIRM panels and be in the FIRM Database if it has been calculated as part of a coastal flood risk project.
357	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Flood Theme;#Base Flood Elevation (BFE);#Cross-sections;#Coastal;#Levee;#Base Map;#Vector;#Map Format and Layout;#	FIRM Graphic Standards	Each FIRM panel must have a map legend with all SFHA, Floodway, BFE, Cross-section, Transect, Levee, and political boundary symbology as shown in the FIRM Panel Technical Reference.
380	;#Regulatory Products;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Index;#Map Format and Layout;#FIRM Graphic Standards;#Map Notes and Labeling;#Physical Map Revision (PMR);#	FIRM Graphic Standards	For Physical Map Revisions (PMR), panels must be prepared using FEMA's latest FIRM panel graphic specifications, regardless of the PMR scenario chosen.
250	;#Flood Insurance Study (FIS);#FIRM Index;#Regulatory Products;#	FIRM Index	The FIRM Panel Index shall be produced at a size of 11" x 17"
251	;#Flood Insurance Study (FIS);#FIRM Index;#Regulatory Products;#	FIRM Index	For FIRM Panel Indexes which require more than 1 page, the page number shall be indicated in the title block in the following manner: PANEL INDEX (Sheet 1 of 2). A county locator map shall be added with a rectangle showing the extent of the current FIRM Panel Index sheet.
252	;#Flood Insurance Study (FIS);#Map Notes and Labeling;#Base Map;#Regulatory Products;#FIRM Index;#	FIRM Index	Required base map features that must be shown and labeled on the latest format of the FIRM Panel Index are HUC-8 watersheds and political jurisdictions. Community labels must also include the CID.
253	;#Flood Insurance Study (FIS);#Map Notes and Labeling;#FIRM Index;#Regulatory Products;#	FIRM Index	FIRM panels shown on the latest format of the FIRM Panel Index shall be labeled only with the four-digit panel number and suffix. The effective date must also be included and shall be placed directly beneath the FIRM panel number in "mm/dd/yyyy" format.

254	;#Flood Insurance Study (FIS);#Map Notes and Labeling;#FIRM Index;#Regulatory Products;#	FIRM Index	The FIRM Panel Index shall identify unprinted panels with asterisks and footnotes that define the reason(s) for the panel(s) not being printed.
145	;#Data Capture;#Coastal;#Regulatory Products;#FIRM Database;#Submittal Requirements;#Flood Insurance Study (FIS);#	FIS Report	A transect location map must be provided in the FIS report narrative if transects are not shown on the FIRM.
234	;#Flood Insurance Study (FIS);#FIS Format;#Regulatory Products;#	FIS Report	FIS reports exceeding 150 pages in length shall be subdivided into two or more volumes.
235	;#Flood Insurance Study (FIS);#FIS Format;#Regulatory Products;#	FIS Report	No more than 100 pages shall be included in any volume of a multiple-volume FIS report.
236	;#Flood Insurance Study (FIS);#FIS Format;#Regulatory Products;#	FIS Report	For multi-volume FIS reports, a single Table of Contents shall be produced for the entire report, and shall be included in all volumes.
237	;#Flood Insurance Study (FIS);#FIS Format;#Regulatory Products;#	FIS Report	Preliminary FIS Reports must include a stamp on the cover to indicate the Preliminary status and the date of the Preliminary issuance.

238	;#Flood Insurance Study (FIS);#FIS Tables;#FIS Format;#Regulatory Products;#	FIS Report	The following numbered sections, tables and figures are required for every FIS report produced in the latest format, regardless of whether the topic addressed by that element is applicable to the flood risk project: SECTION 1.0 - Introduction 1.1 The National Flood Insurance Program 1.2 Purpose of this Flood Insurance Report ...[cont'd] Figure1: FIRM Panel Index ...[cont'd] Table 1: Listing of NFIP Jurisdictions ...[cont'd]
240	;#Flood Insurance Study (FIS);#FIS Format;#Regulatory Products;#	FIS Report	FIS reports revised in the new format must use the new FIS report template.
241	;#Flood Insurance Study (FIS);#Regulatory Products;#	FIS Report	References in the FIS Report text must match the citation listed in the Bibliography and References table.
242	;#Flood Insurance Study (FIS);#FIS Format;#Regulatory Products;#	FIS Report	FIS reports created using the latest format must use an "(Author Year)" format for inline citations.
244	;#Flood Insurance Study (FIS);#FIS Format;#Watershed;#Regulatory Products;#	FIS Report	For watershed projects, affected FIS Reports shall be produced at a countywide level and in the latest format.
255	;#Flood Insurance Study (FIS);#Map Notes and Labeling;#Regulatory Products;#	FIS Report	Every note that is shown on the Notes to Users on one or more of FIRM panels must be included once in the Notes to Users section in the FIS Report

257	;#Flood Insurance Study (FIS);#FIS Format;#Regulatory Products;#	FIS Report	The FIS Report deliverable to the MSC must be an unsecured PDF file, with a resolution of 400 dpi.
258	;#Flood Insurance Study (FIS);#FIS Format;#Regulatory Products;#	FIS Report	FIS Report PDFs must be include the following bookmarks: - the first page of the Table of Contents - the start of each flooding source's Flood Profile - the first and second heading levels (Heading 1 and Heading 2) - all tables and figures. Bookmarks for tables and for figures must be grouped under the TOC bookmark instead of scattered through the other sections - flood profiles. In addition to bookmarks for profiles, a hypertext link to each profile name listed in the Exhibits in the Table of Contents should be added.
259	;#Flood Insurance Study (FIS);#Regulatory Products;#	FIS Report	A description of all dams affecting the communities in the project area, including those dams that lie outside the project area, shall be included in the FIS.
260	;#Flood Insurance Study (FIS);#Floodway;#Regulatory Products;#	FIS Report	A description of any unusual floodway procedures that deviate from national policy, such as State-imposed or locally imposed surcharge limits of less than 1.0 foot for regulatory floodway, must be listed in the "Floodways" section of the FIS report.
261	;#Flood Insurance Study (FIS);#FIS Format;#Regulatory Products;#	FIS Report	Counties that have an effective countywide FIS Report must remain countywide, regardless of whether they are updated to the new FIS Report format or not.
262	;#Flood Insurance Study (FIS);#FIS Format;#Regulatory Products;#	FIS Report	If FEMA directs the processing Mapping Partner to revise an FIS report but not reformat it, the processing Mapping Partner shall ensure that the format, organization, and content of the report follow that of the effective FIS report.

263	;#Flood Insurance Study (FIS);#Regulatory Products;#	FIS Report	A community's information shall be contained in only one FIS report.
268	;#Flood Insurance Study (FIS);#FIS Format;#Watershed;#Regulatory Products;#	FIS Report	All communities within a flood risk project jurisdiction whose FIS Report format is being updated shall receive a copy of the new FIS Report, regardless of whether they are affected by the new flood risk project or are outside the project watershed.
277	;#Flood Insurance Study (FIS);#FIS Format;#Regulatory Products;#	FIS Report	For FIS reports being revised in the latest format, any information that was included in Section 10 of a previous FIS using an approach known as "Revisions by Addendum" shall be incorporated into the relevant sections and tables.
75	;#Hydraulics;#Flood Theme;#FIS Tables;#Floodway;#Base Flood Elevation (BFE);#Cross-sections;#Redelineation;#Shallow Flooding;#Ice Jam;#1-D Steady;#1-D Unsteady;#2-D Riverine;#3-D Riverine;#Floodway;#Split Flow;#	FIS Tables	For each floodway determined under the scope of work, the Mapping Partner must create a Floodway Data Table (FDT) as part of the hydraulic analysis. There must be an entry for each cross section in the model that includes the following information: • Cross-section identification shown in a georeferenced spatial file; • Stream or profile baseline station of the cross section; • Width of the floodway at the cross section; • Wetted area of the cross section under encroached conditions; • Average velocity of the floodwaters at the cross section under encroached conditions; • The greater of BFEs from all flooding sources, including from backwater, affecting the cross section (regulatory elevation); • The BFE from the existing conditions model (without-floodway elevation); • The BFE from the encroached existing conditions model (with-floodway elevation); and • Difference between with- and without-floodway elevations (surcharge).
127	;#Preliminary FIS;#Final FIS;#FIS Tables;#Flood Profiles;#Regulatory Products;#Flood Insurance Rate Map (FIRM);#	FIS Tables	The datum conversion factors must be clearly documented in the FIS tables that are established to report this information. These tables are Table 20 (countywide) or Table 21 (stream-based).
245	;#Flood Insurance Study (FIS);#FIS Format;#FIS Tables;#Regulatory Products;#	FIS Tables	The "Listing of NFIP Jurisdictions" and "Community Map History" tables shall include all communities that fall within the flood risk project jurisdiction.

246	;#Flood Insurance Study (FIS);#FIS Format;#FIS Tables;#Regulatory Products;#	FIS Tables	Communities that have no Special Flood Hazard Areas identified shall be noted in the "Listing of NFIP Jurisdictions" and "Community Map History" tables with a footnote.
247	Levee;#Flood Insurance Study (FIS);#FIS Tables;#Regulatory Products;#	FIS Tables	All accredited levees, PALs, and non-accredited levees must be included in the "Levees" table of the FIS report.
248	;#Flood Insurance Study (FIS);#FIS Tables;#FIS Format;#Flood Profiles;#Regulatory Products;#	FIS Tables	All lettered or numbered cross sections must be shown on the Floodway Data Table and Flood Profiles. Unlettered cross sections shown on the FIRM are not to be included on the Floodway Data Table or Flood Profiles.
249	;#Flood Insurance Study (FIS);#FIS Format;#Physical Map Revision (PMR);#FIS Tables;#Regulatory Products;#	FIS Tables	In the "Community Map History" table, the "FIRM Revisions Date(s)" column shall include all FHBM and FIRM revisions, and must be updated during each revision to reflect the new PMR effective date. All PMR effective dates must be included for the communities that received updated FIRM panels, even if the PMR did not revise all the panels within that community.
264	;#Flood Insurance Study (FIS);#FIS Format;#FIS Tables;#Floodway;#Cross-sections;#Regulatory Products;#	FIS Tables	For cross-sections shown in areas of backwater flooding, elevations in the “Without Floodway” column of the Floodway Data Table shall not include backwater effects. These "Without Floodway" vales must include a footnote stating, "Elevation Computed Without Consideration of Backwater Effects From (Source of Flooding)". The words “Backwater Effects” are to be replaced with “Tidal Effects,” “Overflow Effects,” “Ice Jam Effects,” or “Storm Surge Effects,”, as needed, to reference the appropriate flooding situation.
265	;#Flood Insurance Study (FIS);#FIS Tables;#Floodway;#Regulatory Products;#	FIS Tables	When a part of a regulatory floodway lies outside the flood risk project jurisdiction, both the total floodway width, and the width within the flood risk project jurisdiction, shall be listed in the FIRM database and Floodway Data Table.
230	;#Flood Insurance Study (FIS);#FIRM Database;#Regulatory Products;#	FIS/FIRM	The values shown in the graphics, maps, text, tables, and profiles in the FIS Report shall agree with the values reported in the corresponding FIRM database table(s).

239	;#Flood Insurance Study (FIS);#FIS Format;#FIS Tables;#FIRM Index;#Regulatory Products;#	FIS/FIRM	FIS Reports and FIRM Panel Indexes must be prepared using the FIS Report Technical Reference
243	;#Flood Insurance Study (FIS);#FIRM Database;#Regulatory Products;#	FIS/FIRM	If a future conditions analysis is incorporated into the Flood Risk Project, the results shall be included in the FIRM database, FIRM, and FIS report.
416	;#Flood Risk Database (FRD);#Depth Grids;#Probability & Analysis Grids;#Flood Risk Data;#Non-Regulatory Products;#	Flood Depth Grids	Depth and Analysis Grids must share the same terrain and Bathymetry source datasets as the engineering models.
418	;#Coastal;#Flood Risk Database (FRD);#Depth Grids;#Flood Risk Data;#Non-Regulatory Products;#	Flood Depth Grids	Depth grids for open water shall reflect the depth of flooding above normal pool.
66	;#Hydraulics;#Shallow Flooding;#Ice Jam;#1-D Steady;#1-D Unsteady;#2-D Riverine;#3-D Riverine;#Floodway;#Closed Basin;#Alluvial Fan;#Split Flow;#Flood Theme;#Floodplain Mapping;#Regulatory Products;#Flood Profiles;#	Flood Profiles	Each modeled split or diverted flow path must be plotted with individual profiles.
78	;#Hydraulics;#Shallow Flooding;#Ice Jam;#1-D Steady;#1-D Unsteady;#2-D Riverine;#3-D Riverine;#Floodway;#Closed Basin;#Alluvial Fan;#Split Flow;#Regulatory Products;#Flood Profiles;#	Flood Profiles	The water-surface profiles of different flood frequencies must not cross one another.
79	;#Hydraulics;#Shallow Flooding;#Ice Jam;#1-D Steady;#1-D Unsteady;#2-D Riverine;#3-D Riverine;#Floodway;#Closed Basin;#Alluvial Fan;#Split Flow;#Regulatory Products;#Flood Profiles;#	Flood Profiles	Water-surface elevations shown on the Flood Profiles shall not rise from an upstream to downstream direction.

129	;#Hydraulics;#1-D Steady;#1-D Unsteady;#2-D Riverine;#Flood Theme;#Floodplain Mapping;#Regulatory Products;#Flood Insurance Rate Map (FIRM);#Flood Profiles;#FIS Tables;#Base Flood Elevation (BFE);#Flood Risk Review Meeting;#Mitigation Actions;#	Flood Profiles	Elevations associated with supercritical flow must not be plotted on flood profiles or reflected on FIRMs.
229	;#Flood Theme;#Cross-sections;#Base Flood Elevation (BFE);#Flood Control Structures;#Hydraulic structures;#Redelineation;#Regulatory Products;#Flood Profiles;#Levee;#	Flood Profiles	Profiles should be plotted as the projection of the stream invert and the flood surface(s) onto the flow path. The plots should show the locations of and clearly label: • Each mapped cross section; • Splits and diversions; • Confluences with tributaries splits, and diversions; • Each stream crossing with symbology depicting the top of road and low chord elevations of bridges and culverts along with the name of the bridge/culvert (e.g., Pine Street); • Extents of hydraulic structures adjacent to the flooding source; • Up- and downstream limits of the flood risk project; • Extent of backwater or flooding controlling the receiving stream and depiction of the backwater elevation along the profile.
231	;#Flood Insurance Study (FIS);#FIS Format;#Flood Profiles;#Hydraulic Structures;#Regulatory Products;#	Flood Profiles	For culverts shown on the flood profile, the symbol shown in the FIS template is to represent the overburden. The top of the symbol represents the top of road or ground surface. The culvert pipe is assumed to be the open area between the streambed and the bottom of the overburden.
232	;#Flood Insurance Study (FIS);#FIS Format;#Flood Profiles;#Regulatory Products;#	Flood Profiles	New Flood Profiles for re-analyzed streams must be produced using the same horizontal and vertical scales that were used in the effective FIS report.
233	;#Flood Insurance Study (FIS);#FIS Format;#Flood Profiles;#Regulatory Products;#	Flood Profiles	Any reach or zone labels that appeared on effective Flood Profiles shall not be shown on the Flood Profiles in the new FIS Report.
256	;#Flood Insurance Study (FIS);#Flood Profiles;#Regulatory Products;#	Flood Profiles	Flood Profiles must show data for each of the 5 standard (10%-, 4%-, 2%-, 1%-, and 0.2%-annual-chance) flood events if they were calculated as part of the Flood Risk Project.

266	;#Flood Insurance Study (FIS);#FIS Format;#Flood Profiles;#Regulatory Products;#	Flood Profiles	Flood Profiles shall be prepared on standard 11"x17", 10x10-to-the-inch grid, profile sheets.
267	;#Flood Insurance Study (FIS);#FIS Format;#Flood Profiles;#Regulatory Products;#	Flood Profiles	Only one stream shall be shown on any given Flood Profile panel.
269	;#Flood Insurance Study (FIS);#FIS Format;#Flood Profiles;#Regulatory Products;#	Flood Profiles	Flood Profiles are required for those watercourse segments that may not lie within the community, but do contribute to the flood inundation within the project area. Profile extents will include areas where the stream has left the community, but flood inundation within the project area continues. For these situations, the those limits that are located outside the project area shall be labeled on the profile as "Limit of Flooding Affecting Community."
270	;#Flood Insurance Study (FIS);#FIS Format;#Flood Profiles;#Regulatory Products;#	Flood Profiles	On the Flood Profiles for tributary streams, the 1-percent-annual-chance flood backwater from the main watercourse or water body shall be labeled as "Backwater From (Main Stream Name)."
271	;#Flood Insurance Study (FIS);#Flood Profiles;#FIS Tables;#FIRM Database;#Regulatory Products;#	Flood Profiles	Any well-documented high-water marks of past major floods, including but not limited to those shown in the S_HWM table of the FIRM database, shall be shown and referenced on the Flood Profiles.
272	;#Flood Insurance Study (FIS);#FIS Format;#Flood Profiles;#Regulatory Products;#	Flood Profiles	A vertical elevation scale of 1 inch equals 1, 2, 5, 10, or 20 feet is to be used for the flood profiles. Elevations shall be shown on the left side of the grid at 1-inch intervals within the profile elevation range.
273	;#Flood Insurance Study (FIS);#FIS Format;#Flood Profiles;#Regulatory Products;#	Flood Profiles	The 1%-annual-chance flood profile plots shall agree with the distances and elevations shown in the Floodway Data Table, with a maximum tolerance of 1/20 inch on the printed profile panel. Other features shown on the profiles, such as cross-section labels and hydraulic structures, shall also be accurately plotted to within the 1/20 inch tolerance.

274	;#Flood Insurance Study (FIS);#FIS Format;#Flood Profiles;#Regulatory Products;#	Flood Profiles	The horizontal and vertical scales of the flood profiles shall be chosen so that that flood profile slopes are reasonable and can be easily interpreted by the user.
275	;#Flood Insurance Study (FIS);#FIS Format;#Flood Profiles;#Regulatory Products;#	Flood Profiles	The horizontal scale of the flood profile shall be labeled at 1-inch intervals along the bottom edge of the grid and legend box.
276	;#Flood Insurance Study (FIS);#FIS Format;#Flood Profiles;#Regulatory Products;#	Flood Profiles	The horizonal stream distances shall be reported in feet or meters, except for major flooding sources where a reference system in miles has already been established. However, the units for any one flooding source shall be consistent.
278	;#Flood Insurance Study (FIS);#FIS Format;#Flood Profiles;#Regulatory Products;#	Flood Profiles	River stationing is to be referenced from a physical location such as a confluence or structure.
279	;#Flood Insurance Study (FIS);#FIS Format;#Flood Profiles;#Regulatory Products;#	Flood Profiles	Downstream elevations are to begin on the left edge of the flood profile.
280	;#Flood Insurance Study (FIS);#FIS Format;#Flood Profiles;#FIRM Database;#Profile Baseline;#FIS Tables;#Regulatory Products;#	Flood Profiles	Stream distances reported in the Floodway Data Tables, Profiles, and FIRM database must be measured along the profile baseline.
281	;#Flood Insurance Study (FIS);#FIS Format;#Flood Profiles;#FIS Tables;#Regulatory Products;#	Flood Profiles	Distance and elevation units used on a Flood Profile must be consistent with the units used in the Floodway Data table.

438	;#Flood Risk Database (FRD);#Flood Risk Data;#Risk Assessment;#Hazus;#Non-Regulatory Products;#	Flood Risk Assessment	Hazus 2.1 shall be the source for Census block boundaries within the FRD.
423	;#Flood Risk Database (FRD);#Flood Risk Data;#Non-Regulatory Products;#	Flood Risk Database	All fields and tables in the Flood Risk Database Technical Reference must be populated unless marked as [E]nhanced.
424	;#Discovery;#Flood Risk Database (FRD);#Flood Risk Data;#Flood Risk Report (FRR);#Flood Risk Map (FRM);#Non-Regulatory Products;#	Flood Risk Database	As an outcome of Discovery, a tiling structure must be defined for products.
431	;#Data Capture;#Flood Risk Database (FRD);#Flood Risk Data;#Non-Regulatory Products;#	Flood Risk Database	For Flood Risk Product SHP and DBF file formats, domain-based fields shall contain the actual descriptive values, not the numeric or alphanumeric coded value.
432	;#Flood Risk Data;#Flood Risk Database (FRD);#Non-Regulatory Products;#	Flood Risk Database	Datasets in the FRD must be delivered in their entirety regardless of the limits of S_FRD_Proj_Ar.
433	;#Flood Risk Data;#Flood Risk Database (FRD);#Flood Risk Report (FRR);#Flood Risk Map (FRM);#Non-Regulatory Products;#	Flood Risk Database	All non-regulatory products and datasets shall be delivered at the extent of the project area.

434	;#Flood Risk Database (FRD);#Flood Risk Data;#Non-Regulatory Products;#	Flood Risk Database	Delivered FRD vector datasets shall have the following spatial reference standards: Coordinate System: Geographic (GCS) • Spheroid: o Name: GRS_1980 o Semi major Axis: 6378137 o Semi minor Axis: 6356752.3141403561 • Angular Unit o Name: Degree o Radians per unit: 0.017453292519943299 • Prime Meridian o Name: Greenwich o Longitude 00° 00’ 00” Horizontal Datum: NAD83(NSRS-2007) Horizontal Units: Decimal Degrees (dd) Cluster Tolerance: 0.000000784415 dd Spatial Resolution: 0.0000000784415 dd Vertical Datum: NAVD88 Vertical Units: US Survey Feet Non-geodatabase formats shall maintain these spatial reference standards where allowable by filetype and format.
435	;#Flood Risk Database (FRD);#Flood Risk Data;#Non-Regulatory Products;#	Flood Risk Database	Delivered FRD raster datasets shall have the following spatial standards: Projection: Universal Transverse Mercator (UTM) Zone: Single zone which best covers the project area. Horizontal Datum: NAD83 (NRS_2007?) Horizontal Units: Meters Vertical Vatum: NAVD88.
436	;#Flood Risk Database (FRD);#Flood Risk Data;#Non-Regulatory Products;#	Flood Risk Database	The value to use for non-populated data for each field that is required by the Flood Risk Database Technical Reference or the SOW is as follows: • Text: “NP” • Numeric: -8888 • Date: 8/8/8888
437	;#Flood Risk Database (FRD);#Flood Risk Data;#Non-Regulatory Products;#	Flood Risk Database	The value to use for fields that are optional or required when applicable either by the Flood Risk Database Technical Reference or the SOW is as follows: • Text: Null (or “”, the empty string) • Numeric: -9999 • Date: 9/9/9999
439	;#Flood Risk Database (FRD);#Flood Risk Data;#Watershed;#Non-Regulatory Products;#	Flood Risk Database	The Watershed Boundary Dataset (WBD) (dated xxxxxxx) shall be the source for hydrologic basins in the FRD.

440	;#Flood Risk Database (FRD);#Flood Risk Report (FRR);#Flood Risk Map (FRM);#Non-Regulatory Products;#	Flood Risk Database	The FRD will enable the creation of other products including the FRR and FRM.
441	;#Flood Risk Database (FRD);#Flood Risk Report (FRR);#Non-Regulatory Products;#	Flood Risk Database	Text in the FRR_Custom and FRR_Project tables must be stored as an Office Open XML 2.0 compliant markup fragment containing only text and styles.
442	;#Flood Risk Data;#Flood Risk Database (FRD);#Non-Regulatory Products;#	Flood Risk Database	Mapping Partners must deliver Flood Risk Datasets that are compliant with the Flood Risk Database Technical Reference.
443	;#Flood Risk Database (FRD);#Flood Risk Data;#Non-Regulatory Products;#	Flood Risk Database	In order to maintain privacy, the L_Claims table, if there are less than five (5) claims, five (5) repetitive loss claims, or five (5) severe repetitive loss claims in a community, then those fields shall be set to null.
428	;#Flood Risk Map (FRM);#Non-Regulatory Products;#	Flood Risk Map	The FRM must include the following elements: o Map body o Title block o Map legend o Project locator o North arrow o Map scale
420	;#Flood Risk Report (FRR);#Flood Risk Database (FRD);#Flood Risk Data;#Non-Regulatory Products;#	Flood Risk Report	The Flood Risk Report will only report on the extent of the flood risk data that lies within the flood risk project area.

426	;#Flood Risk Report (FRR);#Non-Regulatory Products;#	Flood Risk Report	Each FRR shall include the following sections: i. Preface ii. Table of Contents 1. Introduction 2. Risk Analysis 3. Flood Risk Analysis Results 4. Actions to Reduce Flood Risk 5. Acronyms and Definitions 6. Additional Resources 7. Data Used to Develop Flood Risk Products
427	;#Flood Risk Report (FRR);#Non-Regulatory Products;#	Flood Risk Report	The FRR must include the following tables: Project Specific Tables: o List of all the communities in the project area; o CSLF summary; o Risk Assessment summary; Community Specific Tables: o Community overview; o CSLF summary; o Risk Assessment summary; o AoMI summary
306	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#Map Format and Layout;#FIRM Index;#Flood Theme;#Floodplain Mapping;#Floodplain Delineation;#	Flood Theme	Any previously existing mismatches in floodplains and flood hazard information between communities and counties must be resolved in the FIRM Database and on FIRM panels.
133	;#Regulatory Products;#Flood Insurance Rate Map (FIRM);#Redelineation;#Flood Theme;#Floodplain Mapping;#Floodplain Delineation;#	Floodplain Boundaries	The Mapping Partner must delineate the floodplain boundaries of the 1-percent-annual-chance flood and, if it is calculated, the 0.2-percent-annual-chance flood.
69	;#Hydraulics;#Floodway;#	Floodway	Floodway surcharge values must be between zero and 1.0 ft. If the State has established more stringent regulations, these regulations take precedence over the NFIP regulatory standard. Further reduction of maximum allowable surcharge limits can be used if required or requested and approved by the communities impacted.
70	;#Discovery;#Stakeholder;#Flood Theme;#Floodway Delineation;#Hydraulics;#Floodway;#	Floodway	If a stream forms the boundary between two or more States, either the 1.0-foot maximum allowable rise criterion or existing State agreements shall be used.

71	;#Flood Theme;#Floodway Delineation;#Hydraulics;#Floodway;#	Floodway	Revised floodway data must match any effective floodways at the limits of the flood risk project.
72	;#Discovery;#Stakeholder;#Flood Theme;#Floodway Delineation;#Hydraulics;#Floodway;#	Floodway	Use an equal conveyance reduction method to establish the minimal regulatory floodway.
73	;#Hydraulics;#Flood Theme;#Floodway Delineation;#Shallow Flooding;#Ice Jam;#1-D Steady;#1-D Unsteady;#2-D Riverine;#3-D Riverine;#Floodway;#Closed Basin;#Alluvial Fan;#Split Flow;#	Floodway	Mapping Partners must receive pre-approval from the RPO and agreement from the impacted communities and states with floodway authorities to determine floodways using methodologies other than steady-state, one-dimensional models.
76	;#Hydraulics;#Rainfall Runoff;#Floodway Delineation;#Sheet Flow;#Ice Jam;#1-D Steady;#1-D Unsteady;#2-D Riverine;#3-D Riverine;#Floodway;#Closed Basin;#Alluvial Fan;#Split Flow;#	Floodway	Storage considerations in hydrologic and hydraulic modeling of the unencroached condition should be revised to reflect any encroachment into storage areas indicated by the floodway configuration. If designated storage areas behind structures are accounted for in the flood discharge computations by routing the base flood hydrograph, no encroachment is to be allowed.
77	;#Hydraulics;#1-D Steady;#1-D Unsteady;#2-D Riverine;#3-D Riverine;#Floodway;#	Floodway	Floodway computations for tributaries must be developed without consideration of backwater from confluences.
108	;#Floodplain Mapping;#Floodway Delineation;#Preliminary FIRM;#Final FIRM;#	Floodway	Regulatory floodways must be mapped within the 1-percent-annual-chance floodplain and must meet the minimum standards outlined in Paragraph 60.3(d)(3) of the NFIP regulations.
132	;#Hydraulics;#Floodway;#Coastal Zones;#Coastal;#	Floodway	The regulatory floodway must be terminated at the boundary of the V1-30, VE, or V Zone, or where the mean high tide exceeds the 1-percent-annual-chance riverine flood elevation, whichever occurs further upstream.

335	;#Final FIRM (Regulatory Deliverables);#FIRM Database;#FIRM Graphic Standards;#Flood Insurance Rate Map (FIRM);#Flood Theme;#Preliminary FIRM (Deliverables);#	Floodway	Regulatory floodways shall be shown on the FIRM panel within the SFHA and, at lettered or numbered cross-section locations, floodway widths must agree with the values shown on the FDT in the FIS report and the FIRM Database tables, within a maximum tolerance of 5 percent of the map scale or 5 percent of the distance, whichever is greater.
117	;#Letter of Map Change (LOMC);#Letter of Map Revision (LOMR);#Flood Insurance Rate Map (FIRM);#Flood Insurance Study (FIS);#Regulatory Products;#	Future Conditions	Once future-conditions flood hazard data have been included on the FIRM and in the FIS report for a community, all revision submittals shall incorporate the future-conditions data developed by the community. The community is entirely responsible for developing and maintaining this data layer on a FIRM. The LOMR or CLOMR process cannot be used to revise the future conditions flood hazard data only.
135	;#Hydrology;#Hydraulics;#Riverine;#Shallow Flooding;#Regression;#Gage;#Rainfall Runoff;#Calibration;#Sheet Flow;#Ice Jam;#1-D Steady;#1-D Unsteady;#2-D Riverine;#3-D Riverine;#Floodway;#Closed Basin;#Alluvial Fan;#Split Flow;#	Future Conditions	Future conditions published on effective flood risk projects must be carried over on subsequent flood risk projects, unless invalidated.
152	;#Base Map;#Geospatial Data Coordination (GDC);#	GDC	Geospatial data for use in flood risk projects must be coordinated, collected, documented and reported with standardized, complete and current information in compliance with Federal geospatial data reporting standards.
153	;#Data Capture;#Base Map;#Geospatial Data Coordination (GDC);#	GDC	Mapping Partners must report details of cost, leverage, and project scope to FEMA's geospatial data tracking systems.
154	;#Base Map;#Geospatial Data Coordination (GDC);#	GDC	Mapping Partners must avoid all unnecessary duplication of Federal, State or local mapping efforts.
155	;#Base Map;#Geospatial Data Coordination (GDC);#	GDC	State Geospatial Data Coordination Procedures and Points of Contact must be reported to the RSC as new sources of Federal or State data are identified.

57	;#Hydrology;#Hydraulics;#Coastal;#Riverine;#Shallow Flooding;#Regression;#Gage;#Rainfall Runoff;#Calibration;#Sheet Flow;#Ice Jam;#1-D Steady;#1-D Unsteady;#2-D Riverine;#3-D Riverine;#Floodway;#Closed Basin;#Alluvial Fan;#Split Flow;#	H&H Analyses	The regulatory and non-regulatory flood risk products must be based on H&H analyses using existing ground conditions in the watershed and floodplain. The multiple profile and floodway runs must have the same physical characteristics in common for existing ground conditions. However, a community may choose to include flood hazard information that is based on future conditions on a FIRM (shown as shaded Zone X); in an FIS report; or non-regulatory products in addition to the existing-conditions.
58	;#Hydrology;#Hydraulics;#Riverine;#Shallow Flooding;#Regression;#Gage;#Rainfall Runoff;#Calibration;#Sheet Flow;#Ice Jam;#1-D Steady;#1-D Unsteady;#2-D Riverine;#3-D Riverine;#Floodway;#Closed Basin;#Alluvial Fan;#Split Flow;#	H&H Analyses	The hydrologic and hydraulic models must be calibrated and the results must be validated.
59	;#Hydrology;#Hydraulics;#Riverine;#Shallow Flooding;#Regression;#Gage;#Rainfall Runoff;#Calibration;#Sheet Flow;#Ice Jam;#1-D Steady;#1-D Unsteady;#2-D Riverine;#3-D Riverine;#Floodway;#Closed Basin;#Alluvial Fan;#Split Flow;#	H&H Analyses	Hydrologic and hydraulic analyses and calibration shall must include data from well-documented flood events (if available) representative of a modeled flood frequency.
60	;#Hydrology;#Hydraulics;#Riverine;#Shallow Flooding;#Regression;#Gage;#Rainfall Runoff;#Calibration;#Sheet Flow;#Ice Jam;#1-D Steady;#1-D Unsteady;#2-D Riverine;#3-D Riverine;#Floodway;#Closed Basin;#Alluvial Fan;#Split Flow;#	H&H Analyses	Any computer program used for hydrologic or hydraulic analyses must meet the criteria of 44 CFR 65.6a(6). Click to view regulation
61	;#Regulatory Products;#Submittal Requirements;#	H&H Analyses	Mapping Partners must prepare fully documented analyses, and documentation must be easily reproducible and include flood risk project methods, reasoning for method selection, input data and parameters, sources of data results, and justifications for major changes in computed flood hazard parameters. Methods must be documented to the extent that the purpose and input data and parameter requirements are clear, and the results can be reproduced. When more than one method is available to accomplish the purpose, the documentation must include the reasoning for using the chosen method. Documentation of input data must describe methods of measurements and sources from which data were obtained or measured. Documentation of parameters used in analyses, including initial and boundary conditions, must describe the derivation of those parameters, and methods of measurements and sources from which data supporting those parameters were obtained or measured.

62	;#Hydraulics;#Ice Jam;#Shallow Flooding;#1-D Steady;#1-D Unsteady;#2-D Riverine;#3-D Riverine;#Floodway;#Closed Basin;#Alluvial Fan;#Split Flow;#Coastal;#Stillwater;#Storm Surge;#	H&H Analyses	For new or updated flood hazard data used for the regulatory products must be supported by modelling and all regulatory products must be in agreement.
74	;#Hydrology;#Hydraulics;#Field Survey & Reconnaissance;#Terrain Data;#Breaklines;#Contours;#Digital Elevation Models (DEMs);#Triangular Irregular Networks (TINs);#Bathymetry;#Riverine;#Shallow Flooding;#Regression;#Gage;#Rainfall Runoff;#Calibration;#Sheet Flow;#Ice Jam;#1-D Steady;#1-D Unsteady;#2-D Riverine;#3-D	H&H Analyses	A registered professional engineer must certify the hydrologic and hydraulic analyses. All supporting data, including as-builts and structural works must also be certified by the appropriate entity. Please see 44 CFR 65.2. Click to view regulation
81	;#Hydraulics;#Shallow Flooding;#Ice Jam;#1-D Steady;#1-D Unsteady;#2-D Riverine;#3-D Riverine;#Floodway;#Closed Basin;#Alluvial Fan;#Split Flow;#	H&H Analyses	Ineffective and non-conveyance areas must be designated to reflect the actual conditions (such as topography and surface roughness) as closely as practical.
84	;#Hydrology;#Hydraulics;#Riverine;#Shallow Flooding;#Regression;#Gage;#Rainfall Runoff;#Calibration;#Sheet Flow;#Ice Jam;#1-D Steady;#1-D Unsteady;#2-D Riverine;#3-D Riverine;#Floodway;#Closed Basin;#Alluvial Fan;#Split Flow;#Flood Theme;#Floodplain Delineation;#Regulatory Products;#Flood Profiles;#	H&H Analyses	All riverine engineering flood risk projects shall consist of a hydraulic model with multiple frequencies: 0.2 percent, 1-percent, 2-percent, 4-percent, and 10-percent-annual-chance exceedance events. In addition, the "1-percent plus" flood elevation shall be modeled for all flood risk projects. The 1% plus flood elevation is defined as a flood elevation derived by using discharges that include the average predictive error for the regression equation discharge calculation for the flood risk project. This error is then added to the 1% annual chance discharge to calculate the new 1% plus discharge. The upper 84-percent confidence limit is calculated for Gage and rainfall-runoff models for the 1% annual chance event. The "1-percent plus" flood elevation must be shown on the Flood Profile in the FIS Report to best understand and communicate the uncertainty of the flood elevation. The mapping of the "1-percent +" floodplain is optional and will only be produced when it is determined to be appropriate.
141	;#Hydraulics;#Hydrology;#Riverine;#Ice Jam;#Floodway;#Discovery;#Stakeholder;#Coordination;#Outreach;#	Ice Jam	In regions of the United States where ice jams are typical, the Mapping Partner that performs the analysis shall investigate historical floods for evidence of ice-jam contribution as part of the Discovery process and coordinate the methodology with the impacted communities and state.
142	;#Hydraulics;#Hydrology;#Riverine;#Ice Jam;#	Ice Jam	Where ice jams occur, backwater effects must be taken into account.

143	;#Hydraulics;#Hydrology;#Riverine;#Ice Jam;#Floodway;#Discovery;#Stakeholder;#Coordination;#	Ice Jam	The appropriate methodology for the floodway designation in areas mapped with an ice-jam analysis shall be determined in coordination with the community.
144	;#Hydraulics;#Hydrology;#Riverine;#Ice Jam;#Coordination;#	Ice Jam	Mapping Partner and FEMA must discuss data and methodology used for ice jam analysis.
195	;#Letter of Map Change (LOMC);#Regulatory Products;#	Letter of Map Change (LOMC)	LOMC requestors shall submit requests, including the required review and processing fee if applicable, to the appropriate processing address. The address is provided in the application forms package that must be used in preparing a LOMC request for submittal.
197	;#Letter of Map Change (LOMC);#Regulatory Products;#	Letter of Map Change (LOMC)	Upon receipt of a LOMC, the processing Mapping Partner shall do the following: • Make an initial determination as to the expected processing procedure • Assign a case number • Create a case file • Enter the request into the MIP • Record the date of receipt
199	;#Letter of Map Change (LOMC);#Regulatory Products;#	Letter of Map Change (LOMC)	LOMC submittals must include certifications by a licensed professional authorized to certify the data under state law.
209	;#Letter of Map Change (LOMC);#Regulatory Products;#	Letter of Map Change (LOMC)	During the review of a LOMC, the processing Mapping Partner shall bring any violation or potential violation of the NFIP regulations to the attention of the FEMA PO or his/her designee. The FEMA PO or his/her designee shall then bring the matter to the attention of the FEMA RO for followup action with the community involved.
215	;#Letter of Map Change (LOMC);#Flood Insurance Rate Map (FIRM);#Regulatory Products;#	Letter of Map Change (LOMC)	Conditional LOMCs are subject to the same standards of a LOMA, LOMR-F, or LOMR except: • Because Conditional LOMCs are based on proposed construction, as-built information is not required. • The Conditional Comment Documents that are issued by FEMA do not amend the effective Flood Hazard Boundary Map (FHBM) or FIRM. • Conditional LOMCs must demonstrate compliance with the Endangered Species Act.

216	;#Letter of Map Change (LOMC);#Regulatory Products;#	Letter of Map Change (LOMC)	Within 3 days of receipt of the LOMC request, the LOMC Clearinghouse shall prepare and mail a letter to the requester acknowledging receipt of the request.
217	;#Letter of Map Change (LOMC);#Regulatory Products;#	Letter of Map Change (LOMC)	If all information is not received within 90-days from the date of the request for additional data, the Mapping Partner shall suspend processing of the LOMC.
218	;#Letter of Map Change (LOMC);#Base Flood Elevation (BFE);#Flood Insurance Rate Map (FIRM);#Letter of Map Revision (LOMR);#Regulatory Products;#	Letter of Map Change (LOMC)	A LOMA, CLOMA, LOMR-F, or CLOMR-F may not be issued or based on preliminary data for a FEMA-contracted Flood Map Project or community-initiated map revision; however, BFE data may be used from these sources if the effective SFHA does not have BFEs established and the preliminary data is the best available.
219	;#Letter of Map Change (LOMC);#Regulatory Products;#	Letter of Map Change (LOMC)	Following the preparation of the LOMC determination document, the processing Mapping Partner shall include the LOMC in the list of determinations that is to be sent to FEMA for official approval. Following approval, the processing Mapping Partner shall provide the requester with FEMA's final determination. The processing Mapping Partner also shall send a copy of the LOMC determination document to the community CEO and floodplain administrator and to the requester when applicable.
220	;#Letter of Map Change (LOMC);#Regulatory Products;#	Letter of Map Change (LOMC)	The processing Mapping Partner shall process reviews of requests for LOMCs in accordance with Parts 65, 70, and 72 of the NFIP regulations.
221	;#Letter of Map Change (LOMC);#Regulatory Products;#	Letter of Map Change (LOMC)	When processing a LOMC, the processing Mapping Partner shall prepare all letters in accordance with the requirements provided in the most recent version of the FEMA Document Control Procedures Manual .
226	;#Letter of Map Change (LOMC);#Regulatory Products;#	Letter of Map Change (LOMC)	LOMC requests involving below-grade crawlspaces constructed within the SFHA shall follow guidance provided provided in Technical Bulletin 11-01.

404	;#Letter of Map Change (LOMC);#Regulatory Products;#	Letter of Map Change (LOMC)	The Compendium of Flood Map Changes shall be published every 6 months. Publication shall occur within 15 days of the close of the 6-month reporting period.
408	;#Revalidation of LOMCs;#	Letter of Map Change (LOMC)	The assigned Mapping Partner shall process requests for Letters of Determination Review (LODRs).
116	;#Letter of Map Change (LOMC);#Letter of Map Revision (LOMR);#Regulatory Products;#	Letter of Map Revision (LOMR)	A LOMR or CLOMR request to change from Zone V to Zone A/Zone X (shaded) or from Zone A to Zone B/Zone X (shaded) must be supported by hydraulic computations.
196	;#Letter of Map Change (LOMC);#Letter of Map Revision (LOMR);#Regulatory Products;#	Letter of Map Revision (LOMR)	If required by state law, the Mapping Partner shall require State concurrence with the LOMR or CLOMR.
198	;#Letter of Map Change (LOMC);#Letter of Map Revision (LOMR);#Regulatory Products;#	Letter of Map Revision (LOMR)	After receiving a LOMR or CLOMR, the processing Mapping Partner shall determine if any ongoing, past, or future map actions affect the case.
200	;#Letter of Map Change (LOMC);#Letter of Map Revision (LOMR);#Regulatory Products;#	Letter of Map Revision (LOMR)	A LOMR or CLOMR must be supported by a topographic map that includes all relevant information required by FEMA.
201	;#Letter of Map Change (LOMC);#Letter of Map Revision (LOMR);#Flood Insurance Rate Map (FIRM);#Floodplain Mapping;#Floodway Delineation;#Regulatory Products;#	Letter of Map Revision (LOMR)	A LOMR or CLOMR must include proposed floodplain and/or floodway boundary delineations shown on an annotated FIRM.

202	;#Letter of Map Change (LOMC);#Letter of Map Revision (LOMR);#Regulatory Products;#	Letter of Map Revision (LOMR)	All LOMRs including new grading or structures must include certified as-built construction or grading plans
203	;#Letter of Map Change (LOMC);#Letter of Map Revision (LOMR);#Flood Insurance Study (FIS);#Regulatory Products;#	Letter of Map Revision (LOMR)	If the discharges in the effective FIS are not used in the LOMR or CLOMR submittal, the revision requester shall provide sufficient data to support the use of the new discharges for the 1-percent-annual-chance flood and, if necessary, the 10-, 2-, and 0.2-percent-annual-chance floods.
204	;#Letter of Map Change (LOMC);#Letter of Map Revision (LOMR);#Flood Profiles;#Floodway Delineation;#Regulatory Products;#	Letter of Map Revision (LOMR)	A LOMR or CLOMR in riverine areas must submit a model duplicating effective hydraulic model (multiple profile and floodway if appropriate).
205	;#Letter of Map Change (LOMC);#Letter of Map Revision (LOMR);#Floodway Delineation;#Regulatory Products;#	Letter of Map Revision (LOMR)	For a LOMR or CLOMR, an existing conditions hydraulic model with the same flooding events as the effective analyses, and, if in the effective riverine analysis, a floodway is required if the duplicate effective model does not reflect the floodplain conditions prior to the start of the project.
222	;#Letter of Map Change (LOMC);#Letter of Map Revision (LOMR);#Flood Insurance Study (FIS);#Flood Insurance Rate Map (FIRM);#Regulatory Products;#	Letter of Map Revision (LOMR)	When processing a LOMR, the Mapping Partner shall prepare the map (FIRM and/or FBFM panels), Flood Profile, and data tables (i.e., Floodway Data and Summary of Discharges) enclosures in accordance with the standards used for the effective map and attachments.
223	;#Letter of Map Change (LOMC);#Letter of Map Revision (LOMR);#Flood Insurance Study (FIS);#Regulatory Products;#	Letter of Map Revision (LOMR)	If a LOMR changes flood elevations, discharges,or floodway information the supporting information in the FIS shall be revised as necessary.
315	Levee;#FIRM Database;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Map Notes and Labeling;#	Levee	All levees stored in the FIRM Database shall be symbolized and labeled on the FIRM panel with the appropriate accreditation status noted.

375	;#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#Flood Theme;#Levee;#	Levee	The S_Levee table is required for any Preliminary or Final FIRM Database that include levees, floodwalls, closure structures, berms, embankments, or dikes that have been designed for flood control, whether or not they have been demonstrated to meet the NFIP requirements in 44 CFR 65.10.
401	;#Letter of Final Determination (LFD);#Appeals;#Expanded Appeals Process (EAP);#Scientific Resolution Panel (SRP);#Post-Preliminary;#	LFD	The LFD date must be no sooner than 60 days after the end of the 90-day appeal period or following resolution of all appeals.
402	;#Letter of Final Determination (LFD);#	LFD	The designated Mapping Partner shall submit an LFD package to FEMA HQ for review and approval prior to issuing LFDs to affected communities.
403	;#Letter of Final Determination (LFD);#	LFD	FEMA shall publish a final Flood Hazard Determination (FHD) notice in the Federal Register after issuance of the LFD.
169	;#Letter of Map Revision (LOMR);#Flood Insurance Study (FIS);#Flood Insurance Rate Map (FIRM);#Regulatory Products;#	LOMR Incorporation	The processing Mapping Partner shall ensure that currently effective LOMRs are incorporated into the new FIS report and FIRM unless new or revised flood hazard information is superseded by the LOMR.
368	;#Letter of Final Determination (LFD);#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#LOMCs Incorporated;#Flood Theme;#Floodplain Delineation;#	LOMR Incorporation	The Physical Map Revision (PMR) Mapping Partner must incorporate any Letters of Map Revision (LOMR) in the PMR footprint into the FIRM Database during the PMR project's timeframe, up until 60 days before LFD.
150	;#Discovery Report;#FIRM Index;#	Map Format and Layout	The FIRM paneling scheme shall follow that used by the USGS for the 7.5-minute-series quadrangle, or subdivisions thereof.

151	;#Map Format and Layout;#	Map Format and Layout	All digital FIRMs must be oriented so that grid north points to the top of the map sheet
289	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Map Format and Layout;#FIRM Index;#	Map Format and Layout	The FIRM panel map collar must include a North Arrow, Scale Bar, and map projection and datum information.
290	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Map Format and Layout;#FIRM Index;#	Map Format and Layout	First-time modernized FIRM panels must be in countywide format.
291	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#Map Format and Layout;#FIRM Index;#Flood Theme;#Floodplain Mapping;#Floodplain Delineation;#	Map Format and Layout	A determination to use Partial-Countywide FIRM panel and FIRM Database format must be coordinated with and approved by the FEMA Region and FEMA Headquarters.
292	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#Map Format and Layout;#FIRM Index;#Flood Theme;#Floodplain Mapping;#Floodplain	Map Format and Layout	If partial countywide FIRM panel mapping is pursued, the FIRM title block will list all of the jurisdictions on the FIRM panel, but the ones not included in the partial countywide mapping will be noted as having their FIRMs and FIS reports published separately.
293	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Map Format and Layout;#FIRM Index;#FIRM Database;#	Map Format and Layout	For partial countywide mapping the FIRM panel suffix is determined by using the next highest letter after considering existing map suffixes for the communities appearing on the revised panels. (Skip “I” and “O”).
294	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Map Format and Layout;#FIRM Index;#FIRM Database;#	Map Format and Layout	For partial countywide FIRM panel mapping, assign panel numbers for the entire county, just as for a full countywide panel layout. Numbering of countywide FIRM panels must consider the numbering of the existing panels so as not to create two panels with the same number (e.g. 0250). If there would be two panels with the same number, start countywide numbering by going up to the first even thousand above the highest existing FIRM panel number.

295	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Map Format and Layout;#FIRM Index;#FIRM Database;#	Map Format and Layout	For Partial countywide FIRM panel mapping, duplicate coverage by reissuing existing FIRM panels with blanked out areas that will be mapped on the new partial countywide FIRM panel and reference the new panels with a "This Area Shown" note.
296	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Map Format and Layout;#FIRM Index;#FIRM Database;#FIRM Graphic Standards;#	Map Format and Layout	If partial countywide FIRM panel mapping is pursued and existing FIRM panels are reissued with "This Area Shown" notes, the panels in Standard Format must be converted to Map Initiatives Format.
300	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Map Format and Layout;#FIRM Index;#FIRM Graphic Standards;#	Map Format and Layout	All FIRM panels shall be printed to full page, portrait orientation, Architectural (ARCH) D map frames with a trimmed paper size of: Height 36” x Width 24. The title block must appear in the bottom right corner and be 5.3 inches wide by 9 inches in height.
301	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Map Format and Layout;#FIRM Index;#FIRM Graphic Standards;#	Map Format and Layout	FIRM panels must include a white border on all sides and must contain a title block on the bottom right corner, and contain a legend, a Notes to Users Section, and a Panel Locator section across the bottom of the panel.
305	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Map Format and Layout;#FIRM Index;#Flood Theme;#Floodplain Mapping;#	Map Format and Layout	Countywide FIRM panel mapping must provide seamless coverage within the county area.
130	;#Hydraulics;#Hydrology;#Flood Theme;#Riverine;#Cross-sections;#Flood Control Structures;#Hydraulic Structures;#	Map Notes and Labelling	Models and work maps must clearly link features with unique identifiers.
338	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Floodway;#Flood Theme;#Map Notes and Labeling;#	Map Notes and Labelling	Special Flood Hazard Areas shall be labeled at least once with the flood zone on a FIRM panel and, if appropriate, with the static elevation, velocity, or depth.

339	Levee;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Flood Theme;#Map Notes and Labeling;#	Map Notes and Labelling	Zone X areas shall be labeled on a FIRM panel where they represent future conditions or areas protected by accredited levees.
340	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Flood Theme;#Map Notes and Labeling;#Base Flood Elevation (BFE);#	Map Notes and Labelling	In SFHAs with assigned static elevations, depths, or velocities, the static BFE, depth, or velocity value shall be placed under the zone label on FIRM Panels.
136	;#Regulatory Products;#Flood Theme;#FIRM Database;#Letter of Final Determination (LFD);#National Flood Hazard Layer (NFHL);#Final Regulatory Deliverables;#	National Flood Hazard Layer (NFHL)	The assigned Mapping Partner shall ensure that the FIRM data can be incorporated into the NFHL without issues. The FIRM data shall be loaded into the NFHL within 14 days after the Letter of Final Determination (LFD) date for the affected communities.
363	;#FIRM Database;#National Flood Hazard Layer (NFHL);#	National Flood Hazard Layer (NFHL)	The NFHL must be used as the source for effective digital FIRM Database data when starting FIRM updates, and used for mandatory edgematching at county/community boundaries.
376	;#Final FIRM (Regulatory Deliverables);#Final FIRM Database (Regulatory Deliverables);#FIRM Database;#Flood Insurance Rate Map (FIRM);#National Flood Hazard Layer (NFHL);#Physical Map Revision (PMR);#Preliminary FIRM (Deliverables);#Preliminary FIRM Database (Deliverables);#Regulatory Products;#	National Flood Hazard Layer (NFHL)	Mapping Partners must use the National Flood Hazard Layer (NFHL) as the initial digital flood hazard mapping source for all FIRM Database and FIRM panel updates.
377	;#Regulatory Products;#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#National Flood Hazard Layer (NFHL);#Physical Map Revision (PMR);#	National Flood Hazard Layer (NFHL)	For Physical Map Revisions (PMR), once the NFHL for a community is converted to the latest FIRM Database schema, all database submissions will also be required to conform to this schema.
379	;#Regulatory Products;#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#National Flood Hazard Layer (NFHL);#Physical Map Revision (PMR);#	National Flood Hazard Layer (NFHL)	For Physical Map Revisions (PMR), the revised FIRM database layers within the PMR panel footprint shall be incorporated into the rFHL.

<table>
<tr><td>414</td><td>;#Flood Risk Database (FRD);#Flood Risk Data;#Preliminary FIRM;#Non-Regulatory Products;#</td><td>Non-Regulatory Datasets</td><td>Flood risk datasets derived from new or updated data must reflect the regulatory elevations as shown on the preliminary FIRM.</td></tr>
<tr><td>415</td><td>;#Flood Risk Database (FRD);#Flood Risk Data;#Flood Insurance Rate Map (FIRM);#Non-Regulatory Products;#</td><td>Non-Regulatory Datasets</td><td>Flood risk datasets derived from effective data must reflect the effective regulatory elevations as shown on the FIRM.</td></tr>
<tr><td>417</td><td>;#Coastal;#Changes Since Last FIRM (CSLF);#Depth Grids;#Areas of Mitigation interest (AoMI);#Flood Risk Database (FRD);#Flood Risk Report (FRR);#Flood Risk Map (FRM);#Risk Assessment;#Flood Risk Data;#Non-Regulatory Products;#</td><td>Non-Regulatory Datasets</td><td>The minimum datasets associated with the Flood Risk Database, Flood Risk Report and Flood Risk Map are defined as follows:
<table>
<tr><th>Study Type / Dataset</th><th>New and Effective Digital Data (engineering/regulatory)</th><th>New Digital Data, No Effective Digital Data</th><th>No new study</th></tr>
<tr><td>Changes Since Last FIRM</td><td>Required</td><td>[Optional Enhancement]</td><td>N/A</td></tr>
<tr><td>Depth and Analysis Grids*</td><td>Required</td><td>Required</td><td>N/A</td></tr>
<tr><td>AOMI</td><td>Required</td><td>Required</td><td>Required</td></tr>
<tr><td>Risk Assessment</td><td>Required (Refined)</td><td>Required (Refined)</td><td>Required (AAL)</td></tr>
</table>
*For riverine, this is for the 5 modeled return intervals, for coastal this is for the 1% annual chance flood.</td></tr>
<tr><td>425</td><td>;#Flood Risk Database (FRD);#Flood Risk Data;#National Flood Hazard Layer (NFHL);#Non-Regulatory Products;#</td><td>Non-Regulatory Datasets</td><td>The National Flood Hazard Layer (or other comparable dataset with all effective FIRMs and LOMRs incorporated) shall be the source for the effective flood hazard area data for non-regulatory products.</td></tr>
<tr><td>213</td><td>;#Regulatory Products;#</td><td>Notice-to-User</td><td>During the Notice-to User revision process, the processing Mapping Partner shall obtain FEMA HQ due process lead's approval of the action taken and document the decision in writing.</td></tr>
<tr><td>214</td><td>;#Flood Insurance Study (FIS);#Flood Insurance Rate Map (FIRM);#Regulatory Products;#</td><td>Notice-to-User</td><td>During the Notice-to User revision process:
• the FIS report, FIRM, and/or FBFM must be corrected and indicate on the document the reprinted date;
• the corrected components must be distributed to all entities that received the defective product; and
• the corrected components must be updated on the MSC site.</td></tr>
<tr><td>227</td><td>;#Flood Insurance Study (FIS);#Flood Insurance Rate Map (FIRM);#Regulatory Products;#</td><td>Notice-to-User</td><td>The Notice-to-Users revision only shall be used to correct errors or omissions in the FIS or on the FIRM that do not affect due process. A Notice-to-Users revision shall not change the effective date.</td></tr>
</table>

49	;#Elevation Data;#Photogrammetry;#Topographic Data;#	Photogrammetry	All FEMA funded aerial mapping must be certified by a licenced professional or certified photogrammetrist
103	;#Letter of Map Revision (LOMR);#	PMR	For areas where new regulatory maps are being issued, flood hazard information on the effective NFIP map (i.e., FIRM, FBFM, FHBM) that is not being updated through a separate flood hazard analysis or floodplain boundary redelineation shall be “carried over” to the new or updated FIRM.
194	;#Letter of Map Revision (LOMR);#	PMR	Regulatory flood map updates (FIRM updates) are required wherever Base Flood Elevations (BFEs) change by more than one foot in either direction. Regulatory flood map updates (FIRM updates) are required wherever floodplain widths increase or decrease by more than 10% percent on average across the stream segment
206	;#Letter of Map Revision (LOMR);#Floodway Delineation;#Regulatory Products;#	PMR	If the revision is submitted as the result of a project, a post-project, revised hydraulic model must be submitted with the same flooding events as the effective analysis, and, if in the effective riverine analysis, a floodway.
207	;#Flood Insurance Study (FIS);#Flood Insurance Rate Map (FIRM);#Regulatory Products;#	PMR	At a minimum, the analyses and other supporting data provided in support of a revision request must be equivalent to or better than the scientific and technical data employed by FEMA for the preparation of the effective FIS report, FIRM, and FBFM.
208	;#Regulatory Products;#	PMR	If the effective hydraulic model is available, the revision requester shall use it to establish baseline conditions.
211	;#Letter of Map Change (LOMC);#Letter of Map Revision (LOMR);#Physical Map Revision (PMR);#Regulatory Products;#	PMR	If the footprint of the revised floodplains in a LOMR is larger than one effective panel, the processing Mapping Partner will review the technical data and then shall prepare a letter, referred to as a 316-PMR letter, to inform the community CEO and floodplain administrator that a PMR will be prepared and request that the community submit any information to be incorporated into the PMR.

378	;#Regulatory Products;#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#Flood Insurance Study (FIS);#Final FIS (Regulatory Deliverables);#Preliminary FIS (Deliverables);#FIRM Index;#National Flood Hazard Layer (NFHL);#Physical Map Revision (PMR);#	PMR	For Physical Map Revisions (PMR) where updated political boundaries are available for the entire extent of the FIRM database, the S_Pol_AR feature class shall be incorporated into the rFHL and shown on the FIRM Panel Index.
193		Post-Preliminary Deliverables	The Flood Hazard Determinations (FHDs)-on-the-Web tool is the authoritative source for creating and publishing Flood Hazard Determination Notices for flood risk projects and Letters of Map Revision (LOMRs) that result in new or modified flood hazard information.
393	;#Final Regulatory Deliverables;#	Post-Preliminary Deliverables	The community must receive a copy of the final FIRM 90 days before the effective date.
394	;#Data Capture;#Letter of Map Change (LOMC);#Regulatory Products;#Final Regulatory Deliverables;#	Post-Preliminary Deliverables	The Engineering Library shall be the official repository for all technical engineering data including LOMCs, TSDN and related flood risk project documentaiton. Information shall be archived and maintained in accordance with FEMA records management standards.
395	;#Data Capture;#Letter of Final Determination (LFD);#Post-Preliminary Processing;#	Post-Preliminary Deliverables	All Mapping Partners must submit FEDD files to FEMA Headquarters (or its designee) for review 60 days before the LFD is scheduled to be issued.
396	;#Data Capture;#Letter of Final Determination (LFD);#Post-Preliminary Processing;#	Post-Preliminary Deliverables	Mapping Partners performing post-preliminary processing must compile the Flood Elevation Determination Docket (FEDD) and all associated correspondence for each affected community in accordance with all relevant regulations. When more than one Mapping Partners is responsible for post-preliminary activities, each Mapping Partner must ensure the FEDD and all related documentation is complete at the time the responsibility is transferred to the next Mapping Partner.

397	;#Data Capture;#Letter of Final Determination (LFD);#Post-Preliminary Processing;#Flood Theme;#Floodplain Mapping;#Floodplain Boundary Standard (FBS);#	Post-Preliminary Deliverables	Mapping Partners must submit the following data at the end of each mapping project: • Floodplain Boundary Standard (FBS) Self-Certification Document (submitted within 30 days after issuance of preliminary maps); • QA report stating compliance with the FBS standard. • Revised Floodplain Boundary Standard Self-Certification Document (submitted within 30 days after issuance of the LFD if floodplain boundaries were revised during the post-preliminary phase); • Correspondence file including any documentation not previously submitted during earlier tasks or as part of the FEDD file related to coordination and processing decisions made during the course of the flood risk project. • Flood Elevation Determination Docket (FEDD) for each affected community • FEDD Checklist for each FEDD file • Technical Study Data Notebook (TSDN) Checklist and Certification form
398	;#Data Capture;#Letter of Final Determination (LFD);#Post-Preliminary Processing;#	Post-Preliminary Deliverables	The FEDD files must be PDFs that are separate for each community.
400	;#Regulatory Products;#FIRM Database;#Final FIRM Database (Regulatory Deliverables);#Flood Insurance Rate Map (FIRM);#Final FIRM (Regulatory Deliverables);#FIRM Database Metadata;#Flood Insurance Study (FIS);#Final FIS (Regulatory Deliverables);#Physical Map Revision (PMR);#Submittal Requirements;#	Post-Preliminary Deliverables	Map Service Center deliverables must be uploaded through the Mapping Information Platform (MIP) during the “Submit MSC Deliverables” task.
166	;#Post-Preliminary;#	Prelim Comment Period	Following issuance of the Preliminary copies of the FIRM and FIS report, FEMA shall provide a period (usually 30 days) for community officials, community residents, and other interested Mapping Partners to review the Preliminary copies of the FIRM and FIS report before proceeding with processing.
163	;#Preliminary FIRM;#Preliminary FIS;#Preliminary FIRM Database;#Quality Review;#Summary of Map Actions (SOMA);#	Prelim Distribution	The Preliminary digital FIRM Database shall be distributed for review with the hardcopy FIRM and FIS report.
164		Prelim Distribution	Obtain FEMA Regional office approval before distributing preliminary and revised preliminary products.

165	;#Preliminary FIRM (Deliverables);#Preliminary FIS (Deliverables);#Summary of Map Actions (SOMA);#Stakeholder;#	Prelim Distribution	The designated Mapping Partner shall distribute Preliminary/Revised Preliminary copies of the FIRM, FIS report, SOMAs (if modified during Revised Preliminary), and Letters to the community Chief Executive Officer (CEO) and floodplain administrator; State NFIP Coordinator; and other identified stakeholders as appropriate.
172	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#FIRM Graphic Standards;#Map Format and Layout;#Map Notes and Labeling;#FIRM Index;#	Prelim Distribution	All Preliminary Title Blocks shall be stamped “Preliminary” or “Revised Preliminary” as appropriate.
173	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#FIRM Graphic Standards;#Map Format and Layout;#Map Notes and Labeling;#FIRM Index;#	Prelim Distribution	No effective date or map revised date shall be shown on the preliminary or revised preliminary title blocks.
80	;#Regulatory Products;#Profile Baseline;#Redelineation;#Flood Profiles;#FIS Tables;#Flood Insurance Study (FIS);#	Profile Baseline	If the floodplain centerline crosses the floodplain to form a more direct flow path than the water line, the case must be documented and the flow path shown on the FIRM and labeled “Profile Baseline.” Flow distances in one-dimensional models must be referenced to the profile baseline.
312	Riverine;#Profile Baseline;#Base Flood Elevation (BFE);#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Map Notes and Labeling;#	Profile Baseline	A profile baseline must be shown on FIRM panels for all flood risk projects with profiles or otherwise established riverine BFE (static elevations excluded), and for modeled riverine Zone A areas.
314	Riverine;#Profile Baseline;#Base Flood Elevation (BFE);#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Map Notes and Labeling;#Base Map;#Vector;#	Profile Baseline	Hydrographic feature lines represented on FIRM panels must not obscure the profile baseline symbology.
1	;#Base Map;#Topographic Data;#Floodplain Mapping;#Flood Insurance Rate Map (FIRM);#Flood Insurance Study (FIS);#Regulatory Products;#Non-Regulatory Products;#FIRM Database;#Flood Risk Report (FRR);#Flood Risk Map (FRM);#Flood Risk Database (FRD);#	Project Initiation	All flood risk projects and map revisions / amendments must be tracked in the MIP.

2	;#Coordinated Needs Management System (CNMS);#	Project Initiation	FEMA shall form a Project Management Team (PMT) as soon as the Flood Risk Project is initiated. The PMT shall manage the project for its entire lifecycle.
3	;#Project Scope;#Discovery;#	Project Initiation	When a community is initially considered for a Flood Map Project involving a new or revised flood hazard analysis, FEMA must establish and maintain a community case file per CFR 44 66.3.
192		Project Initiation	Unique FEMA Case Numbers (e.g., 01-05-1234R) shall be assigned.
82	;#Regulatory Products;#Final Regulatory Deliverables;#	Project Management	Final invoices shall not be paid until a TSDN is submitted, and all MIP and contract requirements are met.
5	;#Project Scope;#	Project Planning	No stream segment or subwatershed will receive a lower level of regulatory flood map product than what currently exists on effective maps.
12	;#Coordinated Needs Management System (CNMS);#	Project Planning	Each fiscal year, the Regions shall have a plan to evaluate all CNMS flooding sources within a 5-year period.
14	;#Coordinated Needs Management System (CNMS);#Discovery Meeting;#	Project Planning	Regional decisions to prioritize, assess, and perform engineering analyses along various flooding sources must be supported by the data contained in CNMS.

16	;#Coordinated Needs Management System (CNMS);#	Project Planning	Each flooding source must be evaluated in CNMS at least once within a 5-year period.
17	;#Discovery;#	Project Planning	Discovery is mandatory for all flood risk projects.
22	;#Discovery;#	Project Planning	Discovery must be completed prior to final purchases being made for a complete flood risk project.
83		Project Planning	The FEMA Regional staff initiating a project shall engage HMA and Mitigation Planners to avoid duplication of benefits through funding to CTPs.
85	;#Coastal;#Coordination;#	Project Planning	For coastal flood risk projects, the Mapping Partner shall document deviations from FEMA guidance and consult the FEMA Project Officer for approval.
110	;#Project Scope;#Discovery Meeting;#	Project Planning	Flooding sources with contributing drainage area less than 1 square mile and/or with an average flood depth of less than one foot should not be included in the flood risk project scope of work, unless they have been analyzed on the effective FIRM or a justified need is identified during Discovery.
111	;#Floodplain Mapping;#	Project Planning	During a Flood Risk Project, SFHAs may not be removed from the FIRM (or redesignated as shaded Zone X) unless it can be proven that the contributing drainage area is less than one mile and the average flood depth is less than one foot.

157	;#Base Map;#Geospatial Data Coordination (GDC);#	Project Planning	FEMA will not provide funding for new base map data collection as part of a specific Flood Risk Project.
323	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Map Notes and Labeling;#Map Format and Layout;#Projections and Coordinate Systems;#	Projections and Coordinate Systems	The assigned Mapping Partner shall ensure that the FIRM panel contains a primary horizontal reference grid and secondary horizontal reference grid ticks to orient map readers to real-world coordinates.
324	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Map Notes and Labeling;#Map Format and Layout;#Projections and Coordinate Systems;#	Projections and Coordinate Systems	The latitude and longitude in degrees, minutes, and seconds shall be referenced at each of the four corners of the FIRM panel, and the UTM and State Plane reference grids (or grid ticks) shall be included on the FIRM panel.
325	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Map Notes and Labeling;#Map Format and Layout;#Projections and Coordinate Systems;#	Projections and Coordinate Systems	If UTM is not the primary grid of the FIRM panel, then it shall be used as the secondary reference grid (shown as grid ticks) and included on the FIRM panel.
326	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Map Notes and Labeling;#Map Format and Layout;#FIRM Database;#Projections and Coordinate Systems;#	Projections and Coordinate Systems	The primary horizontal reference grid of the FIRM panel shall be the same as the coordinate system of the digital data.
327	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Map Notes and Labeling;#Map Format and Layout;#Projections and Coordinate Systems;#	Projections and Coordinate Systems	The secondary grid ticks shall be shown as cross hairs within the body of the FIRM panel and ticks along the edge of the FIRM panel.
328	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Base Map;#Vector;#FIRM Graphic Standards;#	Projections and Coordinate Systems	U.S. PLSS features shall be shown on a FIRM panel if they are available in digital format and were shown on a previous FIRM.

329	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Base Map;#Vector;#FIRM Graphic Standards;#Map Format and Layout;#FIRM Database;#	Projections and Coordinate Systems	When PLSS referencing is used, PLSS area polygons shall be clipped at the panel neatline and at the political boundaries of the subject FIRM database.
330	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#FIRM Graphic Standards;#Map Notes and Labeling;#Map Format and Layout;#	Projections and Coordinate Systems	When PLSS referencing is used, Township lines and Range boundaries shall be labeled on the FIRM panel and if a panel does not contain any township and range boundaries a township and range information note shall be used. Unless the section area is too small to accommodate a label without crowding other relevant data, PLSS sections shall be labeled on the FIRM panel.
331	;#Flood Insurance Rate Map (FIRM);#Preliminary FIRM (Deliverables);#Final FIRM (Regulatory Deliverables);#Base Map;#Vector;#FIRM Graphic Standards;#Map Format and Layout;#FIRM Database;#Projections and Coordinate Systems;#	Projections and Coordinate Systems	If the subject community uses a PLSS grid, the primary grid shown on the FIRM panel shall be the PLSS and the secondary grid ticks shall be the same as the coordinate system of the digital data.
366	;#FIRM Database;#Preliminary FIRM Database (Deliverables);#Final FIRM Database (Regulatory Deliverables);#Projections and Coordinate Systems;#	Projections and Coordinate Systems	For FIRM Databases, the horizontal projection shall be UTM (NAD83 meters or NAD83 HARN meters) or State Plane (NAD83 feet or NAD83 HARN feet) using Geodetic Reference System 1980 (GRS 80) ellipsoid or revisions thereof.
39		Quality Management	All mapping partners must have a FEMA-approved Quality Management Plan that includes details of how FEMA standards will be met.
190	;#Quality Review;#	Quality Review	Any technical review comments received by the Mapping Partner shall be fully addressed and resolutions shall be fully documented.
104	;#Coordinated Needs Management System (CNMS);#Project Scope;#Redelineation;#Topographic Data;#	Redelineation	Redelineation shall only be used when the terrain source data is better than effective and the stream reach is classified as valid in the CNMS database.

134	;#Flood Theme;#Redelineation;#Discovery;#Coordinated Needs Management System (CNMS);#	Redelineation	If the re-delineation topographic data indicates that the effective hydraulic analyses are no longer valid, the Mapping Partner must coordinate further actions with the RPO and the CNMS database must be updated.
405	;#Revalidation of LOMCs;#	Revalidation	2-4 weeks before the effective date of the revised map, the assigned Mapping Partner shall submit a revalidation package to FEMA for review and approval prior to issuing the revalidation letters.
406	;#Revalidation of LOMCs;#	Revalidation	The assigned Mapping Partner shall provide the LOMC-VALID letter to the community CEO and floodplain administrator and the LOMC Subscription Service Coordinator.
407	;#Letter of Map Change (LOMC);#Regulatory Products;#	Revalidation	The Mapping Partner shall twice monthly compile documents in support of the LOMC distribution service, including final LOMCs with attachments, final SOMAs, and revalidation letters.
99	;#Hydraulics;#Riverine;#Shallow Flooding;#Floodway;#Floodplain Mapping;#Floodway Delineation;#Discovery;#Stakeholder;#Coordination;#	Shallow Flooding	Areas of shallow flooding shall not have modeled/computed floodways due to the inherent uncertainties associated with their flow patterns. However, communities can choose to have administrative floodways for such areas.
100	;#Hydraulics;#Riverine;#Shallow Flooding;#Base Flood Elevation (BFE);#	Shallow Flooding	Ponding areas with depths between 1 and 3 feet shall be designated and delineated as Zone AH.
102	;#Hydraulics;#Riverine;#Shallow Flooding;#	Shallow Flooding	For shallow flooding areas, the Mapping Partner shall not calculate the 10-, 4-, 2-, or 0.2-percent-annual-chance flood elevations.

140	;#Hydraulics;#Riverine;#Shallow Flooding;#Elevation Data;#Topographic Data;#Flood Theme;#Floodplain Delineation;#	Shallow Flooding	Shallow flooding areas shall not contain non-SFHA islands based on small scale-scale topographic variations.
101	;#Hydraulics;#Riverine;#Shallow Flooding;#Sheet Flow;#	Sheet Flow	Sheet runoff areas shall be delineated as Zone AO with average flooding depths above the ground surface, rounded to the nearest whole foot, indicated on the work map or digital GIS data.
167	;#Flood Insurance Rate Map (FIRM);#Summary of Map Actions (SOMA);#Letter of Final Determination (LFD);#Regulatory Products;#Preliminary FIRM;#	SOMA	FEMA will provide communities with a Summary of Map Actions (SOMA) when the revised FIRM panels are issued Preliminary and at LFD
168	;#Letter of Map Change (LOMC);#Revalidation of LOMCs;#Summary of Map Actions (SOMA);#	SOMA	Mapping Partners shall review and categorize all effective LOMCs: 1. through a draft SOMA before the Preliminary copies of the affected FIRM panel(s) are prepared and sent to the community for review and comment; 2. through a revised draft SOMA before Revised Preliminary copies of the affected FIRM panel(s) are prepared and sent to the community for review and comment; 3. through a Final SOMA before the Letter of Final Determination (LFD) letter is sent to the community; and 4. through a revalidation letter before the effective date of the new or revised FIRM panels.
18	;#Data Capture;#Tribal;#Discovery;#	Stakeholder Engagement	All communities and Tribes must be given an opportunity to review and make corrections to their political / territorial boundaries and other data and information collected during Discovery.
19	;#Stakeholder;#Discovery Meeting;#Discovery;#	Stakeholder Engagement	Project stakeholders must be contacted prior to the Discovery Meeting.

20	;#Stakeholder;#Discovery;#	Stakeholder Engagement	At least one representative from every community and area of influence must be engaged during Discovery.
28	;#Stakeholder;#Project Scope;#Discovery;#	Stakeholder Engagement	If it is determined that a flood risk project is not appropriate, that decision must be communicated to stakeholders.
29	;#Stakeholder;#Discovery;#	Stakeholder Engagement	The Mapping Partner shall identify data or perform an analysis that illustrates potential changes in flood elevation and mapping, then share and discuss results with stakeholders. If available data does not clearly illustrate the impact, an analysis is required.
30	;#Project Scope;#Stakeholder;#Discovery;#	Stakeholder Engagement	The flood risk project scope of work must be developed in coordination with project stakeholders. The purchased flood risk project scope of work must be shared with project stakedholders.
31	;#Stakeholder;#Mitigation Actions;#Discovery;#	Stakeholder Engagement	Discovery must include a discussion with stakeholders regarding risk identification, mitigation capabilities and actions, planning, and risk communication which leads to a determination as to whether a flood risk project is appropriate.
33	;#Coastal;#Storm Surge;#Discovery;#	Stakeholder Engagement	For coastal projects that will begin with a storm surge analysis, stakeholder coordination must occur by the end of the storm surge flood risk project effort and continue throughout the rest of the coastal flood risk project.
34	;#Coastal;#Storm Surge;#Discovery;#	Stakeholder Engagement	When storm surge analyses are included in a flood risk project, Discovery efforts must include a discussion of how storm surge estimates have changed since the effective flood risk project.

35	;#Tribal;#Discovery;#	Stakeholder Engagement	The FEMA Regional Office must be consulted as to how Tribal Nations should be included in the overall Discovery efforts.
68	;#Regulatory Products;#Flood Theme;#Discovery;#Stakeholder;#Hydrology;#Hydraulics;#Coastal;#Riverine;#Shallow Flooding;#Regression;#Gage;#Rainfall Runoff;#Calibration;#Sheet Flow;#Ice Jam;#1-D Steady;#1-D Unsteady;#2-D Riverine;#3-D Riverine;#Floodway;#Closed Basin;#Alluvial Fan;#Split Flow;#Floodplain Delineation;#Floodway Delineation;#	Stakeholder Engagement	Mapping Partners must regularly engage community officials, State NFIP Coordinators, and FEMA, on the status and findings of engineering analyses and floodplain mapping, including floodway development, throughout the data development process.
228	;#Discovery;#Stakeholder;#Flood Theme;#Floodway Delineation;#Hydraulics;#Floodway;#	Stakeholder Engagement	If more than one community is affected by a floodway, all communities must be included in the discussions.
109	;#Floodplain Mapping;#Floodway Delineation;#Preliminary FIRM;#Final FIRM;#	Stream Centerline	Stream channel boundaries or centerlines must be mapped within the identified 1-percent-annual-chance floodplain; if a regulatory floodway is developed, the stream must stay within the regulatory floodway boundaries.
38	;#Data Capture;#Discovery;#Discovery Meeting;#Discovery Report;#Project Charter;#Base Map;#Geospatial Data Coordination (GDC);#Regulatory Products;#FIRM Database;#Submittal Requirements;#	Submittal Requirements	In addition to the spatial data specified in Table 3 of the FIRM Database technical reference, Mapping Partners must submit the following Discovery data: • Project Team – Contact information for each member of the flood risk project management team. • Discovery Report – Required, if applicable • Discovery Meeting Invitation Letters • Discovery Meeting Agenda • Discovery Meeting Attendance Record • Discovery Meeting Summary • Project Charter – Required, if applicable • Geospatial Data Summary
51	;#Data Capture;#Topographic Data;#Elevation Data;#Terrain Data;#	Submittal Requirements	The minimum data required for the terrain data submission are the source terrain and the output processed terrain data used in the flood risk project.

52	;#Data Capture;#Regulatory Products;#FIRM Database;#Submittal Requirements;#Topographic Data;#Elevation Data;#LiDAR / Mass Points;#Terrain Data;#Contours;#Digital Elevation Models (DEMs);#Triangular Irregular Networks (TINs);#Breaklines;#Photogrammetry;#Bathymetry;#	Submittal Requirements	In addition to the spatial data specified in Table 3 of the FIRM Database technical reference, Mapping Partners must submit the following Terrain data when it is used to perform a flood risk project: • Light Detection and Ranging(LiDAR) data; For projects that acquire new LiDAR data: – QA/QC reports – Project documentation – Raw point cloud data – Classified point cloud data – Breaklines, if applicable – Optional digital bare earth elevation data product(s) For existing LiDAR data not processed as part of the project, the bare earth data must be submitted, and the submittal of the all returns data (if available) is optional. • Photogrammetric data; – Collection Report – Survey Report – Aerial triangulation (AT) report – Processing Report – QA/QC reports – Geo-referenced extents of each delivered dataset – Digital bare earth elevation data product – Breaklines, if applicable
52 continued	;#Data Capture;#Regulatory Products;#FIRM Database;#Submittal Requirements;#Topographic Data;#Elevation Data;#LiDAR / Mass Points;#Terrain Data;#Contours;#Digital Elevation Models (DEMs);#Triangular Irregular Networks (TINs);#Breaklines;#Photogrammetry;#Bathymetry;#	Submittal Requirements	• Tiling index for data files; • Contours; • Bathymetry; • Digital Elevation Models (DEMs); • Triangulated Irregular Networks (TINs) and ESRI Terrain datasets; • Hydro-corrected DEMs; • USGS topographic data; and • All other relevant terrain data.
53	;#Data Capture;#Topographic Data;#Elevation Data;#Terrain Data;#LiDAR / Mass Points;#	Submittal Requirements	For FEMA-funded LiDAR acquisition projects, LiDAR data must be submitted in its entirety to the MIP even if the collection footprint extends beyond the current Risk MAP project area. If LiDAR data are obtained for a project from a third party (e.g., existing LiDAR data from a County), only LiDAR data used for that project must be submitted to the MIP. Third party LiDAR data outside the project area must not be submitted.
160	;#Data Capture;#Regulatory Products;#FIRM Database;#Submittal Requirements;#Hydraulics;#Alluvial Fan;#	Submittal Requirements	In addition to the spatial data specified in the FIRM Database Submittal Table of the FIRM Database Technical Reference, Mapping Partners must submit the following Alluvial Fan data: • A technical report that describes the processes for identifying the alluvial fan, the areas of active and inactive alluvial fan flooding, and the procedures for determining the aerial extent and/or elevation of the base flood.

162	;#Data Capture;#Base Map;#	Submittal Requirements	The minimum required data for the base mapping data submission are the source mapping data and the base map files used in the flood risk project.
174	;#Data Capture;#	Submittal Requirements	Mapping Partners must submit certification of completeness of submitted data for FEMA-funded flood risk projects when their work on a project is complete (via the certification forms provided). This form must cover the Mapping Partner's scope of work for the project and be signed and dated by the manager responsible for the work.
175	;#Data Capture;#Flood Theme;#Floodplain Mapping;#Regulatory Products;#FIRM Database;#Submittal Requirements;#Flood Insurance Study (FIS);#FIS Tables;#Flood Profiles;#Topographic Data;#Elevation Data;#Terrain Data;#Base Map;#	Submittal Requirements	In addition to the spatial data specified in the FIRM Database Submittal Table of the FIRM Database Technical Reference, Mapping Partners responsible for Floodplain Mapping must submit the following data: • The preliminary FIS report • Topographic data files (if not submitted under “Develop Topographic Data”) • Base map data files (if not submitted under “Acquire Base Map”)
177	;#Data Capture;#Non-Regulatory Products;#Flood Risk Report (FRR);#Risk Assessment;#Flood Risk Map (FRM);#Flood Risk Database (FRD);#Flood Risk Data;#	Submittal Requirements	Mapping Partners must submit any supporting data that are used in performing risk assessment analyses and the creation of flood risk products. Mapping Partners must submit all relevant data that fully documents their flood risk analyses including input and output files associated with the flood risk assessments, the Flood Risk Report, the Flood Risk Map; the MXD(s) for the Flood Risk Map; and any other backup data.
179	;#Data Capture;#Discovery;#Project Charter;#	Submittal Requirements	If a Project Charter is signed, it must be submitted to the TSDN folder on the MIP.
182	;#Data Capture;#	Submittal Requirements	The submitting Mapping Partner must retain copies of all project-related data for a period of three years.
183	;#Data Capture;#	Submittal Requirements	Mapping Partners must submit a file that compiles general correspondence for each task.

185	;#Data Capture;#	Submittal Requirements	PDF files created by the Mapping Partner must be created using the source file (e.g., MS Word file). Created PDF files must allow text to be copied and pasted to another document.
186	;#Data Capture;#	Submittal Requirements	Mapping Partners must submit a narrative that summarizes the SOW (streams analyzed, type of flood risk project, etc.), direction from FEMA, assumptions and issues, and any information that may be useful for the other mapping partners working on the project or subsequent users of the flood risk project backup data for each task.
187	;#Data Capture;#Coastal;#Levee;#Regulatory Products;#FIRM Database;#Submittal Requirements;#Flood Insurance Study (FIS);#FIS Tables;#Flood Profiles;#Hydrology;#Hydraulics;#Alluvial Fan;#	Submittal Requirements	In addition to the spatial data specified in the FIRM Database Submittal Table of the FIRM Database Technical Reference, Mapping Partners must submit all relevant data that fully documents their engineering analyses including input and output files for the models used; a report that documents the methodology, assumptions, and data used in the engineering analyses; applicable draft FIS text sections, tables, graphics, and profiles; and any other backup data.
399	;#Regulatory Products;#FIRM Database;#Final FIRM Database (Regulatory Deliverables);#FIRM Database Metadata;#Flood Insurance Rate Map (FIRM);#Final FIRM (Regulatory Deliverables);#Flood Insurance Study (FIS);#Final FIS (Regulatory Deliverables);#Physical Map Revision (PMR);#Base Map;#Raster;#Ortho;#Submittal	Submittal Requirements	All Mapping Partners must provide (in electronic format) all items specified in the Map Service Center Technical Reference in the specified format.
429	;#Flood Risk Database (FRD);#Flood Risk Report (FRR);#Flood Risk Map (FRM);#Data Capture;#Non-Regulatory Products;#	Submittal Requirements	A complete flood risk product submittal for public distribution shall contain the following: 1. FRD files in ESRI fGDB and SHP formats 2. Digital Rasters in the fGDB and GeoTiff formats 3. Metadata file in accordance with FRD metadata profile 4. Full text PDF of the FRR with bookmarks, a hyperlinked table of contents and section headings. 5. PDF of the FRM
210	;#Letter of Map Revision (LOMR);#Flood Insurance Study (FIS);#Flood Insurance Rate Map (FIRM);#Regulatory Products;#	Topographic Data	For floodplain boundary revisions based on new or more detailed topographic information, the revision requester will not be required to submit revised hydraulic analyses unless the changes in ground contours have significantly affected the geometry of cross sections used for the effective FIS and FIRM or have altered effective-flow areas.
118	;#Regulatory Products;#Flood Insurance Rate Map (FIRM);#Floodplain Mapping;#Base Flood Elevation (BFE);#Floodplain Delineation;#	Vertical Datum	For areas within the continental United States, all new flood maps and updates must be referenced to NAVD88, with specific exceptions. Waivers should be approved by the Regional Mitigation Division Director and coordinated with the Headquarters Regional Engineer.

119	;#Regulatory Products;#Flood Insurance Rate Map (FIRM);#Floodplain Mapping;#Base Flood Elevation (BFE);#Floodplain Delineation;#	Vertical Datum	If the final average countywide or flooding source-based datum conversion value is less than +/- 0.1 foot, the Mapping Partner shall consider the datum conversion to be executed and shall not adjust flood elevations for those flooding sources on the FIRM, Flood Profiles, or in the FIS report tables.
120	;#Regulatory Products;#Flood Insurance Rate Map (FIRM);#Floodplain Mapping;#Base Flood Elevation (BFE);#Floodplain Delineation;#	Vertical Datum	The published flood elevations for all flooding sources within a community must be referenced to a single vertical datum.
121	Preliminary FIS;#Final FIS;#FIS Tables;#Flood Profiles;#Regulatory Products;#Floodplain Mapping;#Base Flood Elevation (BFE);#Floodplain Delineation;#	Vertical Datum	The Mapping Partner shall apply the conversion factors to flood elevations reported on the FIRM, Flood Profiles shown in the FIS, and all data tables in the FIS that report flood elevations. The Mapping Partner shall also ensure that all unrevised hydraulic models and supporting backup information are clearly labeled in the Technical Support Data Notebook (TSDN) to indicate that the FIRM and FIS report reflect a datum conversion, and document the process used to determine the applied conversion factor.
122	;#Regulatory Products;#Flood Insurance Rate Map (FIRM);#Floodplain Mapping;#Base Flood Elevation (BFE);#Floodplain Delineation;#	Vertical Datum	Mapping Partners must use either a single countywide vertical datum conversion factor or an average flooding source-based conversion factor for a grouping of flooding sources, for individual flooding sources, or for flooding source segments.
123	;#Regulatory Products;#Flood Insurance Rate Map (FIRM);#Floodplain Mapping;#Base Flood Elevation (BFE);#Floodplain Delineation;#	Vertical Datum	The Mapping Partner performing the datum conversion shall apply a single countywide vertical datum conversion factor when the maximum offset from the average conversion factor does not exceed 0.25 foot.
124	;#Regulatory Products;#Flood Insurance Rate Map (FIRM);#Floodplain Mapping;#Base Flood Elevation (BFE);#Floodplain Delineation;#	Vertical Datum	When calculating a single countywide vertical datum conversion, USGS topographic Quadrangle corners falling within the land area of the county must be used to calculate the vertical datum conversion factor.

125	;#Regulatory Products;#Flood Insurance Rate Map (FIRM);#Floodplain Mapping;#Base Flood Elevation (BFE);#Floodplain Delineation;#	Vertical Datum	When a single countywide conversion is not possible, the Mapping Partner shall calculate an average vertical datum conversion factor using a flooding source-based method for a grouping of flooding sources, an individual flooding source, or segments of a flooding source. When a flooding source-based conversion is executed, the Mapping Partner shall select 3 points evenly distributed along each flooding source (or segment of a flooding source) to be included the datum conversion calculation. The maximum offset from the average conversion factor determined for the flooding source, grouping of flooding sources or flooding source segment may not exceed 0.25 foot.
126	;#Regulatory Products;#Flood Insurance Rate Map (FIRM);#Floodplain Mapping;#Base Flood Elevation (BFE);#Floodplain Delineation;#	Vertical Datum	All flood elevations must be tied in when performing datum conversions.
4	;#Project Scope;#Watershed;#	Watershed Approach	All newly initiated flood risk projects must be watershed-based, with the exception of small-scale flood risk projects related to Provisionally Accredited Levee (PAL) status, and flooding sources related to issue resolution for litigation or Federal legislative or executive inquiries.
32	;#Coastal;#Watershed;#Discovery;#	Watershed Approach	Except for coastal projects, Discovery must occur on a watershed basis in accordance with the watershed approach.
63	;#Discovery Meeting;#Project Scope;#Watershed;#Coordinated Needs Management System (CNMS);#Hydrology;#Hydraulics;#Riverine;#Shallow Flooding;#Regression;#Gage;#Rainfall Runoff;#Calibration;#Sheet Flow;#Ice Jam;#Shallow Flooding;#1-D Steady;#1-D Unsteady;#2-D Riverine;#3-D Riverine;#Floodway;#Closed Basin;#Alluvial Fan;#Split flow;#	Watershed Approach	A flood risk watershed project will be considered complete when the HUC-8 has been evaluated, the watersheds or subwatersheds chosen for new or updated flood risk projects are analyzed, and: • All watersheds or subwatersheds requiring new or updated hydrologic or hydraulic analysis have been analyzed and mapped. • Hydraulics will be performed for an entire stream segment when that stream is selected for a flood risk project. This means that unanalyzed areas (or gaps) between analyzed stream segments must be analyzed unless those gaps consist of a valid flood risk project that ties into the new flood risk project. However, there can be different levels of analyses for the different stream segments, as long as all the models tie-in. • All other subwatersheds have been evaluated and do not require a new or updated flood risk project based on risk and need. • All Hydrology within the watershed is consistent. In watersheds where the hydrology is not consistent, additional analysis is required to create consistency.