Data Submittal Guidelines
for Regional Flood Planning

NOTE: REMAINS SUBJECT TO NON-SUBSTANTIAL CHANGE

December 2024

Second Cycle of Regional Flood Plan Development (2023–2028)

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Background

Each of the 15 Texas Water Development Board (TWDB) designated regional flood planning groups (RFPGs) will build upon previous efforts to develop a regional flood plan by January of every fifth year starting in 2023. The TWDB shall bring new regional plans together to produce an updated state flood plan by September 1st of the following year starting in 2024 and every fifth year thereafter. While regional flood plan development will be directed by the RFPGs, to ensure that each regional flood plan follows a consistent and credible approach, the TWDB Executive Administrator (EA) prepared the following guidelines to assist with the planning process. These guidelines augment the Texas Water Code and the administrative rules related to regional flood planning and are part of the regional flood planning grants contracts.

Purpose

These guidelines build upon and provide additional information on the required format of data to be submitted with each regional flood plan, in alignment with rule and contractual requirements including the Scope of Work (SOW). Exhibit D: Data Submittal Guidelines is complementary to Exhibit C: Technical Guidelines and is intended to assist the RFPGs in carrying out their work, developing related information, and in organizing and delivering information to meet contract requirements.

The draft regional flood plans and the final, adopted regional flood plans are reviewed by the TWDB according to statute and administrative rules, as well as requirements in this and all other contract documents including the SOW.

This document summarizes data deliverable requirements for developing and delivering regional flood plans for the current planning cycle. These guidelines include specific requirements that must be completed by RFPGs as they prepare the regional flood plan. This guidance also includes some conditionally required and optional language that leaves certain considerations to the discretion of the RFPGs.

This document augments existing statute and rules that govern regional flood planning. Provisions of Title 31 of Texas Administrative Code (TAC) §361 & §362 that serve as the foundation for guidance in this document and are not superseded or abridged by anything contained within or excluded from this guidance document.

1   General Data Requirements

The TWDB will provide the RFPGs with a GIS geodatabase template pre-populated with all feature classes and fields but will not include any data. The RFPGs shall fill in the geodatabase template with region-specific data. The geodatabase template shall not be altered, reduced, or limited in any manner that would detract from the original template. The geodatabase template must be maintained and returned in a manner that will allow the TWDB to easily assemble a statewide dataset from the 15 sets of regional data when submitted as part of the draft and final, adopted regional flood plans. The RFPGs may add additional fields in feature classes to address region specific needs only with prior written approval from the TWDB.

All data must conform and comply with all 31 TAC §361 & §362 rules. The data should also be developed based on the guidance in subsequent sections of this document and the most current Exhibit C: Technical Guidelines for Regional Flood Planning.

All required spatial data for the RFPGs shall be submitted in a single geodatabase provided by the TWDB. The template geodatabase is comprised of 27 feature classes and tables which are listed and described in Table 1 of this document.

This work should consider existing flood infrastructure, hazard areas, flood exposure (current and future condition), vulnerability, and identify potential flood management evaluations (FME), flood mitigation projects (FMP), and flood management strategies (FMS) along with any other relevant flood planning data and studies available.

In addition:

1. The submitted information must be accurate and based on the best data and science practicable;
2. potential interregional conflicts should be identified and resolved prior to data being submitted by the RFPGs;
3. RFPGs must enter information in all fields of the geodatabase provided unless otherwise stated in this data submittal guidance;
4. data provided must follow specified units of measure or quantification (as identified in Section 3);
5. spelling, word order, and proper names must be used consistently and correctly when submitting data(this is important for purposes of cross-referencing and consistency);
6. proper names used in the regional flood plans should match those submitted in data deliverables;
7. RFPGs must use the same reporting conventions for data shared by more than one region;
8. RFPGs that have shared interest in datasets must agree on underlying data (e.g. Existing floodplain management practices, H&H models, etc.) prior to submittal by either region.

If there are any questions regarding the submission process, contact the TWDB Flood Planning Data staff early in the process to obtain assistance. This will help to prevent inadvertent creation of errors that could be difficult to correct. Flood planning data staff contact information can be found on the TWDB website (https://www.twdb.texas.gov/flood/planning-staff.asp).

2 Formats for Electronic Data

All final versions of files acquired or developed for the 2028 regional flood plans are considered joint property of the TWDB and are required to be submitted to the TWDB. Electronic data shall be submitted to the TWDB at key planning milestones (technical memo, draft regional plan, final regional plan) through an online file transfer system. Further details on the submission process(es) shall be provided by TWDB. This includes but is not limited to all written technical reports, including the full regional flood plan documents and any appendices (MS Word and PDF), MS Excel files, hydrological and hydraulic models (H&H) as applicable and input/output/supporting data files, GIS, and image-formatted data. Files required for delivery to the TWDB must be in an approved format as specified in this document. Alternative software or delivery methods will be allowed with pre-approval from the TWDB if these requirements present a significant burden on the RFPGs or as technology changes.

2.1 Introduction

Formats of all computer files provided to the TWDB should be compatible with widely distributed versions of the following software:

1. Microsoft Word (MS Office 2010 or newer versions)
2. Microsoft Excel (MS Office 2010 or newer versions)
3. Microsoft Access (MS Office 2010 or newer versions)
4. ArcGIS (10.0 or newer versions)
5. Internet Explorer (11 or newer versions)
6. Adobe Acrobat (2015 or newer versions)

2.2 File Formatting

2.2.1 Accessibility

The digital copy of the final regional flood plan must comply with the requirements and standards specified in 1 TAC §213, Subchapter B (Electronic and Information Resources Accessibility Standards for State Agencies) and the Contract.

All figures must have alternative text descriptions, except for decorative elements, which should be tagged as artifacts or background elements. The file must be titled, and language specified. In addition, the document must establish a logical reading order through the consistent use of styles and headings. Non-accessible elements such as text boxes should be avoided.

2.2.2 PDF and MS Word Specifications

All PDFs intended for online publication must be tagged for accessibility and reflow. All electronic Adobe PDF files must use embedded fonts with electronically searchable text. Hyperlinks should be live, and bookmarks used in a consistent manner to provide easy navigation. Reading order should be evaluated and tab order correctly set. PDFs must pass the Acrobat accessibility full check. It is recommended that PDF files be a size of 50 MB or less to minimize the amount of time it will take to download from the TWDB website. However, if a larger file size is necessary, please ensure that the PDF file is no greater than a file size of 100 MB. Additionally, please use the appropriate prescribed file, table, and map names provided by TWDB.

2.2.3 Image formatting

All drawings and graphs included in reports should also be provided separately to the TWDB in Encapsulated PostScript (EPS) or Tagged Image Format (TIFF) format. Color model should be CMYK and resolution should be 300 dpi.

2.2.4 Correspondence Specifications

All relevant email correspondence of significance must be saved as PDF files and adhere to the PDF specifications in Section 2.2.2.

2.2.5 Hydrologic and Hydraulic (H&H) Models

Any relevant H&H model files should be complete, include only relevant scenarios and files, properly named with associated description in the model, different scenarios should be clearly identified, and include appropriate metadata. For the 2D models, files required to run the model and the output file containing results for relevant scenarios will be sufficient. Any relevant H&H models shall be submitted to the TWDB. Please follow these guidelines when submitting H&H models:

1. Models should be complete, without missing dependencies;
2. Models should run successfully when downloaded to another location;
3. For 2D models, it is sufficient to include files requires to run the model and the output file with results of various scenarios;
4. Only relevant scenarios and files should be included;
5. Scenarios should be clearly identified and include appropriate metadata;
6. All models should be submitted with appropriate metadata and the associated report;
7. All files should be clearly named.

Each H&H model and their associated files submitted to the TWDB should be zipped and named using the appropriate MODEL_ID.

To store and preserve key information about these models, the TWDB and Texas A&M University have developed a system named Model Storage and Management System (MS2). Upon request to the TWDB, RFPG technical consultants are provided with a unique login to the MS2 system, whereby models are to be submitted, metadata generated for models, and communication managed with the TWDB. All models submitted as part of regional flood plans must also be uploaded to MS2.

2.3 File Structure

For the required files discussed in Section 3, follow the appropriate file naming convention identified therein. For all other files, a standard naming convention should be used consistently for all file names and include the region number, data type, and figure title when relevant. It is preferred that "camel case" be used for file name formatting, which is a formatting style that capitalizes the first letter of each word. File names should not contain spaces or special characters except for underscores. See Figure 1 for an example of how data delivery folders should be structured. Contact the TWDB Flood Planning Data staff if you would like to receive a folder containing the preferred folder structure. It is not necessary to include files that were provided by the TWDB as supporting materials if their use is clearly documented and referenced.

To help the TWDB locate the model supporting the regional flood plan, please include a reference document in the root of the H&H Models folder that provides a crosswalk between model folder and Flood Mitigation Project. If a model is used for another piece of the plan, provide this detail in the crosswalk document.

Figure 1. File Delivery Example
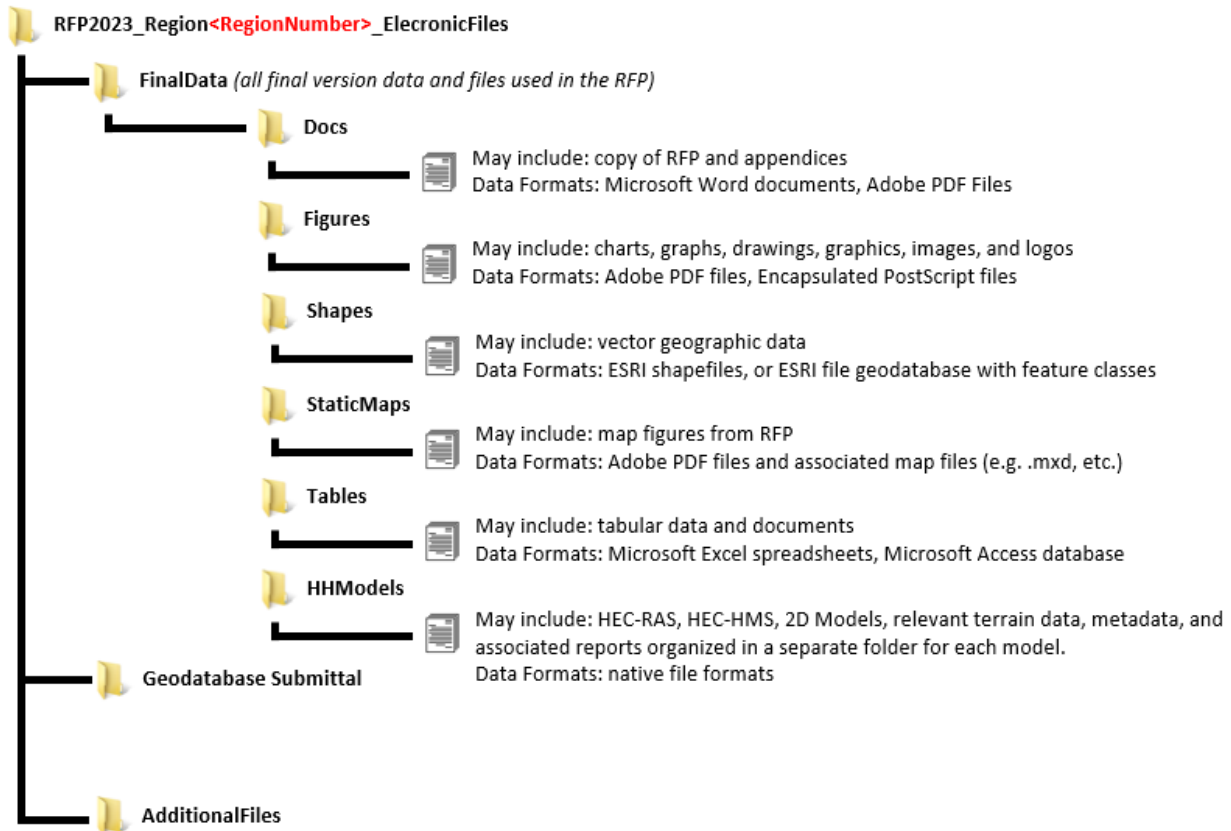
2.4 GIS Data Requirements

2.4.1 Metadata

All GIS files developed for the TWDB are required to have associated metadata. Deliverables are not considered complete without metadata. Metadata, including information about the data's projection, can be developed using one of several built-in or add-on tools within ArcGIS, and typically is associated with the geometry file as an XML file.

All GIS files submitted to the TWDB must have spatial reference information that describes the projection, datum, and where applicable, the collection methods.

2.4.2 Projection

All electronic geospatial data must have spatial reference information and be projection defined (have its coordinate system identified and embedded in or associated with the data file). All GIS data submitted to TWDB should be in the following projection:

NAD_1983_2011_Texas_Centric_Mapping_System_Lambert

Raster data, such as aerial photographs may be submitted in their native projection, and maps must be in the appropriate projection/coordinate system for the area depicted.

All CAD data must be in known real world coordinate space, ideally in geographic/decimal degrees/NAD83, and must **NOT** be in page space or a custom site-specific projection.

2.4.3   Tabular Data

Should tabular data be appropriate to connect location information with attribute information, then documentation specifying the primary and foreign keys is required (see Section 3 for guidance on required spatial deliverables). Should coordinate information be provided in tabular format it should contain, at minimum, the following fields:

1. ID: a unique identifier given to each feature
2. Latitude: Y-coordinate in decimal degrees
3. Longitude: X-coordinate in decimal degrees
4. Datum: the horizontal datum of the coordinates

2.4.4   GIS Map Deliverables

All map deliverables (.aprx, .mxd, etc.) used in final map production are also required for delivery to the TWDB with accompanying data in a stand-alone directory structure. For maps submitted as a project file, each layout tab should be named respective to the TWDB assigned map number. For map document files, a unique .mxd file is to be submitted for each map produced for the regional flood plan. All map deliverables also need to be configured to use relative paths and not be set to use a printer-specific paper setting.

2.4.5   Data Deliverables

Each RFPG is responsible for submitting all required GIS data in a single geodatabase.

Section 3 further specifies what data is required and the proper format for all required data. The Geodatabase should be named using the following naming convention – "RR_RFP_GIS_Data". The "RR" is the two-digit RFPG number (for example, Region 2 geodatabase should be "02_RFP_GIS_Data").

3   Required Spatial Data

As described in section 2.4.5, all required spatial data associated with the regional flood plans shall be submitted in a single geodatabase (with "RR_RFP_GIS_Data" as the title where "RR" is the two-digit region number, for example Region 1 would be "01"). This database includes 27 feature classes and tables. See the table below for a summary of how to name each feature class, the type of feature class, the SOW task to which the data correlates, and the delivery milestone associated with each required feature class/table.

All required data should be submitted as part of the single geodatabase, and not as separate files. Additional spatial data used to produce the regional flood plans outside of this list shall be submitted using the file structure shown in Section 2.3.

Each required feature is described in greater detail in **Table 1**. For each feature, a table and guidelines are provided. The table includes the correct field names, a description of the field, if the field is required, the data type, and a list of valid entries for that field, when applicable.

Table 1: Required Spatial Data

#	Item Name	Description	Feature Class Name	Polygon /Line/ Point/ GDB Table	SOW Task	Submittal Milestone
1	**Entities**	Entities with flood-related authority and whether they are actively engaged in flood planning, floodplain management, and flood mitigation activities	**Entities**	Polygon	1.1.d	Technical Memo
2	**Watersheds**	The spatial layer for watersheds with associated FME, FMS, and FMPs	**Watersheds**	Polygon	1	Technical Memo
3	**Existing Infrastructure**	A general description of the location, condition, and functionality of existing natural flood mitigation features and constructed major flood infrastructure within the RFPGs.	**ExFldInfraPol**	Polygon	1.2	Technical Memo
4		A general description of the location, condition, and functionality of existing natural flood mitigation features and constructed major flood infrastructure within the RFPGs.	**ExFldInfraLn**	Line	1.2	Technical Memo
5		A general description of the location, condition, and	**ExFldInfraPt**	Point	1.2	Technical Memo

#	Item Name	Description	Feature Class Name	Polygon /Line/ Point/ GDB Table	SOW Task	Submittal Milestone
		functionality of existing natural flood mitigation features and constructed major flood infrastructure within the RFPGs.				
6	**Proposed or Ongoing Flood Mitigation Projects**	Proposed or ongoing flood mitigation projects currently under construction, being implemented; and with dedicated funding to construct and the expected year of completion.	**ExFldProjs**	Polygon	1.8	Technical Memo
7	**Existing Flood Hazard**	Perform existing condition flood hazard analyses to determine the location and magnitude of 10%, 1.0%,and 0.2% annual chance flood events	**ExFldHazard**	Polygon	2A.1	Technical Memo
8	**Existing Flood Mapping Gaps**	Gaps in inundation boundary mapping	**Ex_Map_Gaps**	Polygon	2A.1.i	Technical Memo
9	**Existing Exposure**	Develop high-level, region-wide, and largely GIS-based existing condition flood exposure analyses using the information identified in the flood hazard analysis to identify who and what might be harmed within the region for, at a minimum, 10%, 1.0%, and 0.2% annual chance flood events	**ExFldExpPol**	Polygon	2A.2	Technical Memo
10		Develop high-level, region-wide, and largely GIS-based existing condition flood exposure analyses using the information identified in the flood hazard analysis to identify who and what might be harmed within the region for, at a minimum, 10%, 1.0%, and 0.2% annual chance flood events	**ExFldExpLn**	Line	2A.2	Technical Memo

#	Item Name	Description	Feature Class Name	Polygon /Line/ Point/ GDB Table	SOW Task	Submittal Milestone
11		Develop high-level, region-wide, and largely GIS-based existing condition flood exposure analyses using the information identified in the flood hazard analysis to identify who and what might be harmed within the region for, at a minimum, 10%, 1.0%, and 0.2% annual chance flood events	**ExFldExpPt**	Point	2A.2	Technical Memo
12		Combines the Exposure Polygon, Line, and Point data into a single layer, also includes Vulnerability data	**ExFldExpAll**	Point	2A.2	Technical Memo
13	**Future Flood Hazard**	Perform future condition flood hazard analyses to determine the location and magnitude of 10%, 1.0%, and 0.2% annual chance flood events	**FutFldHazard**	Polygon	2B.1	Technical Memo
14	**Future Flood Mapping Gaps**	Future gaps in inundation boundary mapping	**Fut_Map_Gaps**	Polygon	2B.1f	Technical Memo
15	**Future Exposure**	Perform future condition flood exposure analyses using the information identified in the flood hazard analysis to identify who and what might be harmed within the region for, at a minimum, 10%, 1.0%,and 0.2% annual chance flood events	**FutFldExpPol**	Polygon	2B.2	Technical Memo
16		Perform future condition flood exposure analyses using the information identified in the flood hazard analysis to identify who and what might be harmed within the region for, at a minimum, 10%, 1.0%, and 0.2% annual chance flood events	**FutFldExpLn**	Line	2B.2	Technical Memo

#	Item Name	Description	Feature Class Name	Polygon /Line/ Point/ GDB Table	SOW Task	Submittal Milestone
17		Perform future condition flood exposure analyses using the information identified in the flood hazard analysis to identify who and what might be harmed within the region for, at a minimum, 10%, 1.0%, and 0.2% annual chance flood events	**FutFldExpPt**	Point	2B.2	Technical Memo
18		Combines the Exposure Polygon, Line, and Point data into a single layer, also includes Vulnerability data	**FutFldExpAll**	Point	2B.2	Technical Memo
19	**Existing Floodplain Management Practices**	Identify areas with existing floodplain management practices, identify common and compare contrasting practices within the region, and acknowledge locations that may lack floodplain management.	**ExFldMng**	Polygon	3A	Technical Memo
20	**Goals**	Identify specific and achievable flood mitigation and floodplain management goals along with target years by which to meet those goals	**Goals**	GDB Table	3C	Technical Memo
21	**Streams**	Shows the streams to be studied by FMEs, and those relevant to FMS and FMPs, when applicable.	**Streams**	Line	4A	Technical Memo
22	**Flood Management Evaluations**	Flood Management Evaluations will identify areas requiring flood risk evaluation.	**FME**	Polygon	4A,4C, 5A, 5B	Technical Memo (Limited fields)
23	**Flood Mitigation Projects**	Flood Mitigation Projects reduce flood risk through a variety of approaches. The service area is the region impacted by the project.	**FMP**	Polygon	4A,4B, 5A	Technical Memo (Limited fields)
24	**Post-project Hazard**	Project specific features showing an updated hazard	**HazPost_FMP**	Polygon	5A	Draft Plan

#	Item Name	Description	Feature Class Name	Polygon /Line/ Point/ GDB Table	SOW Task	Submittal Milestone
		area that accounts for the impact of the project				
25	**Project Details**	A table included in the geodatabase but built using the Project Details excel template. The table includes more detailed analysis of the project.	**FMP_Details**	Excel template, GDB Table	5A	Draft Plan
26	**Flood Management Strategies**	Flood Management Strategies can be a broad array of policy or other strategies that aid in flood management.	**FMS**	Polygon	4A, 4B, 5A	Technical Memo (Limited fields)
27	**Model Coverage**		**ModelCoverage**	Polygon	4A	Technical Memo

Table 2 provides specific guidance for the construction of unique IDs for each dataset. It is essential for the correct format to consistently be used so that all RFPG data can be assembled into a single statewide dataset. Additionally, IDs used should be consistent throughout an entire Flood Planning cycle and should be altered between submissions. Each ID will start with a two-digit region number, for example Region 1 would start with "01".

Table 2: Unique ID Guidance

Feature Class	ID Field	Feature Class Number	Guidance	Starting ID
Entities	ENTITY_ID	01	Two-digit Region Number-Feature Class Number-10 Digits	RR-01-0000000001
Watersheds	WS_ID	02	Two-digit Region Number-Feature Class Number-10 Digits	RR-02-0000000001
ExFldInfraPol	EXINFPY_ID	03	Two-digit Region Number-Feature Class Number-10 Digits	RR-03-0000000001
ExFldInfraLn	EXINFLN_ID	04	Two-digit Region Number-Feature Class Number-10 Digits	RR-04-0000000001
ExFldInfraPt	EXINFPT_ID	05	Two-digit Region Number-Feature Class Number-10 Digits	RR-05-0000000001
ExFldProjs	EXPROJ_ID	06	Two-digit Region Number-Feature Class Number-10 Digits	RR-06-0000000001
ExFldHazard	EXHAZ_ID	07	Two-digit Region Number-Feature Class Number-10 Digits	RR-07-0000000001
Ex_Map_Gaps	EXGAPS_ID	08	Two-digit Region Number-Feature Class Number-10 Digits	RR-08-0000000001
ExFldExpPol	EXEXPPY_ID	09	Two-digit Region Number-Feature Class Number-10 Digits	RR-09-0000000001
ExFldExpLn	EXEXPLN_ID	10	Two-digit Region Number-Feature Class Number-10 Digits	RR-10-0000000001
ExFldExpPt	EXEXPPT_ID	11	Two-digit Region Number-Feature Class Number-10 Digits	RR-11-0000000001
ExFldExpAll	EXEXPALLID	12	Two-digit Region Number-Feature Class Number-10 Digits	RR-12-0000000001
Fut_Map_Gaps	FUTGAPS_ID	13	Two-digit Region Number-Feature Class Number-10 Digits	RR-13-0000000001
FutFldHazard	FUTHAZ_ID	14	Two-digit Region Number-Feature Class Number-10 Digits	RR-14-0000000001
FutFldExpPol	FTEXPPY_ID	15	Two-digit Region Number-Feature Class Number-10 Digits	RR-15-0000000001
FutFldExpLn	FTEXPLN_ID	16	Two-digit Region Number-Feature Class Number-10 Digits	RR-16-0000000001
FutFldExpPt	FTEXPPT_ID	17	Two-digit Region Number-Feature Class Number-10 Digits	RR-17-0000000001

Feature Class	ID Field	Feature Class Number	Guidance	Starting ID
FutFldExpAll	FTEXPALLID	18	Two-digit Region Number-Feature Class Number-10 Digits	RR-18-0000000001
ExFpMP	EXFPMP_ID	19	Two-digit Region Number-Feature Class Number-10 Digits	RR-19-0000000001
Goals	GOAL_ID	20	Two-digit Region Number-Feature Class Number-10 Digits	RR-20-0000000001
Streams	STREAM_ID	21	Two-digit Region Number-Feature Class Number-10 Digits	RR-21-0000000001
FME	FME_ID	51	Two-digit Region Number-Feature Class Number-10 Digits	RR-51-0000000001
FMP	FMP_ID	52	Two-digit Region Number-Feature Class Number-10 Digits	RR-52-0000000001
FMS	FMS_ID	53	Two-digit Region Number-Feature Class Number-10 Digits	RR-53-0000000001
FMP_HazPost	POSTHAZ_ID	25	Two-digit Region Number-Feature Class Number-10 Digits	RR-25-0000000001
FMP_Details	FMP_ID		Use FMP ID	Use FMP ID
ModelCoverage	MODEL_ID	27	Two-digit Region Number-Feature Class Number-10 Digits	RR-27-0000000001

3.1 Entities [Entities]

Description:

Identifies flood planning entities and political subdivisions with flood-related authority and whether they are actively engaged in flood planning, floodplain management, and flood mitigation activities.

Table 3: List of Fields for 'Entities'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Entity ID	Y	ENTITY_ID	Text	Must be unique for each feature, begin with two-digit region code, except for those crossing boundaries, which begin with "00"	
Entity Name	Y	ENT_NAME	Text	Provide full name of entity (EX: Travis County, rather than just Travis)	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number, two digits, such as "07", regardless of whether an entity crosses regional boundaries	
Region (RFPG) Name	Y	RFPG_NAME	Text		
Political Subdivision	Y	POLSUB_FLG	Text	Is entity a political subdivision?	Yes, No
Entity Type	Y	ENT_TYPE	Text		Municipality, County, River Authority, Flood District, Other
Entity Description	N	ENT_DESC	Text	Description of entity type, conditionally required for ENT_TYPE='Other'	
Active in Flood Planning	Y	ACTIVE	Text	Is entity active in flood planning?	Yes, No, Unknown
FIPS Code	N	FIPS	Text	Census FIPS code if county or census place	
CID Code	N	CID	Text	FEMA-assigned community number (6-digit with the first two being "48" for Texas)	

Guidelines:

 The 'Entities' feature class identifies all political subdivisions with flood-related authority as polygons. This feature class was intended for public sector entities, thus should not include private landowners or business owners. The polygons can overlap. If the subdivision aligns with a census geography such as County or Place (City, Town, Villages, Census Designated Places) please include the 2019 FIPS code that ties to the Census data. This will be 5 digits for Counties and 7 digits for Places, with the first two digits being the State FIPS code ("48").

Required fields RFPG_NUM and RFPG_NAME should be populated with reporting region's information, regardless of whether the entity crosses regional boundaries. For entities that cross RFPG boundaries, please include the entire polygon even if portions extend beyond the RFPG. The TWDB will work with the RFPGs to ensure cross-boundary entities have the same unique IDs, with many known overlaps being pre-populated into the geodatabase template distributed by the TWDB. For entities crossing RFPG boundaries that do not match any known overlapping geography, please coordinate with the TWDB Flood Planning Data staff and corresponding RFPG(s) to ensure consistency between ENTITY_IDs. Prepopulated entities in the geodatabase template should not be altered without the approval of the TWDB.

3.2 Watersheds [Watersheds]

Description:

Identifies watersheds for the RFPGs.

Table 4: List of Fields for 'Watersheds'

Flied Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Watershed ID	Y	WS_ID	Text	Must be unique for each feature	
Watershed Name	Y	WS_NAME	Text		
Watershed Description	N	WS_DESC	Text		
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number, two digits, such as "07"	
Region (RFPG) Name	Y	RFPG_NAME	Text		
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"); comma-separated if multiple	
HUC 8	Y	HUC8	Text	NHD HUC8 numbers, comma-separated	
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length	
Associated FME	N	FME_ID	Text	IDs from FME features, comma-separated. This optional field is intended to identify cases where there is an associated FME	
Associated FMS	N	FMS_ID	Text	IDs from FMS features, comma-separated. This optional field is intended to identify cases where there is an associated FMS	
Associated FMP	N	FMP_ID	Text	IDs from FMP features, comma-separated. This optional field is intended to identify cases where there is an associated FMP	
Associated Proposed or Ongoing FMP	N	EXPROJ_ID	Text	IDs from Proposed or Ongoing Flood Mitigation Projects features, comma-separated. This optional field is intended to identify cases where there is an associated Proposed or Ongoing Flood Mitigation Project	

Guidelines:

The purpose of this feature class is to identify local watersheds, for example, Onion Creek, Shoal Creek, etc., as applicable. The scale for this feature class is flexible and at the discretion of each RFPG. Urban areas may require smaller scale watersheds while rural area watersheds may be larger.

3.3 Existing Flood Infrastructure

Description:

A general description of the location, condition, and functionality of existing natural flood mitigation features and constructed major flood infrastructure within the RFPGs.

Guidelines:

Because flood infrastructure and natural features exhibit diverse geometries, three separate existing flood infrastructure feature classes shall be submitted – polygon, line, and point. See Tables below for each feature class.

The infrastructure type fields identify the discrete types of infrastructure to be included. Table 5 delineates how each infrastructure type should be classified as either natural features or major constructed infrastructure. The "Storm Drain System" entry should include only pipes over 12 inches, culverts, and inlets. Each attribute classified as "River", "Tributary", "Storm Drain System", "Stormwater Tunnel", or "Levee" must be a minimum of 500 feet in length. Major flood infrastructure classified as "Reservoir" are those identified by the TWDB as major or minor reservoirs with flood control as the main or dual-purpose function. "Ponds" should have a capacity of less than 1,300 acre-feet, unless explicitly named a retention or detention for flood use. "Park or Open Space" includes parks, preserves, reserves, etc. "Coastal-Natural" includes beaches and dunes. Major infrastructure classified as "Coastal-Constructed" includes sea barriers, sea walls, tidal barriers, and tidal gates. "Gauge" to include sensors.

All appropriate infrastructure dimension fields (e.g. diameter, height, etc.) are included for each feature class. However, these are not required and were included to maintain flexibility, with the exception for AREA [ExFldInfraPol] and LENGTH [ExFldInfraLn) for specific infrastructure types, as specified:

- Area: conditionally required for wetlands, playas, ponds, reservoirs, and park or open space.

- Length: conditionally required for rivers, tributaries, storm drain system, stormwater tunnel, and levees.

If a given infrastructure does not have a name, RFPGs shall use "Unnamed [Infra Type]" with the type of infrastructure being part of the name. RFPGs should include a description of the unnamed major infrastructure or natural feature.

For the purposes of regional flood planning, the TWDB has provided the build type classifications (Table 5) that should be utilized in each of the existing infrastructure feature classes [NATBUILT].

Table 5: List of Infrastructure types and corresponding build type classification

Build Type	Flood Infrastructure
Natural	Wetland, Playa, Fan, Estuary, Dune, Park or Open Space, River, Tributary, Sinkhole, Coastal-Natural, Other-Natural
Constructed	Levee, Revetment, Stormwater Tunnel, Stormwater Channel, Storm Drain System, Weir, Culvert, Pond, Reservoir, Dam, Bridge, Inlet, Gauge, Bridge, LWC, Roadway Stream Crossing, Coastal-Constructed, Other-Constructed

Required fields FUNCT_CONFI and COND_CONFI shall be populated at the discretion of the RFPGs in reference to the FUNCTIONALITY and CONDITION fields, respectively, where:

- High: Data used for classification came from the entity through findings of a study or analysis
- Low: Data used for classification is based on asset attributes and assumptions
- None: No data available to determine classification

Additional guidance on assessing condition and functionality of existing major infrastructure and natural features is described in Exhibit C Technical Guidelines.

For required fields OWN_ENT and OPER_ENT, only ENTITY_IDs from the Entities feature class should be used to populate these fields, with the exception of 'Other' as a valid entry if the Owning or Operating Entity does not have flood-related authority and is not actively engaged in flood planning, floodplain management, and flood mitigation activities (i.e. Private Business, etc.). List 'Other' first if there are multiple entities. OWN_NAME and OPER_NAME are conditionally required if 'Other' is reported in OWN_ENT or OPER_ENT, respectively.

3.3.1 Polygon [ExFldInfraPol]

Table 6: List of Fields for 'ExFldInfraPol'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Flood Infrastructure (Polygon) ID	Y	EXINFPY_ID	Text	Must be unique for each feature	
Flood Infrastructure Name	Y	NAME	Text	Name of feature	
Flood Infrastructure Description	Y	DESCR	Text	A brief description of the infrastructure.	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number, two digits, such as "07"	
Region (RFPG) Name	Y	RFPG_NAME	Text		
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"); comma-separated if multiple.	
HUC 8	Y	HUC8	Text	NHD HUC8 numbers, comma-separated	
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	
Watershed ID	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated. May be left blank if too many for field length.	
Infrastructure Type	Y	INFRA_TYPE	Text	Functioning wetlands, playa lakes, sinkholes, alluvial fans, vegetated dunes, open spaces providing flood protection, reservoirs with flood-mitigating capabilities, and detention and retention ponds. 'Park or Open Space' includes parks, preserves, reserves, etc. "Coastal-Natural" includes beaches.	Wetland, Playa, Fan, Estuary, Dune, Pond, Reservoir, Park or Open Space, Coastal-Natural, Other-Natural, Other-Constructed
Natural or Constructed	Y	NATBUILT	Text		Natural, Constructed
Construction Date	N	DT_CONST	Date		

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Area (acre)	N	AREA	Float	Area of detention pond, wetlands, playa lakes (acres), Conditionally required for INFRA_TYPE=Wetland, Playa, Pond, Reservoir, Park or Open Space.	
Water Supply	N	WATER_SUP	Text	This field is intended to identify whether reservoirs have water supply as their main function. Field is required if INFRA_TYPE=Reservoir, otherwise leave as null	Yes, No
Functionality	Y	FUNCTIONALITY	Text	Functional infrastructure meets its intended design level of service. Otherwise, it is non-functional.	Functional, Non-functional, Unknown
Functionality Description	Y	FUNCT_DESCR	Text	Functionality description	
Functionality Data Confidence	Y	FUNCT_CONFI	Text	Confidence level of FUNCTIONALITY.	High, Low, None
Level of Service	Y	LOS	Text	Enter the LOS in terms of annual probability	50, 10, 4, 2, 1, 0.2, Unknown
Condition	Y	CONDITION	Text	Condition of the infrastructure. Deficient infrastructure is in poor structural condition and needs replacement	Deficient, Non-deficient, Unknown
Condition Description	Y	COND_DESCR	Text	Describe the structural issue causing deficiency	
Condition Data Confidence	Y	COND_CONFI	Text	Confidence level of CONDITION	High, Low, None
Population Protected by Infrastructure	N	POP_PROTEC	Long	This field is intended to identify approximate population effected by the infrastructure.	
Owning Entity (ID)	Y	OWN_ENT	Text	ENTITY_ID from Entity feature class, comma-separated. Leave as null if not applicable	Entity IDs, Other
Owning Entity Name	N	OWN_NAME	Text	Name of the Owning Entity. Conditionally required if OWN_ENT contains 'Other'	
Operating Entity (ID)	Y	OPER_ENT	Text	ENTITY_ID from Entity feature class, comma-separated. Leave as null if not applicable	Entity IDs, Other
Operating Entity Name	N	OPER_NAME		Name of the Operating Entity. Conditionally required if OWN_ENT contains 'Other'	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Associated FME	N	FME_ID	Text	IDs from FME features, comma-separated. This optional field is intended to identify cases where there is an associated FME.	
Associated FMS	N	FMS_ID	Text	IDs from FMS features, comma-separated. This optional field is intended to identify cases where there is an associated FMS.	
Associated FMP	N	FMP_ID	Text	IDs from FMP features, comma-separated. This optional field is intended to identify cases where there is an associated FMP.	

3.3.2   Line [ExFldInfraLn]

Table 7: List of Fields for 'ExFldInfraLn'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Flood Infrastructure (Line) ID	Y	EXINFLN_ID	Text	Must be unique for each feature	
Flood Infrastructure Name	Y	NAME	Text	Name of feature	
Flood Infrastructure Description	Y	DESCR	Text	A brief description of the infrastructure	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number, two digits, such as "07"	
Region (RFPG) Name	Y	RFPG_NAME	Text		
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"); comma-separated if multiple.	
HUC 8	Y	HUC8	Text	NHD HUC8 numbers, comma-separated	
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	
Watershed ID	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated. May be left blank if too many for field length.	
Infrastructure Type	Y	INFRA_TYPE	Text	Ensure rivers and tributaries in the Streams feature class are also included. Minimum length for levees, rivers, and tributaries. For sea barriers, sea walls, and tidal gates, please use valid entry 'Coastal-Constructed';	River, Tributary, Levee, Revetment, Stormwater Tunnel, Stormwater Channel, Weir, Storm Drain System, Other-Natural, Other-Constructed, Coastal-Natural, Coastal-Constructed
Natural or Constructed	Y	NATBUILT	Text		Natural, Constructed,
Construction Date	N	DT_CONST	Date		
Diameter (ft)	N	DIAMETER	Float	Pipe diameter (feet)	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Height (ft)	N	HEIGHT	Float	Height of dam or levee, sea barrier, tunnel, pipe, culvert (feet)	
Width (ft)	N	WIDTH	Float	(feet)	
Length (ft)	N	LENGTH	Float	(feet); Required for INFRA_TYPES storm drain system, rivers, tributaries, and levees	
Functionality	Y	FUNCTIONALITY	Text	Functional infrastructure meets its intended design level of service. Otherwise, it is non-functional.	Functional, Non-functional, Unknown
Functionality Description	Y	FUNCT_DESCR	Text	Functionality Description	
Functionality Data Confidence	Y	FUNCT_CONFI	Text	Confidence level of FUNCTIONALITY.	High, Low, None
Level of Service	Y	LOS	Text	Enter the LOS in terms of annual probability	50, 10, 4, 2, 1, 0.2, Unknown
Condition	Y	CONDITION	Text	Condition of the infrastructure. Deficient infrastructure is in poor structural condition and needs replacement.	Deficient, Non-deficient, Unknown
Condition Description	Y	COND_DESCR	Text	Describe the structural issue causing deficiency	
Condition Data Confidence	Y	COND_CONFI	Text	Confidence level of CONDITION	High, Low, None
Population Protected by Infrastructure	N	POP_PROTEC	Long	This field is intended to identify approximate population effected by the infrastructure.	
Owning Entity (ID)	Y	OWN_ENT	Text	ENTITY_ID from Entity feature class, comma-separated. Leave as Null if not applicable.	ENTITY_IDs, Other
Owning Entity Name	N	OWN_NAME		Conditionally required if OWN_ENT contains 'Other'	
Operating Entity (ID)	Y	OPER_ENT	Text	ENTITY_ID from Entity feature class, comma-separated. Leave as Null if not applicable.	ENTITY_IDs, Other
Operating Entity Name	N	OPER_NAME		Conditionally required if OPER_ENT contains 'Other'	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Associated FME	N	FME_ID	Text	IDs from FME features, comma-separated. This optional field is intended to identify cases where there is an associated FME.	
Associated FMS	N	FMS_ID	Text	IDs from FMS features, comma-separated. This optional field is intended to identify cases where there is an associated FMS.	
Associated FMP	N	FMP_ID	Text	IDs from FMP features, comma-separated. This optional field is intended to identify cases where there is an associated FMP.	

3.4 Point [ExFldInfraPt]

Table 8: List of Fields for 'ExFldInfraPt'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Flood Infrastructure (Point) ID	Y	EXINFPT_ID	Text	Must be unique for each feature	
Flood Infrastructure Name	Y	NAME	Text	Name of feature	
Flood Infrastructure Description	Y	DESCR	Text	A brief description of the infrastructure	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number	
Region (RFPG) Name	Y	RFPG_NAME	Text		
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"); comma-separated if multiple.	
HUC 8	Y	HUC8	Text	NHD HUC8 numbers, comma-separated	
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	
Watershed ID	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated. May be left blank if too many for field length.	
Infrastructure Type	Y	INFRA_TYPE	Text	Gauge includes sensors.	Sinkhole, LWC, Dam, Inlet, Culvert, Bridge, Roadway Stream Crossing, Gauge, Other-Natural, Other-Constructed
Natural or Constructed	Y	NATBUILT	Text		Natural, Constructed,
Construction Date	N	DT_CONST	Date		
Diameter (ft)	N	DIAMETER	Float	Pipe diameter (feet)	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Height (ft)	N	HEIGHT	Float	Height of dam or levee, sea barrier, tunnel, pipe, culvert (feet)	
Elevation (ft)	N	BRDG_ELEV	Float	Bridge deck elevation (feet)	
Width (ft)	N	WIDTH	Float	(feet)	
Length (ft)	N	LENGTH	Float	(feet)	
Functionality	Y	FUNCTIONALITY	Text	Functional infrastructure meets its intended design level of service. Otherwise, it is non-functional.	Functional, Non-functional, Unknown
Description of Functionality	Y	FUNCT_DESCR	Text	Functionality Description	
Functionality Data Confidence	Y	FUNCT_CONFI	Text	Confidence level of FUNCTIONALITY.	High, Low, None
Level of Service	Y	LOS	Text	Enter the LOS in terms of annual probability	50, 10, 4, 2, 1, 0.2, Unknown
Condition	Y	CONDITION	Text	Condition of the infrastructure. Deficient infrastructure is in poor structural condition and needs replacement	Deficient, Non-deficient, Unknown
Description of Condition	Y	COND_DESCR	Text	Describe the structural issue causing deficiency	
Condition Data Confidence	Y	COND_CONFI	Text	Confidence level of CONDITION	High, Low, None
Population Protected by Infrastructure	N	POP_PROTEC	Long	This field is intended to identify approximate population effected by the infrastructure.	
Owning Entity (ID)	Y	OWN_ENT	Text	ENTITY_ID from Entity feature class, comma-separated. Leave as Null if not applicable.	ENTITY_IDs, Other
Owning Entity Name	N	OWN_NAME		Conditionally required if OWN_ENT contains Other	
Operating Entity (ID)	Y	OPER_ENT	Text	ENTITY_ID from Entity feature class, comma-separated. Leave as Null if not applicable.	ENTITY_IDs, Other
Operating Entity Name	N	OPER_NAME		Conditionally required if OPER_ENT contains Other	
Associated FME	N	FME_ID	Text	IDs from FME features, comma-separated. This optional field is intended to identify cases where there is an associated FME.	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Associated FMS	N	FMS_ID	Text	IDs from FMS features, comma-separated. This optional field is intended to identify cases where there is an associated FMS.	
Associated FMP	N	FMP_ID	Text	IDs from FMP features, comma-separated. This optional field is intended to identify cases where there is an associated FMP.	

3.5 Proposed and Ongoing Flood Mitigation Projects [ExFldProjs]

Description:

Proposed or ongoing flood mitigation projects currently under construction, being implemented; and with dedicated funding to construct and the expected year of completion.

Table 9: List of Fields for 'ExFldProjs'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Proposed or Ongoing Project ID	Y	EXPROJ_ID	Text	Must be unique for each project	
Project Name	Y	EXPRJNAME	Text	Project name	
Project Description	Y	EXPRJDESC	Text	Project description	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number, two digits, such as "07"	
Region (RFPG) Name	Y	RFPG_NAME	Text		
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"); comma-separated if multiple.	
HUC 8	Y	HUC8	Text	NHD HUC10 numbers, comma-separated	
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	
Watershed ID	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated. May be left blank if too many for field length.	
Project Status	Y	STATUS	Text		Proposed, Ongoing
Project Cost	Y	COST	Float		
Dedicated Construction Funding	Y	FUNDING	Text	Whether there is dedicated funding	Yes, No
Source of Funding	Y	FUND_SRC	Text	Funding source	
Expected Completion Year	Y	COMP_YR	Short	4-digit completion year	
Anticipated Benefit	Y	BENEFIT	Text		

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Previous Flood Planning Cycle	N	REC_PROJ	Text	Was this a recommended project from the 2020-2023 flood planning cycle?	Yes, No
Flood Planning Cycle 1 Project ID	N	CYCLE1_ID	Text	FMP or FMS ID from 2020-2023 cycle. Required if REC_PROJ = 'Yes'	
Flood Planning Cycle 1 Project Description	N	CYCLE1_DESC	Text	Description of project status of recommended project from 2020-2023 cycle. Required if REC_PROJ = 'Yes'	
Associated Hazard ID	N	EXHAZ_ID	Text	This is to be populated once existing condition flood hazard analysis is completed. EXHAZ_IDs from Existing Hazard feature class, comma-separated if multiple.	
Originating Study or Plan	N	SOURCE	Text	Can be used to connect project to originating document such as a city or county master plan	

Guidelines:

All proposed and ongoing projects should be represented in at least a single polygon in this feature class. The service area will most likely be a single contiguous polygon, though it is possible for a project to have discontinuous polygons representing the service area. In this case, the service area should still be represented by a single record in this feature set. The areas should include contributing drainage areas to the project. Previously RFPG-recommended FMP or FMS now proposed or ongoing should be included. Original FMP or FMS IDs should be included in these cases [CYCLE1_ID; CYCLE1_DESC].

3.6 Existing Condition Flood Risk Analysis

3.6.1   Existing Condition Flood Hazard [ExFldHazard]

Description:

Perform existing condition flood hazard analyses to determine the location and magnitude of 10% annual chance,1.0% annual chance, and 0.2% annual chance floods. This task also includes identification of flood prone areas. Flood prone areas can be identified in the 'FLOOD_FREQ' field with a value of 'Unknown'.

Table 10: List of Fields for 'ExFldHazard'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Existing Hazard ID	Y	EXHAZ_ID	Text	Must be unique for each feature	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Region (RFPG) Name	Y	RFPG_NAME	Text		
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"). For hazard and exposure feature classes, COUNTY must be singular.	
HUC 8	Y	HUC8	Text	NHD HUC8 numbers, comma-separated	
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	
Watershed ID	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated . May be left blank if too many for field length.	
Riverine Flood Risk	Y	FLD_TP_RIV	Text	Flood risk type: Riverine	Yes, No
Coastal Flood Risk	Y	FLD_TP_CST	Text	Flood risk type: Coastal	Yes, No
Urban or Local Flood Risk	Y	FLD_TP_LOC	Text	Flood risk type: Urban/Local	Yes, No
Playa Flood Risk	Y	FLD_TP_PLY	Text	Flood risk type: Playa	Yes, No
Other Flood Risk	Y	FLD_TP_OTH	Text	Flood risk type: Other	Yes, No
Annual Probability of Occurrence	Y	FLOOD_FREQ	Text	Annual probability of occurrence	10, 4, 1, 0.2, Unknown
Hazard Area (sqmi)	Y	AREA_SQMI	Float	Hazard area (sqmi)	
Data Source	Y	SOURCE	Text		
Source Date	N	SRC_DATE	Date	Effective date (for FIRM) or published date (for others)	
Source Link	N	SRC_LINK	Text	URL	
Date of Hydrological Model	N	HYDRO_DATE	Date	Date of existing hydrologic model	
Date of Hydraulic Model	N	HYDRA_DATE	Date	Date of existing hydraulic model	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Terrain Data Description	N	TERR_DATA	Text	Identify the type of data , for example "30 meter DEM". Be sure to include the resolution and source.	
Terrain Date	N	TERR_DATE	Date		
Hazard Map Date	N	MAP_DATE	Date	Date of current digital mapping, may be the same as SRC_DATE	
Source is Regulatory	Y	REGULATORY	Text		Yes, No
Entity with Oversight	Y	ENTITY_ID	Text	ENTITY_ID from Entity feature class, comma-separated if multiple.	
Associated FME	N	FME_ID	Text	IDs from FME features, comma-separated. This optional field is intended to identify cases where there is an associated FME.	
Associated FMS	N	FMS_ID	Text	IDs from FMS features, comma-separated. This optional field is intended to identify cases where there is an associated FMS.	
Associated FMP	N	FMP_ID	Text	IDs from FMP features, comma-separated. This optional field is intended to identify cases where there is an associated FMP.	

Guidelines:

It is the role of the RFPG to review available flood hazard data and determine the best available data throughout the regional flood plan. A variety of data sources should be used, with relevant source attribute data identified for each hazard. Each polygon represents the best data for a given hazard area, not different historic flood events.

When the hazard polygon is derived through the public meetings or comments, indicate the FLOOD_FREQ as "Unknown" and the SOURCE as "Public". Make a best attempt to represent the data as a polygon.

3.6.2   Flood Mapping Gaps Polygon [Ex_Map_Gaps]

Description:

Identification of gaps in inundation boundary mapping.

Table 11: List of Fields for 'Ex_Map_Gaps'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Flood Map Gap ID	Y	EXGAPS_ID	Text	Must be unique for each feature	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number	
Region (RFPG) Name	Y	RFPG_NAME	Text		
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"); comma-separated if multiple.	
HUC 8	Y	HUC8	Text	NHD HUC8 numbers, comma-separated	
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	
Watershed ID	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated. May be left blank if too many for field length.	
Annual Chance Flood Risk	Y	FLOOD_FREQ	Text	Annual probability of occurrence	10, 4, 1, 0.2, Unknown
Entity with Oversight (ID)	Y	ENTITY_ID	Text	ENTITY_ID from Entity feature class, comma-separated if multiple	
Associated FME	N	FME_ID	Text	IDs from FME features, comma-separated. This optional field is intended to identify cases where there is an associated FME.	
Hazard Map Date	N	MAP_DATE	Date	The date the hazard map was produced, if applicable	
Data Source	N	SOURCE	Text	Data source used to identify a gap in flood maps	Fathom, BLE, Approximate Data, None

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Reason Description	Y	REASON	Text	The reason that this gap is specified	Areas with effective data more than 10 years old, Approximate Data, Incomplete Coverage, No Available Floodplain Data, Atlas 14 Data Update Required, Available data lacks analytical rigor

Guidelines:

Flood mapping gaps are areas without sufficient or outdated mapping data. Existing maps covering the area may be out of date or lacking in analytical rigor. The minimum feature size is one watershed, which should be no smaller than 1-square mile. RFPGs are to utilize their own discretion to decide which maps are outdated since this will depend on various factors including but not limited to date of existing H&H models and mapping, change of land use and impervious cover in the area, change in rainfall pattern and availability of updated hydrology information. For map gaps identified using the FloodQuilt, indicate the SOURCE as "Approximate Data".

3.6.3   Existing Condition Flood Exposure

Description:

Develop high-level, region-wide, and largely GIS-based existing condition flood exposure analyses using the information identified in the flood hazard analysis to identify who and what might be harmed within the region for, at a minimum, 10% annual chance, 1.0% annual chance, and 0.2% annual chance flood events.

Guidelines:

Since flood exposure exhibits diverse geometries, three separate existing flood exposure feature classes will be submitted – polygon, line, and point. See below for Tables for each feature class. Exposure feature layers should be created by intersecting the flood hazard layer with feature layers including but not limited to buildings, infrastructure, roadways, land area etc. The exposure type fields identify the discrete types of exposure to be included. Every exposure must be represented by a single record in the 'ExFldExpAll' feature layer.

3.6.3.1   *Polygon [ExFldExpPol]*
Table 12: List of Fields for 'ExFldExpPol'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Existing Exposure Polygon ID	Y	EXEXPPY_ID	Text	Must be unique for each feature	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Region (RFPG) Name	Y	RFPG_NAME	Text		
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"). For hazard and exposure feature classes, COUNTY must be singular.	
HUC 8	Y	HUC8	Text	NHD HUC8 numbers, comma-separated	
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	
Watershed ID	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated . May be left blank if too many for field length.	
Exposure Type	Y	EXP_TYPE	Text	Identify the type of exposure	Residential Bldg, Commercial Bldg, Agricultural Bldg, Industrial Bldg, Public Bldg, Vacant or Unknown Bldg, Agricultural Land, Power Generation, Other
Exposure Description	N	EXP_DESC	Text	Description of the exposure type, required when EXP_TYPE = "Other"	
Base Elevation	N	BASE_ELEV	Float	Estimated base elevation of the structure (feet)	
Exposed Farmland	N	EXP_ACRE	Float	Estimated farm and ranch land. Required if EXP_TYPE=Agricultural Land, report area in acres	
Daytime Population	Y	POP_DAY	Long	Daytime population at flood risk	
Nighttime Population	Y	POP_NIGHT	Long	Nighttime population at flood risk	
Annual Probability of Occurrence	Y	FLOOD_FREQ	Text	Lowest annual probability of occurrence	10, 4, 1, 0.2, Unknown
Inundation Depth	N	INUN_DEPTH	Float	Inundation depth (feet)	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Velocity	N	VELOCITY	Float	Velocity (ft/sec)	
Riverine Flood Risk	Y	FLD_TP_RIV	Text	Flood risk type: Riverine	Yes, No
Coastal Flood Risk	Y	FLD_TP_CST	Text	Flood risk type: Coastal	Yes, No
Urban or Local Flood Risk	Y	FLD_TP_LOC	Text	Flood risk type: Urban/Local	Yes, No
Playa Flood Risk	Y	FLD_TP_PLY	Text	Flood risk type: Playa	Yes, No
Other Flood Risk	Y	FLD_TP_OTH	Text	Flood risk type: Other	Yes, No
Entity with Oversight (ID)	Y	ENTITY_ID	Text	ENTITY_ID from Entity feature class, comma-separated if multiple.	
Associated FME	N	FME_ID	Text	IDs from FME features, comma-separated. This optional field is intended to identify cases where there is an associated FME.	
Associated FMS	N	FMS_ID	Text	IDs from FMS features, comma-separated. This optional field is intended to identify cases where there is an associated FMS.	
Associated FMP	N	FMP_ID	Text	IDs from FMP features, comma-separated. This optional field is intended to identify cases where there is an associated FMP.	

Guidelines:

Optional field EXP_DESC is conditionally required when EXP_TYPE= 'Other'. Optional field EXP_ACRE is conditionally required when EXP_TYPE= 'Agricultural Land'.

All critical facilities should originate from the Exposure – Polygon feature class.

3.6.3.2 Line [ExFldExpLn]
Table 13: List of Fields for 'ExFldExpLn'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Existing Exposure Line ID	Y	EXEXPLN_ID	Text	Must be unique for each feature	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Region (RFPG) Name	Y	RFPG_NAME	Text		
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"). For hazard and exposure feature classes, COUNTY must be singular.	
HUC 8	Y	HUC8	Text	NHD HUC8 numbers, comma-separated	
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	
Watershed ID	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated. May be left blank if too many for field length.	
Exposure Type	Y	EXP_TYPE	Text	Identify the type of exposure	Roadway Segment, Other
Exposure Description	N	EXP_DESC	Text	Description of the exposure type, required when EXP_TYPE = "Other"	
Base Elevation	N	BASE_ELEV	Float	Estimated base elevation of the structure (feet)	
Exposure Length	N	EXP_MILES	Float	Exposure length (miles); required if EXP_TYPE = Roadway Segment	
Annual Probability of Occurrence	Y	FLOOD_FREQ	Text	Lowest annual probability of occurrence	10, 4, 1, 0.2, Unknown
Inundation Depth	N	INUN_DEPTH	Float	Inundation depth (feet)	
Velocity	N	VELOCITY	Float	Velocity (ft/sec)	
Riverine Flood Risk	Y	FLD_TP_RIV	Text	Flood risk type: Riverine	Yes, No
Coastal Flood Risk	Y	FLD_TP_CST	Text	Flood risk type: Coastal	Yes, No
Urban or Local Flood Risk	Y	FLD_TP_LOC	Text	Flood risk type: Urban/Local	Yes, No
Playa Flood Risk	Y	FLD_TP_PLY	Text	Flood risk type: Playa	Yes, No
Other Flood Risk	Y	FLD_TP_OTH	Text	Flood risk type: Other	Yes, No
Entity with Oversight (ID)	Y	ENTITY_ID	Text	ENTITY_ID from Entity feature class, comma-separated if multiple.	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Associated FME	N	FME_ID	Text	IDs from FME features, comma-separated. This optional field is intended to identify cases where there is an associated FME.	
Associated FMS	N	FMS_ID	Text	IDs from FMS features, comma-separated. This optional field is intended to identify cases where there is an associated FMS.	
Associated FMP	N	FMP_ID	Text	IDs from FMP features, comma-separated. This optional field is intended to identify cases where there is an associated FMP.	

Guidelines:

Optional field EXP_DESC is conditionally required when EXP_TYPE= 'Other'. Optional field EXP_MILES is conditionally required if EXP_TYPE= 'Roadway Segment', otherwise leave field as Null.

3.6.3.3 Point [ExFldExpPt]
Table 14: List of Fields for 'ExFldExpPt'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Existing Exposure Point ID	Y	EXEXPPT_ID	Text	Must be unique for each feature	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number	
Region (RFPG) Name	Y	RFPG_NAME	Text		
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"). For hazard and exposure feature classes, COUNTY must be singular.	
HUC 8	Y	HUC8	Text	NHD HUC8 numbers, comma-separated	
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	
Watershed ID	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated. May be left blank if too many for field length.	
Exposure Type	Y	EXP_TYPE	Text	Identify the type of exposure	Power Generation, Roadway Stream Crossing, Other
Exposure Description	N	EXP_DESC	Text	Description of the exposure type, required when EXP_TYPE = "Other"	
Base Elevation	N	BASE_ELEV	Float	Estimated base elevation of the structure (feet)	
Low Water Crossing	Y	EXP_LWC	Text	If Exposure Type = 'Roadway Stream Crossing', identify if it is also LWC.	Yes, No
Annual Probability of Occurrence	Y	FLOOD_FREQ	Text	Lowest annual probability of occurrence	10, 4, 1, 0.2, Unknown
Inundation Depth	N	INUN_DEPTH	Float	Inundation depth (feet)	
Velocity	N	VELOCITY	Float	Velocity (ft/sec)	
Riverine Flood Risk	Y	FLD_TP_RIV	Text	Flood risk type: Riverine	Yes, No

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Coastal Flood Risk	Y	FLD_TP_CST	Text	Flood risk type: Coastal	Yes, No
Urban or Local Flood Risk	Y	FLD_TP_LOC	Text	Flood risk type: Urban/Local	Yes, No
Playa Flood Risk	Y	FLD_TP_PLY	Text	Flood risk type: Playa	Yes, No
Other Flood Risk	Y	FLD_TP_OTH	Text	Flood risk type: Other	Yes, No
Entity with Oversight (ID)	Y	ENTITY_ID	Text	ENTITY_ID from Entity feature class, comma-separated if multiple.	
Associated FME	N	FME_ID	Text	IDs from FME features, comma-separated. This optional field is intended to identify cases where there is an associated FME.	
Associated FMS	N	FMS_ID	Text	IDs from FMS features, comma-separated. This optional field is intended to identify cases where there is an associated FMS.	
Associated FMP	N	FMP_ID	Text	IDs from FMP features, comma-separated. This optional field is intended to identify cases where there is an associated FMP.	

Guidelines:

Optional field EXP_DESC is conditionally required when EXP_TYPE= 'Other'. Required field EXP_LWC only applies to EXP_TYPE = 'Roadway Stream Crossing'; for all other exposure types, EXP_LWC is 'No'.

3.6.4 Existing Condition Vulnerability [ExFldExpAll]

Description:

Combines the exposure polygon, line, and point data into a single point layer that includes all Exposure and Vulnerability data.

Table 15: List of Fields for 'ExFldExpAll'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Existing Exposure All ID	Y	EXEXPALLID	Text	Must be unique for each feature	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number	
Region (RFPG) Name	Y	RFPG_NAME	Text		

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"). For hazard and exposure feature classes, COUNTY must be singular.	
HUC 8	Y	HUC8	Text	NHD HUC8 numbers, comma-separated	
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	
Watershed ID	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated. May be left blank if too many for field length.	
Annual Chance Flood Risk	Y	FLOOD_FREQ	Text	Lowest annual probability of occurrence	10, 4, 1, 0.2, Unknown
Inundation Depth	N	INUN_DEPTH	Float	Inundation depth (feet)	
Velocity	N	VELOCITY	Float	Velocity (ft/sec)	
Riverine Flood Risk	Y	FLD_TP_RIV	Text	Flood risk type: Riverine	Yes, No
Coastal Flood Risk	Y	FLD_TP_CST	Text	Flood risk type: Coastal	Yes, No
Urban or Local Flood Risk	Y	FLD_TP_LOC	Text	Flood risk type: Urban/Local	Yes, No
Playa Flood Risk	Y	FLD_TP_PLY	Text	Flood risk type: Playa	Yes, No
Other Flood Risk	Y	FLD_TP_OTH	Text	Flood risk type: Other	Yes, No
Original Geometry Type	Y	EXP_GEOM	Text	Geometry type of corresponding feature in existing exposure polygon, line, or point feature class	Polygon, Line, Point
Original ID from Polygon, Line, or Point	Y	EXPORIG_ID	Text	Unique ID from existing exposure polygon, line, or point feature	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Exposure Type	Y	EXP_TYPE	Text		Residential Bldg, Commercial Bldg, Agricultural Bldg, Industrial Bldg, Public Bldg, Vacant or Unknown Bldg, Roadway Stream Crossing, Roadway Segment, Agricultural Land, Power Generation, Other
Exposure Description	N	EXP_DESC	Text	Description of the exposure type, required when EXP_TYPE = "Other"	
Base Elevation	N	BASE_ELEV	Float	Estimated base elevation of the structure (feet)	
Exposed Farmland	N	EXP_ACRES	Float	Estimated farm and ranch land. Required if EXP_TYPE=Agricultural Land, report area in acres	
Exposure Length	N	EXP_MILES	Float	Exposure length (miles); required if EXP_TYPE = Roadway Segment	
Low Water Crossing	Y	EXP_LWC	Text	Identify if the exposure is a Low Water Crossing	Yes, No
Cost of Structure or Land	N	COSTSTRUCLAND	Float	Estimated value of structure or land parcel in exposure (polygon only)	
Critical Facility	Y	CRITICAL	Text	Is this a critical facility?	Yes, No
Critical Facility Type	Y	CRIT_TYPE	Text	Type of critical facility. "Fire" may include fire stations with EMS. If field CRITICAL is "No" then CRIT_TYPE should be Null. Critical facilities should not include items like power lines or gas transmission lines..	Medical, Police, Fire, EMS, Shelter, School, Water Treatment, Wastewater Treatment, Power Generation, Other
Critical Facility Description	N	CRIT_DESC	Text	Description of critical facility. Conditionally required if CRIT_TYPE = 'Other'	
Daytime Population	Y	POP_DAY	Long	Daytime population at flood risk (for buildings, 0 if not applicable)	
Nighttime Population	Y	POP_NIGHT	Long	Nighttime population at flood risk (for buildings, 0 if not applicable)	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Social Vulnerability Index	Y	SVI	Float	Social Vulnerability Index for exposure. A decimal number in range 0-1. If unknown or not applicable, leave as Null.	
Texas Flood SVI	Y	TXF_SVI	Float	Social Vulnerability Index for exposure. A decimal number in range 0-1. Leave as Null until June 2024 when we receive new Texas flood specific SVI data from UT. If unknown, leave as Null.	
Entity with Oversight (ID)	Y	ENTITY_ID	Text	ENTITY_ID from Entity feature class, comma-separated if multiple.	
Associated FME ID	N	FME_ID	Text	IDs from FME features, comma-separated. This optional field is intended to identify cases where there is an associated FME.	
Associated FMS ID	N	FMS_ID	Text	IDs from FMS features, comma-separated. This optional field is intended to identify cases where there is an associated FMS.	
Associated FMP ID	N	FMP_ID	Text	IDs from FMP features, comma-separated. This optional field is intended to identify cases where there is an associated FMP.	

Guidelines:

The 'ExFldExpAll' layer combines the three exposure layers into a single point feature layer, identifies whether the exposure is a critical facility, and provides the Social Vulnerability Index for each attribute. The SVI should match the Tract SVI provided by TWDB. When converting from an exposure polygon or line into a point, the centroid may be used, or any other method determined to best locate the point. This feature class is primarily for summarization of exposure data (e.g., Table 3 in Exhibit C) and visualization, not for detailed spatial analysis.

Optional field EXP_DESC is conditionally required when EXP_TYPE= 'Other'. Optional field EXP_ACRE is conditionally required when EXP_TYPE= 'Agricultural Land'. Required field CRIT_TYPE should be left as Null when required field CRITICAL = 'No'. Optional field CRIT_DESC is conditionally required when EXP_TYPE = 'Other'. Required field EXP_LWC only applies to EXP_TYPE = 'Roadway Stream Crossing'; for all other exposure types, EXP_LWC is 'No'. Optional field EXP_MILES is conditionally required if EXP_TYPE= 'Roadway Segment', otherwise leave field as Null.

If SVI field is unknown or not applicable, leave as Null. The same guidelines apply to TXF-SVI.

The original geometry type used for critical facilities should only be polygons. Therefore, critical facilities should not include items like power lines or gas transmission lines. Facilities such as industrial chemical plants and refineries, oil and gas infrastructure, or Superfund sites may be classified as critical facilities using the 'Other' valid entry for CRIT_TYPE.

3.7 Future Condition Flood Risk Analysis

3.7.1 Future Condition Flood Hazard [FutFldHazard]

Description: Perform future condition flood hazard analyses to determine the location and magnitude of 10% annual chance, 1.0% annual chance, and 0.2% annual chance floods. This task also includes identification of flood prone areas. Flood prone areas can be identified in the 'FLOOD_FREQ' field with a value of 'Unknown'.

Table 16: List of Fields for 'FutFldHazard'

Field Alias	Required ?	Field Name	Data Type	Guidance	Valid Entries
Future Hazard ID	Y	FUTHAZ_ID	Text	Must be unique for each feature	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number	
Region (RFPG) Name	Y	RFPG_NAME	Text		
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"). For hazard and exposure feature classes, COUNTY must be singular.	
HUC 8	Y	HUC8	Text	NHD HUC8 numbers, comma-separated	
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	
Watershed ID	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated. May be left blank if too many for field length.	
Riverine Flood Risk	Y	FLD_TP_RIV	Text	Flood risk type: Riverine	Yes, No
Coastal Flood Risk	Y	FLD_TP_CST	Text	Flood risk type: Coastal	Yes, No
Urban or Local Flood Risk	Y	FLD_TP_LOC	Text	Flood risk type: Urban/Local	Yes, No
Playa Flood Risk	Y	FLD_TP_PLY	Text	Flood risk type: Playa	Yes, No
Other Flood Risk	Y	FLD_TP_OTH	Text	Flood risk type: Other	Yes, No

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Annual Probability of Occurrence	Y	FLOOD_FREQ	Text	Annual probability of occurrence	10, 4, 1, 0.2, Unknown
Hazard Area (sqmi)	Y	AREA_SQMI	Float	Hazard area (sqmi)	
Data Source	Y	SOURCE	Text		
Source Date	N	SRC_DATE	Date	Effective date (for FIRM) or published date (for others)	
Source Link	N	SRC_LINK	Text	URL	
Date of Hydrological Model	N	HYDRO_DATE	Date	Date of existing hydrologic model	
Date of Hydraulic Model	N	HYDRA_DATE	Date	Date of existing hydraulic model	
Terrain Data Description	N	TERR_DATA	Text	Identify the type of data , for example "30-meter DEM". Be sure to include the resolution and source.	
Terrain Date	N	TERR_DATE	Date		
Hazard Map Date	N	MAP_DATE	Date	Date of current digital mapping, may be the same as SRC_DATE	
Source is Regulatory	Y	REGULATORY	Text		Yes, No
Entity with Oversight (ID)	Y	ENTITY_ID	Text	ENTITY_ID from Entity feature class, comma-separated if multiple.	
Associated FME	N	FME_ID	Text	IDs from FME features, comma-separated. This optional field is intended to identify cases where there is an associated FME.	
Associated FMS	N	FMS_ID	Text	IDs from FMS features, comma-separated. This optional field is intended to identify cases where there is an associated FMS.	
Associated FMP	N	FMP_ID	Text	IDs from FMP features, comma-separated. This optional field is intended to identify cases where there is an associated FMP.	

Guidelines:

It is the role of the RFPG to review available flood hazard data and determine the best available data throughout the regional flood plan. A variety of data sources should be used, with relevant source attribute data identified for each hazard.

3.7.2   Future Flood Mapping Gaps Polygon [Fut_Map_Gaps]

Description:

Identification of future gaps in inundation boundary mapping.

Table 17: List of Fields for 'Fut_Map_Gaps'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Future Flood Map Gap ID	Y	FUTGAPS_ID	Text	Must be unique for each feature	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number	
Region (RFPG) Name	Y	RFPG_NAME	Text		
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"); comma-separated if multiple.	
HUC 8	Y	HUC8	Text	NHD HUC8 numbers, comma-separated	
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	
Watershed ID	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated. May be left blank if too many for field length.	
Annual Probability of Occurrence	Y	FLOOD_FREQ	Text	Annual probability of occurrence	10, 4, 1, 0.2, Unknown
Entity with Oversight (ID)	Y	ENTITY_ID	Text	ENTITY_ID from Entity feature class, comma-separated if multiple	
Associated FMEs	N	FME_ID	Text	IDs from FME features, comma-separated. This optional field is intended to identify cases where there is an associated FME.	
Hazard Map Date	N	MAP_DATE	Date	The date the hazard map was produced, if applicable	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Data Source	N	SOURCE	Text	Data source used to identify a gap in flood maps	Fathom, BLE, Approximate Data, None
Reason Description	Y	REASON	Text	The reason that this gap is specified	Areas with effective data more than 10 years old, Approximate Data, Incomplete Coverage, No Available Floodplain Data, Atlas 14 Data Update Required, Available data lacks analytical rigor

Guidelines:

Flood mapping gaps are areas without sufficient or outdated mapping data. Future maps covering the area may be out of date or lacking in analytical rigor. The minimum feature size is one watershed, which should be no smaller than 1-square mile. RFPGs are to utilize their own discretion to decide which maps are outdated since this will depend on various factors including but not limited to date of existing H&H models and mapping, change of land use and impervious cover in the area, change in rainfall pattern and availability of updated hydrology information. For map gaps identified using the FloodQuilt, indicate the SOURCE as "Approximate Data".

3.7.3   Future Condition Flood Exposure

Description:

Perform future condition flood exposure analyses using the information identified in the flood hazard analysis to identify who and what might be harmed within the region for, at a minimum, 10% annual chance, 1.0% annual chance, and 0.2% annual chance flood events

Guidelines:

Since flood exposure exhibits diverse geometries, three separate future flood exposure feature classes will be submitted—polygon, line, and point. See below for Tables for each feature class. Exposure feature layers should be created by intersecting the flood hazard layer with feature layers including but not limited to buildings, infrastructure, roadways, land area etc. The exposure type fields identify the discrete types of exposure to be included. Every exposure should be represented by a single record in the 'FutFldExpAll' feature layer.

3.7.3.1   *Polygon [FutFldExpPol]*
Table 18: List of Fields for 'FutFldExpPol'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Future Exposure Polygon ID	Y	FTEXPPY_ID	Text	Must be unique for each feature	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Region (RFPG) Name	Y	RFPG_NAME	Text		
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"). For hazard and exposure feature classes, COUNTY must be singular.	
HUC 8	Y	HUC8	Text	NHD HUC8 numbers, comma-separated	
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	
Watershed ID	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated . May be left blank if too many for field length.	
Exposure Type	Y	EXP_TYPE	Text	Identify the type of exposure	Residential Bldg, Commercial Bldg, Agricultural Bldg, Industrial Bldg, Public Bldg, Vacant or Unknown Bldg, Agricultural Land, Power Generation, Other
Exposure Description	N	EXP_DESC	Text	Description of the exposure type, required when EXP_TYPE = "Other"	
Base Elevation	N	BASE_ELEV	Float	Estimated base elevation of the structure (feet)	
Exposed Farmland	N	EXP_ACRE	Float	Estimated farm and ranch land. Required if EXP_TYPE=Agricultural Land, report area in acres	
Daytime Population	Y	POP_DAY	Long	Daytime population at flood risk	
Nighttime Population	Y	POP_NIGHT	Long	Nighttime population at flood risk	
Annual Probability of Occurrence	Y	FLOOD_FREQ	Text	Lowest annual probability of occurrence	10, 4, 1, 0.2, Unknown
Inundation Depth	N	INUN_DEPTH	Float	Inundation depth (feet)	
Velocity	N	VELOCITY	Float	Velocity (ft/sec)	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Cost of Structure or Land	N	COSTSTRUCLAND	Float	Estimated value of structure or land parcel in exposure (polygon only)	
Riverine Flood Risk	Y	FLD_TP_RIV	Text	Flood risk type: Riverine	Yes, No
Coastal Flood Risk	Y	FLD_TP_CST	Text	Flood risk type: Coastal	Yes, No
Urban or Local Flood Risk	Y	FLD_TP_LOC	Text	Flood risk type: Urban/Local	Yes, No
Playa Flood Risk	Y	FLD_TP_PLY	Text	Flood risk type: Playa	Yes, No
Other Flood Risk	Y	FLD_TP_OTH	Text	Flood risk type: Other	Yes, No
Entity with Oversight (ID)	Y	ENTITY_ID	Text	ENTITY_ID from Entity feature class, comma-separated if multiple.	
Associated FME	N	FME_ID	Text	IDs from FME features, comma-separated. This optional field is intended to identify cases where there is an associated FME.	
Associated FMS	N	FMS_ID	Text	IDs from FMS features, comma-separated. This optional field is intended to identify cases where there is an associated FMS.	
Associated FMP	N	FMP_ID	Text	IDs from FMP features, comma-separated. This optional field is intended to identify cases where there is an associated FMP.	

Guidelines:

Optional field EXP_DESC is conditionally required when EXP_TYPE= 'Other'. Optional field EXP_ACRE is conditionally required when EXP_TYPE= 'Agricultural Land'.

All critical facilities should originate from the Exposure – Polygon feature class.

3.7.3.2 Line [FutFldExpLn]
Table 19: List of Fields for 'FutFldExpLn'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Future Exposure Line ID	Y	FTEXPLN_ID	Text	Must be unique for each feature	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Region (RFPG) Name	Y	RFPG_NAME	Text		
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"). For hazard and exposure feature classes, COUNTY must be singular.	
HUC 8	Y	HUC8	Text	NHD HUC8 numbers, comma-separated	
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	
Watershed ID	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated. May be left blank if too many for field length.	
Exposure Type	Y	EXP_TYPE	Text	Identify the type of exposure	Roadway Segment, Other
Exposure Description	N	EXP_DESC	Text	Description of the exposure type, required when EXP_TYPE = "Other"	
Base Elevation	N	BASE_ELEV	Float	Estimated base elevation of the structure (feet)	
Exposure Length	N	EXP_MILES	Float	Exposure length (miles)	
Annual Probability of Occurrence	Y	FLOOD_FREQ	Text	Lowest annual probability of occurrence	10, 4, 1, 0.2, Unknown
Inundation Depth	N	INUN_DEPTH	Float	Inundation depth (feet)	
Velocity	N	VELOCITY	Float	Velocity (ft/sec)	
Riverine Flood Risk	Y	FLD_TP_RIV	Text	Flood risk type: Riverine	Yes, No
Coastal Flood Risk	Y	FLD_TP_CST	Text	Flood risk type: Coastal	Yes, No
Urban or Local Flood Risk	Y	FLD_TP_LOC	Text	Flood risk type: Urban/Local	Yes, No
Playa Flood Risk	Y	FLD_TP_PLY	Text	Flood risk type: Playa	Yes, No
Other Flood Risk	Y	FLD_TP_OTH	Text	Flood risk type: Other	Yes, No
Entity with Oversight (ID)	Y	ENTITY_ID	Text	ENTITY_ID from Entity feature class, comma-separated if multiple.	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Associated FME	N	FME_ID	Text	IDs from FME features, comma-separated. This optional field is intended to identify cases where there is an associated FME.	
Associated FMS	N	FMS_ID	Text	IDs from FMS features, comma-separated. This optional field is intended to identify cases where there is an associated FMS.	
Associated FMP	N	FMP_ID	Text	IDs from FMP features, comma-separated. This optional field is intended to identify cases where there is an associated FMP.	

Guidelines:

Optional field EXP_DESC is conditionally required when EXP_TYPE= 'Other'. Optional field EXP_MILES is conditionally required if EXP_TYPE= 'Roadway Segment', otherwise leave field as Null.

3.7.3.3 Point [FutFldExpPt]
Table 20: List of Fields for 'FutFldExpPt'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Future Exposure Point Feature	Y	FTEXPPT_ID	Text	Must be unique for each feature	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number	
Region (RFPG) Name	Y	RFPG_NAME	Text		
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"). For hazard and exposure feature classes, COUNTY must be singular.	
HUC 8	Y	HUC8	Text	NHD HUC8 numbers, comma-separated	
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Watershed ID	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated. May be left blank if too many for field length.	
Exposure Type	Y	EXP_TYPE	Text	Identify the type of exposure	Power Generation, Roadway Stream Crossing, Other
Exposure Description	N	EXP_DESC	Text	Description of the exposure type, required when EXP_TYPE = "Other"	
Base Elevation	N	BASE_ELEV	Float	Estimated base elevation of the structure (feet)	
Low Water Crossing	Y	EXP_LWC	Text	Identify if the exposure is a Low Water Crossing	Yes, No
Annual Probability of Occurrence	Y	FLOOD_FREQ	Text	Lowest annual probability of occurrence	10, 4, 1, 0.2, Unknown
Inundation Depth	N	INUN_DEPTH	Float	Inundation depth (feet)	
Velocity	N	VELOCITY	Float	Velocity (ft/sec)	
Riverine Flood Risk	Y	FLD_TP_RIV	Text	Flood risk type: Riverine	Yes, No
Coastal Flood Risk	Y	FLD_TP_CST	Text	Flood risk type: Coastal	Yes, No
Urban or Local Flood Risk	Y	FLD_TP_LOC	Text	Flood risk type: Urban/Local	Yes, No
Playa Flood Risk	Y	FLD_TP_PLY	Text	Flood risk type: Playa	Yes, No
Other Flood Risk	Y	FLD_TP_OTH	Text	Flood risk type: Other	Yes, No
Entity with Oversight (ID)	Y	ENTITY_ID	Text	ENTITY_ID from Entity feature class, comma-separated if multiple.	
Associated FME	N	FME_ID	Text	IDs from FME features, comma-separated. This optional field is intended to identify cases where there is an associated FME.	
Associated FMS	N	FMS_ID	Text	IDs from FMS features, comma-separated. This optional field is intended to identify cases where there is an associated FMS.	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Associated FMP	N	FMP_ID	Text	IDs from FMP features, comma-separated. This optional field is intended to identify cases where there is an associated FMP.	

Guidelines:

Optional field EXP_DESC is conditionally required when EXP_TYPE= 'Other'. Required field EXP_LWC only applies to EXP_TYPE = 'Roadway Stream Crossing'; for all other exposure types, EXP_LWC is 'No'.

3.7.4 Future Condition Vulnerability [FutFldExpAll]

Description:

Combines the future polygon, line, and point data into a single point layer that also includes Vulnerability data.

Table 21: List of Fields for 'FutFldExpAll'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Existing Exposure All ID	Y	FTEXPALLID	Text	Must be unique for each feature	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number	
Region (RFPG) Name	Y	RFPG_NAME	Text		
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"). For hazard and exposure feature classes, COUNTY must be singular.	
HUC 8	Y	HUC8	Text	NHD HUC8 numbers, comma-separated	
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Watershed ID	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated. May be left blank if too many for field length.	
Annual Probability of Occurrence	Y	FLOOD_FREQ	Text	Lowest annual probability of occurrence	10, 4, 1, 0.2, Unknown
Inundation Depth	N	INUN_DEPTH	Float	Inundation depth (feet)	
Velocity	N	VELOCITY	Float	Velocity (ft/sec)	
Riverine Flood Risk	Y	FLD_TP_RIV	Text	Flood risk type: Riverine	Yes, No
Coastal Flood Risk	Y	FLD_TP_CST	Text	Flood risk type: Coastal	Yes, No
Urban or Local Flood Risk	Y	FLD_TP_LOC	Text	Flood risk type: Urban/Local	Yes, No
Playa Flood Risk	Y	FLD_TP_PLY	Text	Flood risk type: Playa	Yes, No
Other Flood Risk	Y	FLD_TP_OTH	Text	Flood risk type: Other	Yes, No
Original Geometry Type	Y	EXP_GEOM	Text	Geometry type of corresponding feature in existing exposure polygon, line, or point feature class	Polygon, Line, Point
Original ID from Polygon, Line, or Point	Y	EXPORIG_ID	Text	Unique ID from existing exposure polygon, line, or point feature	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Exposure Type	Y	EXP_TYPE	Text		Residential Bldg, Commercial Bldg, Agricultural Bldg, Industrial Bldg, Public Bldg, Vacant or Unknown Bldg, Roadway Stream Crossing, Roadway Segment, Agricultural Land, Power Generation, Other
Exposure Description	N	EXP_DESC	Text	Description of the exposure type, required when EXP_TYPE = "Other"	
Base Elevation	N	BASE_ELEV	Float	Estimated base elevation of the structure (feet)	
Exposed Farmland	N	EXP_ACRE	Float	Estimated farm and ranch land. Required if EXP_TYPE=Agricultural Land, report area in acres	
Exposure Length	N	EXP_MILES	Float	Exposure length (miles); required if EXP_TYPE = Roadway Segment	
Low Water Crossing	Y	EXP_LWC	Text	Identify if the exposure is a Low Water Crossing. If Exposure Type = 'Roadway Stream Crossing', identify if it is also LWC.	Yes, No
Cost of Structure or Land	N	COSTSTRUCLAND	Float	Estimated value of structure or land parcel in exposure (polygon only)	
Critical Facility	Y	CRITICAL	Text	Is this a critical facility?	Yes, No

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Critical Facility Type	Y	CRIT_TYPE	Text	Type of critical facility. "Fire" may include fire stations with EMS. If field CRITICAL is "No" then CRIT_TYPE should be Null. Critical Infrastructure should not include items like power lines or gas transmission lines.	Medical, Police, Fire, EMS, Shelter, School, Water Treatment, Wastewater Treatment, Power Generation, Other
Critical Facility Description	N	CRIT_DESC	Text	Description of critical facility; Conditionally required if CRIT_TYPE is 'Other'	
Daytime Population	Y	POP_DAY	Long	Daytime population at flood risk (for buildings, 0 if not applicable)	
Nighttime Population	Y	POP_NIGHT	Long	Nighttime population at flood risk (for buildings, 0 if not applicable)	
Social Vulnerability Index	Y	SVI	Float	Social Vulnerability Index for exposure. A decimal number in range 0-1 . If Unknown or not applicable, leave as Null	
Texas Flood SVI	Y	TXF_SVI	Float	Social Vulnerability Index for exposure. A decimal number in range 0-1. Stay Null until June 2024 when we receive new Texas flood specific SVI data from UT. If unknown, leave as Null.	
Entity with Oversight (ID)	Y	ENTITY_ID	Text	ENTITY_ID from Entity feature class, comma-separated if multiple.	
Associated FME	N	FME_ID	Text	IDs from FME features, comma-separated. This optional field is intended to identify cases where there is an associated FME.	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Associated FMS	N	FMS_ID	Text	IDs from FMS features, comma-separated. This optional field is intended to identify cases where there is an associated FMS.	
Associated FMP	N	FMP_ID	Text	IDs from FMP features, comma-separated. This optional field is intended to identify cases where there is an associated FMP.	

Guidelines:

The 'FutFldExpAll' layer combines the three exposure layers into a single point feature layer, identifies whether the exposure is a critical facility, and provides the Social Vulnerability Index for each attribute. The SVI should match the Tract SVI provided by TWDB. When converting from an exposure polygon or line into a point, the centroid may be used or any other method determined to best locate the point. This feature class is primarily for summarization of exposure data (e.g., Table 5 in Exhibit C) and visualization, not for detailed spatial analysis.

Optional field EXP_DESC is conditionally required when EXP_TYPE= 'Other'. Optional field EXP_ACRE is conditionally required when EXP_TYPE= 'Agricultural Land'. Required field CRIT_TYPE should be left as Null when required field CRITICAL = 'No'. Optional field CRIT_DESC is conditionally required when EXP_TYPE = 'Other'. Required field EXP_LWC only applies to EXP_TYPE = 'Roadway Stream Crossing'; for all other exposure types, EXP_LWC is 'No'. Optional field EXP_MILES is conditionally required if EXP_TYPE= 'Roadway Segment', otherwise leave field as Null.

If SVI field is unknown or not applicable, leave as Null. The same guidelines apply to TXF-SVI.

The original geometry type used for critical facilities should only be polygons. Critical facilities should not include items like power lines or gas transmission lines. Facilities such as industrial chemical plants and refineries, oil and gas infrastructure, or Superfund sites may be classified as critical facilities using the 'Other' valid entry for CRIT_TYPE.

3.8 Existing Floodplain Management Practices [ExFldMng]

Description:

Identify areas with existing floodplain management practices, identify common practices within the region, and acknowledge locations that may lack floodplain management.

Table 22: List of Fields for 'ExFldMng'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Entity ID	Y	ENTITY_ID	Text	This ID should match the ENTITY_ID from the Entities feature class	
Entity Name	Y	ENT_NAME	Text		
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number	
Region (RFPG) Name	Y	RFPG_NAME	Text		
Overall Population of Entity	Y	ENT_POP	Long	Overall population of entity; value should originate from most recent Census information	
Floodplain Management Regulations	Y	FLD_REG	Text	Does entity have floodplain management regulations?	Yes, No, Unknown
Adopted Minimum Regulations	Y	MIN_CODE	Text	Has the entity adopted minimum regulations pursuant to Texas Water Code Section 16.3145?	Yes, No, Unknown
NFIP Participant	Y	NFIP	Text	Is the entity an NFIP participant?	Yes, No
CRS Participation	Y	CRS	Text	Does the entity have community floodplain management practices that exceed the minimum requirements of NFIP?	Yes, No
Higher Standards Adopted	Y	HIGHER	Text	Are higher standards adopted?	Yes, No, Unknown
Level of Enforcement	Y	LEV_ENFRC	Text	Level of enforcement of practices	High, Moderate, Low, None, Unknown
Floodplain Management Practices	Y	LEV_FPMP	Text	Floodplain Management Practices	Strong, Moderate, Low, None, Unknown
Existing Stormwater or Drainage Fee	Y	DRAIN_FEE	Text	Does the entity already have stormwater or drainage fee	Yes, No, Unknown
Regulations URL	N	REG_URL	Text	URL for entity regulations	

Guidelines:

The 'ExFldMng' feature class maps the entities and political subdivisions with flood-related authority from the 'Entities' feature class and identifies floodplain management practices, including but not

limited to level of floodplain management, whether an entity participates in the NFIP, and if areas have higher floodplain management standards.

RFPGs shall ensure consistency between the 'Entities' feature class and the 'ExFldMng' feature class, particularly the entity boundary, ENTITY_ID, and ENTITY_NAME. Required field ENT_POP should report the whole population within an entity's boundaries regardless of whether the entity crosses a regional boundary; RFPGs are strongly encouraged to coordinate with neighboring RFPGs for all entities that cross regional boundaries. Cross-regional coordination includes entity outreach (data gathering) and data consistency (reporting).

3.9 Regional Flood Planning Goals [Goals]

Description:

Identify specific and achievable flood mitigation and floodplain management goals along with target years by which to meet those goals.

Table 23: List of Fields for 'Goals'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Goal ID	Y	GOAL_ID	Text	Must be unique for each goal	
Goal Theme	Y	GOAL_THEME	Text	Theme of the goal	Studies, Structures and population, Projects, Outreach and education, Floodplain management, Roadway and early warning systems, Infrastructure, Nature-based, Funding, Critical facilities, Water supply, Non-structural, Multiple
Goal Description	Y	GOAL_DESC	Text	Not to exceed 500 character maximum. If GOAL_THEME is 'Multiple', include which themes are pertinent to the Goal as comma-delineated list.	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number	
Region (RFPG) Name	Y	RFPG_NAME	Text		
Short or Long Term	Y	TERM	Text	Identify the term of goal: Short Term (10 year) or Long Term (30 year) or another identified by the RFPG	Short Term (10 year), Long Term (30 year)
Target Year	Y	TGT_YEAR	Short	Identify the target year for accomplishment of goal	2033, 2053, 2038, 2058

Field Alias	Required ?	Field Name	Data Type	Guidance	Valid Entries
Geographic Extent	Y	EXTENT	Text	Identify the extent of geographic area to which goal applies (such as entire RFPG or HUC 8 number(s))	
Residual Risk	Y	RESIDUAL	Text	Risk that remains after goal is met	
Measurement Method	N	MEASURE	Text	Method that will be used to measure goal attainment	
Overarching Goal	Y	OVER_GOAL	Text	To be determined by the RFPG	
Associated Goal (ID)	N	ASSC_GOALS	Text	GOAL_IDs of associated goals, comma-separated if multiple	
Flood Planning Cycle	Y	FP_CYCLE	Text	Flood Planning Cycle the Goal was introduced. 2023: 2020-2023, 2028: 2023-2028	2023, 2028
Status of goal	Y	STATUS	Text	Progress made to the goal from previous cycle; Conditionally required if FP_CYCLE = '2023'	Yes, No
Percent of goal	N	PROGRESS	Short	Percent of goal achieved (whole number); Conditionally required if FP_CYCLE = '2023'	
Status description	N	STATUS_DES	Text		

Guidelines:

This is not a spatial layer and will be included in the geodatabase as a table only. Each goal should be represented as a single record in the table.

In our efforts to easily track the progress previously reported goals in current and future cycles, the GOAL_ID value should remain the same until the goal has been attained. For example, GOAL_ID 031004563 from the 2020-2023 cycle shall be henceforth referred to as GOAL_ID 03-20-0000004563. The intent of this is to associate a specific GOAL ID to one goal for tracking purposes, thus the unique GOAL_ID cannot be recycled.

3.10 Regional Flood Planning Streams [Streams]

Description:

Shows the streams to be studied by FMEs, and those relevant to FMS and FMPs, when applicable.

Table 24: List of Fields for 'Streams'

Field Alias	Required ?	Field Name	Data Type	Guidance	Valid Entries
Stream	Y	STREAM_ID	Text	Must be unique for each feature	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
	Y	STR_NAME	Text		
RFPG	Y	RFPG_NUM	Short (2)	RFPG number	
	Y	RFPG_NAME	Text		
Counties	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"); comma-separated if multiple.	
HUC8s	Y	HUC8	Text	NHD HUC8 numbers, comma-separated	
HUC10s	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC12s	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	
Watersheds	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated. May be left blank if too many for field length.	
NHD Reach Code	N	NHD_CODE	Text	NHD reach code(s) associated with this stream feature.	
CNMS Reach ID	N	CNMS_CODE	Text	Optionally document CNMS reach ID(s) associated with this stream feature.	
Length	Y	LEN_MILES	Float	Stream length in miles	
Associated FME	N	FME_ID	Text	IDs from FME features, comma-separated. This optional field is intended to identify cases where there is an associated FME.	
Associated FMS	N	FMS_ID	Text	IDs from FMS features, comma-separated. This optional field is intended to identify cases where there is an associated FMS.	
Associated FMP	N	FMP_ID	Text	IDs from FMP features, comma-separated. This optional field is intended to identify cases where there is an associated FMP.	

Guidelines:

Stream features are to be included for all FMEs, and for FMS and FMPS as needed. The National Hydrology Database (NHD) stream layer provided by TWDB should be a starting point, with the stream features pointing back to NHD reach codes. Local entities will often have better stream network

information which will supersede the NHD network. Different features can overlap if stream segments contribute to different FME, FMS, or FMPs that have overlapping service areas. Streams included in this feature class should also be present in the ExFldInfraLn feature class.

3.11 Flood Management Evaluation [FME]

Description:

Flood Management Evaluations will identify areas requiring flood risk evaluation.

Table 25: List of Fields for 'FME'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
FME ID	Y	FME_ID	Text	Must be unique for each feature	
FME Name	Y	FME_NAME	Text		
FME Description	Y	DESCR	Text	Description of evaluation to be conducted	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number	
Region (RFPG) Name	Y	RFPG_NAME	Text		
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"); comma-separated if multiple.	
HUC 8	Y	HUC8	Text	NHD HUC8 numbers, comma-separated	
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	
Watershed ID	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated. May be left blank if too many for field length.	
Associated Goal ID	Y	GOAL_ID	Text	GOAL_ID from Goal feature	
FME Area (sqmi)	Y	AREA_SQMI	Float	Size of area to be evaluated, in square miles	
Riverine Flood Risk	Y	FLD_TP_RIV	Text	Flood risk type: Riverine	Yes, No
Coastal Flood Risk	Y	FLD_TP_CST	Text	Flood risk type: Coastal	Yes, No
Urban or Local Flood Risk	Y	FLD_TP_LOC	Text	Flood risk type: Urban/Local	Yes, No
Playa Flood Risk	Y	FLD_TP_PLY	Text	Flood risk type: Playa	Yes, No
Other Flood Risk	Y	FLD_TP_OTH	Text	Flood risk type: Other	Yes, No
Sponsor ID	Y	SPONSOR	Text	ENTITY_ID of study sponsor	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Entity with Oversight (ID)	Y	ENTITY_ID	Text	ENTITY_IDs from Entities features, comma-separated	
Emergency Need	Y	EMER_NEED	Text	Does this project/strategy meet an emergency need?	Yes, No
FME Type	Y	FME_TYPE	Text	See section 3.2 in Exhibit C for full listing.	Watershed Planning, Project Planning, Preparedness, Other
FME Cost	Y	FME_COST	Float	Total study cost in dollars. Total cost should exclude construction costs	
Total Anticipated FMP Cost	N	FMP_COST	Float	Anticipated total project cost in dollars including construction cost. Should not include FME_COST.	
Potential for Funding	Y	FUND	Text	Is there potential for federal funding or other funding sources?	Yes, No
Potential Funding Sources	N	FUND_SRC	Text	Sources of funding	
Potential Funding Amount	N	FUND_AMNT	Float	Amount of available funding. Funding amount should exclude construction costs	
Structures at 1% Annual Flood Risk	Y	STRUCT_100	Long	Estimated number of structures at 100-year flood risk	
Residential Structures at 1% Annual Flood Risk	Y	RES_STRUCT 100	Long	Residential structures at 100-year flood risk	
Daytime Population at 1% Annual Flood Risk	Y	POP_DAY100	Long	Daytime population at 100-year flood risk	
Nighttime Population at 1% Annual Flood Risk	Y	POP_NIGHT1 00	Long	Nighttime population at 100-year flood risk	
Population at 1% Annual Flood Risk	Y	POP100	Long	Population at 100-year flood risk	
Critical Facilities at 1% Annual Flood Risk	Y	CRITFAC100	Long	Critical facilities at 100-year flood risk	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Low Water Crossings in Project Area	Y	LWC	Long	Number of low water crossings in project area	
Miles of Road at 1% Annual Flood Risk	Y	ROAD_MILES100	Float	Estimated miles of road at 100-year flood risk	
Road Closures in the Past 10 Years	Y	ROADCLS	Long	Estimated number of road closure occurrences in the past 10 years	
Farm and Ranch Land at 1% Annual Flood Risk (Acres)	Y	FARMACRE100	Float	Estimated farm and ranch land at 100-year flood risk, in acres	
New Model Inclusion	Y	NEW_MODEL	Text	Will this project include a new hydrologic or hydraulic model?	Yes, No
Existing or Anticipated Models	Y	MODEL_EXST	Text	Whether hydrologic and or hydraulic models exist or are anticipated in the near future that could be used in the FME	Yes, No
Model Description	N	MODEL_DESC	Text	Description of such models	
Date of Existing Hydrologic Model	N	HYDRO_DATE	Date	Date of existing hydrologic model	
Date of Existing Hydraulic Model	N	HYDRA_DATE	Date	Date of existing hydraulic model	
Date of Anticipated HHModel	N	MODEL_ANTCI	Date	Date of anticipated Hydrologic or hydraulic model	
Associated Model ID	N	MODEL_ID	Text	Associated Model IDs from Model Coverage feature class, if any. Comma-separated if multiple.	
Existing or Anticipated Map	Y	MAP_EXST	Text	Whether maps exist or are anticipated in the near future	Yes, No
Map Description	N	MAP_DESC	Text	Description of such maps	
Map Date	N	MAP_DATE	Date	Date of existing map	
Date of Anticipated Map	N	MAP_ANTCI	Date	Date of anticipated map	
Map Source	Y	SOURCE	Text	Model/mapping source	
Source Date	N	SRC_DATE	Date		
Source Link	N	SRC_LINK	Text	URL	
Source is Regulatory	Y	REGULATORY	Text	Is source regulatory?	Yes, No, Partial, Unknown

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Terrain Data Type	N	TERR_DATA	Text	Type of data	
Terrain Data Date	N	TERR_DATE	Date		
Associated FMX	Y	ASSOCIATED	Text	Are there associated FMEs, FMSs, or FMPs? Must account for any interdependencies	Yes, No
Associated FME	N	ASSCFME_ID	Text	FME IDs of strategies compared, comma-separated if multiple	
Associated FMS	N	ASSCFMS_ID	Text	FMS IDs of strategies compared, comma-separated if multiple	
Associated FMP	N	ASSCFMP_ID	Text	FMP IDs of strategies and projects compared, comma-separated if multiple	
Associated FMX Description	N	ASSC_DESC	Text	A description of how associated FME, FMS, and FMPs related to this FMP. Must include any interdependencies.	
Associated FIF Project ID	N	ASSC_FIF	Text	Five-digit project ID from a relevant FIF project, comma-separated if multiple.	
FEMA Risk Index	N	FEMA_INDEX	Text	The FEMA Risk Index for the FME area. Conditionally required if FLD_TP_RIV or FLD_TP_CST='Yes'	Very High, Relatively High, Relatively Moderate, Relatively Low, Very Low, No Rating, Not Applicable, Insufficient Data
Community Disaster Resilience Zone	N	CDRZ	Text	Is the FME located within a FEMA Community Disaster Resilience Zone?	Yes, No, Partial
RFPG Recommendation	Y	RECOMMEND	Text	Is this FME recommended by RFPG for this planning cycle?	Yes, No
Reason for Recommendation	Y	REC_DESC	Text	Reason for recommendation	
RFPG performed FME	Y	RFPG_PERF	Text	FMEs performed by RFPGs. These cannot be recommended.	Yes, No

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
TWDB to perform FME	Y	TWDB_PERF	Text	Subset of recommended FMEs requested to be performed by TWDB on behalf of the RFPG; Conditionally required if RECOMMEND = 'Yes'	Yes, No
Year to be performed	Y	FME_YEAR	Short	Tentative year the FME is expected to be performed	
Order of Timing	Y	ORDER_TIME	Short	For recommended FMEs that are to be performed by TWDB order the FME projects with "1" being the FME the RFPG prefers the TWDB to perform first. For more guidance, see Task 5B in Exhibit C Document.	
Flood Planning Cycle	Y	FP_CYCLE	Short	Flood Planning Cycle the FME was introduced. 2023: 2020-2023, 2028: 2023-2028	2023, 2028
Status of evaluation	N	STATUS	Text	Status of the previously recommended FME. Leave as Null if FME was not recommended in previous cycle. Reach out to TWDB if new valid entries are required. If STATUS is 'Proposed', 'Ongoing', 'Completed, or 'Withdrawn', the FME cannot be RECOMMEND='Yes'	Proposed, Ongoing, Completed, No Change, Withdrawn, New
Status description	N	STATUS_DES	Text	Description of the status of previously recommended FME.	

Guidelines:

All FMEs should be represented in this feature class. FME polygons should match known hydrological units. The appropriate size of FMEs varies from individual watersheds to larger HUCs. FME_COST and FUND_AMNT fields should exclude construction costs.

RFPGs can determine the FEMA Risk Index of the FME area by visiting the FEMA Risk Index webpage. If the FME area is comprised of several tracts, RFPGs are encouraged to provide a weighted average risk index from population. Should the individual indices for riverine and coastal flooding conflict, RFPGs should take the higher of the two. More information about Community Disaster Resilience Zones may be found here.

For FMEs that cross regional flood planning boundaries, either the primary region sponsor or the region with the larger FME area should report the FME to avoid duplicate information. In such cases, the reported information should cover the entire FME area, not just the portion within the reporting region.

In our efforts to easily track the progress of previously recommended FMEs in current and future cycles, if a recommended FME was also previously recommended in a previous planning cycle, the FME_ID value should remain the same for the duration of the evaluation. For example, FME_ID 031004563 from the 2020-2023 cycle shall be henceforth referred to as FME_ID 03-51-0000004563. The intent of this is to associate a specific FME ID to one particular project for tracking purposes, thus the unique FME ID cannot be recycled.

3.12 Flood Mitigation Project

3.12.1 Project Service Area [FMP]

Description:

Flood Mitigation Projects reduce flood risk through a variety of approaches. The service area is the region impacted by the project.

Table 26: List of Fields for 'FMP'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
FMP ID	Y	FMP_ID	Text	Must be unique for each feature	
FMP Name	Y	FMP_NAME	Text	Name of project	
FMP Description	Y	FMP_DESCR	Text	Description of evaluation to be conducted	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number	
Region (RFPG) Name	Y	RFPG_NAME	Text		
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"); comma-separated if multiple.	
HUC 8	Y	HUC8	Text	NHD HUC8 numbers, comma-separated	
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	
Watershed ID	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated. May be left blank if too many for field length.	
Originating Study or Plan	N	SOURCE	Text	Can be used to connect project to originating document such as a city or county master plan	
Associated Goal ID	Y	GOAL_ID	Text	GOAL_IDs from Goal feature, comma separated if multiple	
FMP Area (sqmi)	Y	AREA_SQMI	Float	Project area in square miles	
Riverine Flood Risk	Y	FLD_TP_RIV	Text	Flood risk type: Riverine	Yes, No
Coastal Flood Risk	Y	FLD_TP_CST	Text	Flood risk type: Coastal	Yes, No

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Urban or Local Flood Risk	Y	FLD_TP_LOC	Text	Flood risk type: Urban/Local	Yes, No
Playa Flood Risk	Y	FLD_TP_PLY	Text	Flood risk type: Playa	Yes, No
Other Flood Risk	Y	FLD_TP_OTH	Text	Flood risk type: Other	Yes, No
Sponsor ID	Y	SPONSOR	Text	ENTITY_ID of study sponsor	
Entity with Oversight (ID)	Y	ENTITY_ID	Text	ENTITY_IDs from Entities features, comma-separated	
Emergency Need	Y	EMER_NEED	Text	Does this project/strategy meet an emergency need?	Yes, No
Emergency Description	N	EMER_DESC	Text	Description of emergency need	
FMP Type	Y	FMP_TYPE	Text	See section 3.2 in Exhibit C for full listing.	LWC upgrade, Infrastructure, Channel, Detention Pond, Storm Drain, Reservoir, Dam, Flood Walls and Levees, Coastal, Nature-Based Solutions, Comprehensive, Property Acquisition, Property Elevation, Preparedness, Early Warning Systems, Floodproofing, Regulatory Requirements, Other - Non-Structural, Other-Structural, Other
FMP Cost	Y	FMP_COST	Float	Total project cost in dollars	
Recurring Cost	Y	RECUR_COST	Float	Estimated recurring cost	
Potential for Funding	Y	FUND	Text	Is there potential for federal funding or other funding sources?	Yes, No
Potential Funding Sources	N	FUND_SRC	Text	Sources of funding	
Potential Funding Amount	N	FUND_AMNT	Float	Amount of available funding	
Area of 1% Annual Flood Risk (sqmi)	Y	AREA_100	Float	Area of 100-year floodplain in square miles	
Area of 0.2% Annual Flood Risk (sqmi)	Y	AREA_500	Float	Area of 500-year floodplain in square miles	
Flood Prone Area (sqmi)	Y	AREA_PRONE	Float	Area of flood prone area in square miles	

Field Alias	Required ?	Field Name	Data Type	Guidance	Valid Entries
Structures at 1% Annual Flood Risk	Y	STRUCT_100	Long	Number of structures at 100-year flood risk	
Structures at 0.2% Annual Flood Risk	Y	STRUCT_500	Long	Number of structures at 500-year flood risk	
Residential Structures at 1% Annual Flood Risk	Y	RES_STRUCT 100	Long	Residential structures at 100-year flood risk	
Daytime Population at 1% Annual Flood Risk	Y	POP_DAY100	Long	Daytime population at 100-year flood risk	
Nighttime Population at 1% Annual Flood Risk	Y	POP_NIGHT1 00	Long	Nighttime population at 100-year flood risk	
Population at 1% Annual Flood Risk	Y	POP100	Long	Population estimated in 100-year flood risk (maximum between day and night)	
Critical Facilities at 1% Annual Flood Risk	Y	CRITFAC100	Long	Critical facilities in 100-year flood risk	
Medical, EMS, Police, Fire, and Schools in 100-year flood risk	Y	EMER100	Long	Of the Critical Facilities, sum of Medical, EMS, Police, Fire, and Schools in 100-year flood risk	
Low Water Crossings in Project Area	Y	LWC	Long	Number of low water crossings in project area	
Roadway Miles at 1% Annual Flood Risk	Y	ROAD_MILES 100	Float	Estimated miles of road at 100-year flood risk	
Road Closures in the Past 10 Years	Y	ROADCLS	Long	Estimated number of road closure occurrences in the past 10 years	
Farm and Ranch Land at 1% Annual Flood Risk (Acres)	Y	FARMACRE1 00	Float	Acres of farm and ranch land at 100-year flood risk	
Total Historic Fatalities	N	FATAL	Long	Estimated total historic fatalities (if available)	
Total Historic Injuries	N	INJURY	Long	Estimated total historic injuries (if available)	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Annual Damages to Residential, Commercial, and Public Property	N	DAMAGE	Float	Estimated annual damages to residential, commercial, and public property	
Area of reduced 100-year flood risk	Y	REDAREA100	Float	Area of reduced 100-year flood risk	
Area of reduced 500-year flood risk	Y	REDAREA500	Float	Area of reduced 500-year flood risk	
Structures with Reduced 1% Annual Flood Risk	Y	REDSTRUCT100	Long	Number of structures with reduced 100-year flood risk	
Structures Removed from 1% Annual Flood Risk	Y	REMSTRC100	Long	Number of structures removed from 100-year flood risk	
Structures Removed from 0.2% Annual Flood Risk	Y	REMSTRC500	Long	Number of structures removed from 500-year flood risk	
Residential Structures Removed from 1% Annual Flood Risk	Y	REMRESSTRC100	Long	Residential structures removed from 100-year flood risk	
Population Removed from 1% Annual Flood Risk	Y	REMPOP100	Long	Population estimated removed from 100-year flood risk	
Critical Facilities Removed from 1% Annual Flood Risk	Y	REMCRITFAC100	Long	Number of critical facilities removed from 100-year flood risk	
Medical, EMS, Police, Fire, and Schools removed from 100-year flood risk	Y	REMEMER100	Long	Of the Critical Facilities, sum of Medical, EMS, Police, Fire, and Schools removed in 100-year flood risk	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Low Water Crossings Removed from 1% Annual Flood Risk	Y	REMLWC100	Long	Number of low water crossings removed from 100-year flood risk	
Roadway Miles Removed from 1% Annual Flood Risk	Y	REMRDLEN100	Float	Estimated miles of road removed from 100-year flood risk	
Reduction in Road Closures over 10 Years	Y	REMROADCLS	Long	Estimated reduction in number of road closures over 10 years	
Area of Farm and Ranch Land Removed from 1% Annual Flood Risk (Acres)	Y	REMFRMACRE100	Float	Acres of farm and ranch land removed from 100-year flood risk	
Reduction in Fatalities	N	REMFATAL	Long	Estimated reduction in number of fatalities (if available)	
Reduction in Injuries	N	REMINJR	Long	Estimated reduction in number of injuries (if available)	
Reduction in Annual Damages to Residential, Commercial, and Public Property	N	REMDAMAGE	Float	Estimated reduction in annual damages to residential, commercial, and public property	
Pre-Project Level-of-Service	Y	PREPROJLOS	Text	Pre-Project Level-of-Service	
Post-Project Level-of-Service	Y	POSPROJLOS	Text	Post-Project Level-of-Service	
Cost per Structure Removed	Y	COSTSTRUCT	Float	Cost per structure removed from 100-year flood risk. Will not be required if no structures are removed.	
Benefit Cost Ratio	Y	BC_RATIO	Float		
Other Benefits	Y	OTH_BENEFT	Text	Other benefits as deemed relevant by the RFPG including environmental benefits and other public benefits	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Social Vulnerability Index	Y	SVI	Float	The Social Vulnerability Index is a number between 0-1. If unknown or not applicable, leave as Null.	
Texas Flood SVI	Y	TXF_SVI	Float	Social Vulnerability Index for exposure. A decimal number in range 0-1. Stay Null until June 2024 when we receive new Texas flood specific SVI data from UT. If unknown or not applicable, leave as Null.	
FEMA Risk Index	N	FEMA_INDEX	Text	The FEMA Risk Index for the FMP area. Conditionally required if FLD_TP_RIV or FLD_TP_CST='Yes'	Very High, Relatively High, Relatively Moderate, Relatively Low, Very Low, No Rating, Not Applicable, Insufficient Data
Community Disaster Resilience Zone	N	CDRZ	Text	Is the FMP located within a FEMA Community Disaster Resilience Zone?	Yes, No, Partial
Negative Impacts	Y	NEG_IMPACT	Text	Will this project/strategy have negative impact on neighboring areas?	Yes, No, Unknown
Negative Impacts Description	Y	NEG_DESC	Text	Description of negative impact	
Measures to Mitigate Negative Impact	N	NEG_MITIG	Text	Measures to mitigate negative impact; Required if NEG_IMPACT = 'Yes'	
Water Supply	Y	WATER_SUP	Text	Does this project contribute to the water supply?	Yes, No
Water Supply in Acre-Feet	N	WSUP_AF	Float	Estimation in acre feet per year; Required if WATER_SUP = 'Yes'	
Water Supply Description	N	WSUP_DESCR	Text	Description of contribution to water supply. List relevant evaluations and describe consistency with state water plan; Required if WATER_SUP='Yes'	

Field Alias	Required ?	Field Name	Data Type	Guidance	Valid Entries
Residual Risk	Y	RISKS	Text	A description of residual, post-project, and future risks associated, including the risk of potential catastrophic failure and the potential for future increases to these risks due to lack of maintenance	
Nature-Based Solution (% by Cost)	Y	NATURE	Float	Percent nature-based solution by cost	
Traffic Count for Low Water Crossings	N	TRAFFIC	Long	Traffic count for low water crossings	
Associated FMX	Y	ASSOCIATED	Text	Are there associated FMEs, FMSs, or FMPs? Must account for any interdependencies	Yes, No
Associated FME	N	ASSCFME_ID	Text	FME IDs of strategies compared, comma-separated if multiple	
Associated FMS	N	ASSCFMS_ID	Text	FMS IDs of strategies compared, comma-separated if multiple	
Associated FMP	N	ASSCFMP_ID	Text	FMP IDs of strategies and projects compared, comma-separated if multiple	
Associated FMX Description	N	ASSC_DESC	Text	A description of how associated FME, FMS, and FMPs related to this FMP. Must include any interdependencies.	
Associated FIF Project ID	N	ASSC_FIF	Text	Five-digit project ID from a relevant FIF project, comma-separated if multiple.	
Associated Post-Project Hazard ID	N	ASSCPOSTHZ	Text	POSTHAZ_IDs from HazPost_FMP, comma-separated if multiple	
Implementation Issue	Y	ISSUES	Text	Implementation issues including those related to right-of-way, permitting, acquisitions, relocations, utilities and transportation	
RFPG Recommendation	Y	RECOMMEND	Text	Is this FMP recommended by RFPG for this planning cycle?	Yes, No

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Reason for Recommendation	Y	REC_DESC	Text	Reason for recommendation	
Associated Model ID	Y	MODEL_ID	Text	Associated Model IDs from Model Coverage feature class. Include all models used for this project, including those used to show no negative effect. Comma-separated if multiple.	
Flood Planning Cycle	Y	FP_CYCLE	Short	Flood Planning Cycle the FMP was introduced. 2023: 2020-2023, 2028: 2023-2028	2023, 2028
Status of project	N	STATUS	Text	Status of the previously recommended FMP. Leave as Null if FMP was not recommended in previous cycle. Reach out to TWDB if new valid entries are required. If STATUS is 'Proposed', 'Ongoing', 'Completed, or 'Withdrawn', the FMP cannot be RECOMMEND='Yes'	Proposed, Ongoing, Completed, No Change, Withdrawn, New
Status description	N	STATUS_DES	Text	Description of the status of previously recommended FMP.	
Severity Ranking: Pre-Project Average Depth of Flooding (100-year)	Y	RANKING1	Text	To be populated from the same field in FMP_Details	
Score 1: Severity - Pre-Project Average Depth of Flooding (100-year)	Y	SCORE1	Short	To be populated from the same field in FMP_Details	
Severity Ranking: Community Need (% Population)	Y	RANKING2	Text	To be populated from the same field in FMP_Details	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Score 2: Severity - Community Need (% Population)	Y	SCORE2	Short	To be populated from the same field in FMP_Details	
Life and Safety Ranking (Injury/Loss of Life)	Y	RANKING6	Text	To be populated from the same field in FMP_Details	
Score 6: Life and Safety	Y	SCORE6	Short	To be populated from the same field in FMP_Details	
Score 8: Social Vulnerability	Y	SCORE8	Short	To be populated from the same field in FMP_Details	
Multiple Benefit Ranking	Y	RANKING10	Text	To be populated from the same field in FMP_Details	
Score 10: Multiple Benefites	Y	SCORE10	Short	To be populated from the same field in FMP_Details	
Environmental Benefit Ranking	Y	RANKING13	Text	To be populated from the same field in FMP_Details	
Score 13: Environmental Benefit	Y	SCORE13	Short	To be populated from the same field in FMP_Details	
Mobility Ranking	Y	RANKING15	Text	To be populated from the same field in FMP_Details	
Score 15: Mobility	Y	SCORE15	Short	To be populated from the same field in FMP_Details	

Guidelines:

All FMPs should be represented in at least a single polygon in this feature class. The service area will most likely be a single contiguous polygon, though it is possible for a project to have discontinuous polygons represent the service area. In this case, the service area should still be represented by a single record in this feature set. The FMP areas should include contributing drainage areas to the project.

 For FMPs that cross regional flood planning boundaries, either the primary region sponsor or the region with the larger FMP area should report the FMP to avoid duplicate information. In such cases, the reported information should cover the entire FMP area, not just the portion within the reporting region.

RFPGs can determine the FEMA Risk Index of the FMP area by visiting the FEMA Risk Index webpage. If the FMP area is comprised of several tracts, RFPGs are encouraged to provide a weighted average risk index from population. Should the individual indices for riverine and coastal flooding conflict, RFPGs should take the higher of the two. More information about Community Disaster Resilience Zones may be found here.

Several fields in this feature class are identical to the FMP_Details table. An important component of the Project Details template are several metrics that will eventually be used to rank the FMPs. Guidance on these metrics is provided in Section 3.10.C in Exhibit C.

In our efforts to easily track the progress of previously recommended FMPs in current and future cycles, if a recommended FMP was also previously recommended in a previous planning cycle, the FMP_ID value should remain the same for the duration of the project. For example, FMP_ID 031004563 from the 2020-2023 cycle shall be henceforth referred to as FMP_ID 03-52-0000004563. The intent of this is to associate a specific FMP ID to one particular project for tracking purposes, thus the unique FMP ID cannot be recycled.

3.12.2 Post-Project Flood Hazard [HazPost_FMP]

Description:

Project specific features showing an updated hazard area that accounts for the impact of the project. This feature class is optional for projects, though it is strongly encouraged to be submitted.

Table 27: List of Fields for 'HazPost_FMP'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Post-Project Hazard ID	Y	POSTHAZ_ID	Text	Must be unique for each feature	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number	
Region (RFPG) Name	Y	RFPG_NAME	Text		
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"). For hazard and exposure feature classes, COUNTY must be singular.	
HUC 8	Y	HUC8	Text	NHD HUC8 numbers, comma-separated	
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	
Watershed ID	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated. May be left blank if too many for field length.	
Riverine Flood Risk	Y	FLD_TP_RIV	Text	Flood risk type: Riverine	Yes, No
Coastal Flood Risk	Y	FLD_TP_CST	Text	Flood risk type: Coastal	Yes, No
Urban or Local Flood Risk	Y	FLD_TP_LOC	Text	Flood risk type: Urban/Local	Yes, No
Playa Flood Risk	Y	FLD_TP_PLY	Text	Flood risk type: Playa	Yes, No
Other Flood Risk	Y	FLD_TP_OTH	Text	Flood risk type: Other	Yes, No

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Annual Chance Flood Risk	Y	FLOOD_FREQ	Text	Annual probability of occurrence	10, 4, 1, 0.2, Unknown
Data Source	Y	SOURCE	Text		
Source Date	N	SRC_DATE	Date		
Source Link	N	SRC_LINK	Text	URL	
Date of Existing Hydrologic Model	N	HYDRO_DATE	Date	Date of existing hydrologic model	
Date of Existing Hydraulic Model	N	HYDRA_DATE	Date	Date of existing hydraulic model	
Terrain Data	N	TERR_DATA	Text	Type of data	
Terrain Data Type	N	TERR_DATE	Date		
Hazard Map Date	N	MAP_DATE	Date	Date of existing map	
Source is Regulatory	Y	REGULATORY	Text	Is source regulatory?	Yes, No, Partial, Unknown
Entity with Oversight (ID)	Y	ENTITY_ID	Text	IDs from Entities features, comma-separated	
Associated FME	N	FME_ID	Text	IDs from FME features, comma-separated. This optional field is intended to identify cases where there is an associated FME.	
Associated FMS	N	FMS_ID	Text	IDs from FMS features, comma-separated. This optional field is intended to identify cases where there is an associated FMS.	
Associated FMP	N	FMP_ID	Text	IDs from FMP features, comma-separated. This optional field is intended to identify cases where there is an associated FMP.	

Guidelines:

This feature class represents the updated hazard condition as reduced by a given FMP. This should include post-project 10% annual chance, 1% annual chance, and 0.2% annual chance hazard boundaries, at a minimum. The RFPGs may flood hazard boundaries for additional frequencies at their discretion. Be sure to identify the data sources that were used to determine the post-project hazard area.

3.12.3 Project Details [FMP_Details]

Description:

An Excel workbook that, once complete, will be imported into the RFPG geodatabase. The table includes detailed data that will be used to rank the FMPs in the state flood plan.

Table:

See the ProjectDetailsTemplate.xls template for a full list of fields.

Guidelines:

The Project Details table is to be completed for <u>recommended</u> FMPs only. Data fields (columns in the spreadsheet) should come straight from the FMP feature class. It is recommended that these are systematically brought into the Project Details template to avoid any data integrity issues. TWDB can assist with this process, if needed. An important component of the Project Details template are several metrics that will eventually be used to rank the FMPs. Guidance on these metrics is provided in Section 3.10.C in Exhibit C. For these shared fields between the FMP feature class and the Project Details template, it is imperative for the data to be identical for FMPs to be properly ranked.

The Project Details table must be first completed within the Project Details template provided by TWDB. Once all project data has been entered into the Project Details template, the 'Data Entry' sheet is to be converted into a table within the geodatabase. See the Project Details template for detailed instructions on use of the template.

3.13 Flood Management Strategy [FMS]

Description:

Flood Management Strategies can be a broad array of policy or other strategies that aid in flood management.

Table 28: List of Fields for 'FMS'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
FMS ID	Y	FMS_ID	Text	Must be unique for each feature	
FMS Name	Y	FMS_NAME	Text	Name of strategy	
FMS Description	Y	FMS_DESCR	Text	Description of strategy	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number	
Region (RFPG) Name	Y	RFPG_NAME	Text		
County	Y	COUNTY	Text	County name, without "County" (e.g. "Harris", not "Harris County"); comma-separated if multiple. May be left blank if too many for field length.	
HUC 8	Y	HUC8	Text	NHD HUC8 numbers, comma-separated. May be left blank if too many for field length.	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
HUC 10	Y	HUC10	Text	NHD HUC10 numbers, comma-separated	
HUC 12	N	HUC12	Text	NHD HUC12 numbers, comma-separated. May be left blank if too many for field length.	
Watershed ID	N	WS_ID	Text	WS_IDs from Watershed feature, comma-separated. May be left blank if too many for field length.	
Associated Goal ID	Y	GOAL_ID	Text	GOAL_ID from Goal feature, comma-separated if multiple	
FMS Area (sqmi)	Y	AREA_SQMI	Float	Strategy area, in square miles	
Riverine Flood Risk	Y	FLD_TP_RIV	Text	Flood risk type: Riverine	Yes, No
Coastal Flood Risk	Y	FLD_TP_CST	Text	Flood risk type: Coastal	Yes, No
Urban or Local Flood Risk	Y	FLD_TP_LOC	Text	Flood risk type: Urban/Local	Yes, No
Playa Flood Risk	Y	FLD_TP_PLY	Text	Flood risk type: Playa	Yes, No
Other Flood Risk	Y	FLD_TP_OTH	Text	Flood risk type: Other	Yes, No
Sponsor ID	Y	SPONSOR	Text	ENTITY_ID of study sponsor	
Entity with Oversight (ID)	Y	ENTITY_ID	Text	ENTITY_IDs from Entities features, comma-separated	
Emergency Need	Y	EMER_NEED	Text	Does this project/strategy meet an emergency need?	Yes, No
FMS Type	Y	FMS_TYPE	Text	See Section 3.2 in Exhibit C for full listing.	Property Acquisition and Structural Elevation, Infrastructure Projects, Education and Outreach, Flood Measurement and Warning, Regulatory and Guidance, Other
FMS Nonrecurring, Noncapital Cost	Y	NRNC_COST	Float	Estimated nonrecurring, noncapital cost in dollars. Only recommended FMSs with NRNC Cost will be ranked in the State Flood Plan	
FMS Implementation Cost	Y	FMS_COST	Float	Estimated total implementation cost in dollars	
Potential for Funding	Y	FUND	Text	Is there potential for federal funding or other funding sources?	Yes, No

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Source of Funding	N	FUND_SRC	Text	Sources of funding	
Funding Amount	N	FUND_AMNT	Float	Amount of available funding	
Area of 1% Annual Flood Risk (sqmi)	Y	AREA_100	Float	Area of 100-year floodplain in square miles	
Area of 0.2% Annual Flood Risk (sqmi)	Y	AREA_500	Float	Area of 500-year floodplain in square miles	
Flood Prone Area (sqmi)	Y	AREA_PRONE	Float	Area of flood prone area in square miles	
Number of Structures at 1% Annual Flood Risk	Y	STRUCT_100	Long	Number of structures at 100-year flood risk	
Structures at 0.2% Annual Flood Risk	Y	STRUCT_500	Long	Number of structures at 500-year flood risk	
Residential Structures at 1% Annual Flood Risk	Y	RES_STRUCT100	Long	Residential structures at 100-year flood risk	
Daytime Population at 1% Annual Flood Risk	Y	POP_DAY100	Long	Daytime population at 100-year flood risk	
Nighttime Population at 1% Annual Flood Risk	Y	POP_NIGHT100	Long	Nighttime population at 100-year flood risk	
Population at 1% Annual Flood Risk	Y	POP100	Long	Population estimate in 100-year flood risk (maximum between day and night)	
Critical Facilities at 1% Annual Flood Risk	Y	CRITFAC100	Long	Critical facilities in 100-year flood risk	
Medical, EMS, Police, Fire, and Schools in 100-year flood risk	Y	EMER100	Long	Of the Critical Facilities, sum of Medical, EMS, Police, Fire, and Schools in 100-year flood risk	
Low Water Crossings in Project Area	Y	LWC	Long	Number of low water crossings in project area	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Roadway miles at 1% Annual Flood Risk	Y	ROAD_MILES100	Float	Estimated miles of road at 100-year flood risk	
Road Closures in the Past 10 Years	Y	ROADCLS	Long	Estimated number of road closure occurrences in the past 10 years	
Farm and Ranch Land at 1% Annual Flood Risk (Acre)	Y	FARMACRE100	Float	Acres of farm and ranch land in 100-year flood risk	
Total Historic Fatalities	N	FATAL	Long	Estimated total historic fatalities (if available)	
Total Historic Injuries	N	INJURY	Long	Estimated total historic injuries (if available)	
Annual Damages to Residential, Commercial, and Public Property	N	DAMAGE	Float	Estimated annual damages to residential, commercial, and public property	
Area of reduced 100-year flood risk	Y	REDAREA100	Float	Area of reduced 100-year flood risk	
Area of reduced 500-year flood risk	Y	REDAREA500	Float	Area of reduced 500-year flood risk	
Structures with Reduced 1% Annual Flood Risk	Y	REDSTRUCT100	Long	Number of structures with reduced 100-year flood risk	
Structures Removed from 1% Annual Flood Risk	Y	REMSTRC100	Long	Number of structures removed from 100-year flood risk	
Structures Removed from 0.2% Annual Flood Risk	Y	REMSTRC500	Long	Number of structures removed from 500-year flood risk	
Residential Structures Removed from 1% Annual Flood Risk	Y	REMRESSTRC100	Long	Residential structures removed from 100-year flood risk	
Population Removed from 1% Annual Flood Risk	Y	REMPOP100	Long	Population estimate removed from 100-year flood risk	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Critical Facilities Removed from 1% Annual Flood Risk	Y	REMCRITFAC100	Long	Number of critical facilities removed from 100-year flood risk	
Medical, EMS, Police, Fire, and Schools removed from 100-year flood risk	Y	REMEMER100	Long	Of the Critical Facilities, sum of Medical, EMS, Police, Fire, and Schools in 100-year flood risk	
Low Water Crossings Removed from 1% Annual Flood Risk	Y	REMLWC100	Long	Number of low water crossings removed from 100-year flood risk	
Roadway Miles Removed from 1% Annual Flood Risk	Y	REMRDLEN100	Float	Estimated miles of road removed from 100-year flood risk	
Reduction in Road Closures over 10 Years	Y	REMROADCLS	Long	Estimated reduction in number of road closures over 10 years	
Area of Farm and Ranch Land Removed from 1% Annual Flood Risk (Acre)	Y	REMFRMACRE100	Float	Acres of farm and ranch land removed from 100-year flood risk	
Reduction in Fatalities	N	REMFATAL	Long	Estimated reduction in number of fatalities (if available)	
Reduction in Injuries	N	REMINJR	Long	Estimated reduction in number of injuries (if available)	
Reduction in Annual Damages to Residential, Commercial, and Public Property	N	REMDAMAGE	Float	Estimated reduction in annual damages to residential, commercial, and public property	
Cost per Structure Removed	Y	COSTSTRUCT	Float	Cost per structure removed from 100-year flood risk. Will not be required if no structures are removed.	
Other Benefits	Y	OTH_BENEFT	Text	Other benefits as deemed relevant by the RFPG including environmental benefits and other public benefits	

Field Alias	Required ?	Field Name	Data Type	Guidance	Valid Entries
Negative Impacts	Y	NEG_IMPACT	Text	Will this project/strategy have negative impact on neighboring areas?	Yes, No, Unknown
Negative Impact Description	Y	NEG_DESC	Text	Description of negative impact	
Measures to Mitigate Negative Impact	N	NEG_MITIG	Text	Measures to mitigate negative impact; Required if NEG_IMPACT = 'Yes'	
Water Supply	Y	WATER_SUP	Text	Does this project contribute to the water supply?	Yes, No
Water Supply in Acre-Feet	N	WSUP_AF	Float	Estimation in acre feet per year; Required if WATER_SUP = 'Yes'	
Water Supply Description	N	WSUP_DESC R	Text	Description of contribution to water supply. List relevant evaluations and describe consistency with state water plan. Required if WATER_SUP='Yes'	
Nature-Based Solution (% by Cost)	Y	NATURE	Float	Percent nature-based solution by cost	
Traffic Count for Low Water Crossings	N	TRAFFIC	Long	Traffic count for low water crossings	
Associated FMX	Y	ASSOCIATED	Text	Are there associated FMEs, FMSs, or FMPs?	Yes, No
Associated FME	N	ASSCFME_ID	Text	FME IDs of strategies compared, comma-separated if multiple	
Associated FMS	N	ASSCFMS_ID	Text	FMS IDs of strategies compared, comma-separated if multiple	
Associated FMP	N	ASSCFMP_ID	Text	FMP IDs of strategies and projects compared, comma-separated if multiple	
Associated FMX Description	N	ASSC_DESC	Text	A description of how associated FME, FMS, and FMPs related to this FMP including any interdependency.	
Associated FIF Project ID	N	ASSC_FIF	Text	Five-digit project ID from a relevant FIF project, comma-separated if multiple.	

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Equitable Comparison	Y	COMPARISON	Text	Has there been an equitable comparison between and consistent assessment of all FMSs and FMPs in the same area that the RFPGs determine to be potentially feasible?	Yes, No
FME Compared	N	COMPFME_ID	Text	FME IDs of strategies compared, comma-separated if multiple	
FMS Compared	N	COMPFMS_ID	Text	FMS IDs of strategies compared, comma-separated if multiple	
FMP Compared	N	COMPFMP_ID	Text	FMP IDs of strategies and projects compared, comma-separated if multiple	
Comparison Description	N	COMP_DESC	Text	Describe the comparison	
FEMA Risk Index	N	FEMA_INDEX	Text	The FEMA Risk Index for the FMS area. Conditionally required if FLD_TP_RIV or FLD_TP_CST='Yes'	Very High, Relatively High, Relatively Moderate, Relatively Low, Very Low, No Rating, Not Applicable, Insufficient Data
Community Disaster Resilience Zone	N	CDRZ	Text	Is the FMS located within a FEMA Community Disaster Resilience Zone?	Yes, No, Partial
RFPG Recommendation	Y	RECOMMEND	Text	Is this FMS recommended by RFPG for this planning cycle?	Yes, No
Reason for Recommendation	Y	REC_DESC	Text	Reason for recommendation	
Associated Model IDs	Y	MODEL_ID	Text	Associated Model IDs from Model Coverage feature class. Include all models used for this strategy including those used to show no negative effect, if applicable. Comma-separated if multiple.	
Flood Planning Cycle	Y	FP_CYCLE	Short	Flood Planning Cycle the FMS was introduced. 2023: 2020-2023, 2028: 2023-2028	2023, 2028

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Status of studies	N	STATUS	Text	Status of the previously recommended FMS. Leave as Null if FMS was not previously recommended. Reach out to TWDB if new valid entries are required. If STATUS is 'Proposed', 'Ongoing', 'Completed, or 'Withdrawn', the FMS cannot be RECOMMEND='Yes'	Proposed, Ongoing, Completed, No Change, Withdrawn, New
Status description	N	STATUS_DES	Text	Description of the status of previously recommended FMS.	

Guidelines:

Not all FMS need to be included in this Feature class. When an FMS points to a specific area, as opposed to being a general strategy for an entire entity's jurisdiction, the target area should be represented by a polygon.

RFPGs can determine the FEMA Risk Index of the FMS area by visiting the FEMA Risk Index webpage. If the FMS area is comprised of several tracts, RFPGs are encouraged to provide a weighted average risk index from population. Should the individual indices for riverine and coastal flooding conflict, RFPGs should take the higher of the two. More information about Community Disaster Resilience Zones may be found here.

For FMSs that cross regional flood planning boundaries, either the primary region sponsor or the region with the larger FMS area should report the FMS to avoid duplicate information. In such cases, the reported information should cover the entire FMS area, not just the portion within the reporting region.

In our efforts to easily track the progress of previously recommended FMSs in current and future cycles, if a recommended FMS was also previously recommended in a previous planning cycle, the FMS_ID value should remain the same for the duration of the study. For example, FMS_ID 031004563 from the 2020-2023 cycle shall be henceforth referred to as FMS_ID 03-53-0000004563. The intent of this is to associate a specific FMS ID to one particular project for tracking purposes, thus the unique FMS ID cannot be recycled.

3.14 Model Coverage [Model Coverage]

Description:

The Model Coverage feature class was created to facilitate connections between H&H Models and flood risk reduction solutions.

Table 29: List of Fields for 'ModelCoverage'

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Model ID	Y	MODEL_ID	Text	The two-digit region code, followed by a unique 10-digit identifier, for a total of 12 digits.	
Model Name	Y	MODEL_NAME	Text		
Model Description	Y	MODEL_DESCR	Text	Description of model including scenario modeled	
Region (RFPG) Number	Y	RFPG_NUM	Short (2)	RFPG number	
Region (RFPG) Name	Y	RFPG_NAME	Text		
Type of Model	Y	MODEL_TYPE	Text		Hydraulic, Hydrologic, Coastal, Combined Riverine-Coastal, 2D, Risk Assessment, Economics/BCA, Other, Unknown
Model Software	Y	MODEL_SOFTW	Text	Software used, such as "HEC-RAS"	HEC-RAS, HEC-HMS, HEC-GeoHMS, HEC-WAT, HEC-EFM, HEC-MetVue, HEC-SSP, RiverWare, InfoWorks ICM, InfoWorks WS Pro, SWMM, InfoSWMM, XPSWMM, XPStorm, ICPR, OpenFlows StormCAD, OpenFlows CivilStorm, OpenFlows FLOOD, OpenFlows CulvertMaster, OpenFlows PondPack, ADCIRC, WHAFIS, SWAN, MIKE 21, FEMA Hazus, FEMA BCA, HEC-FDA, HEC-FIA, Hydro-CAD, HY-8 Culvert, Delft3D, SWAT, PRMS, WRAP, EPANET, FLO-2D, Other, Unknown
Version of Software	N	SOFTW_VERS	Text	Version of software	
Date of Last Update	N	LAST_UPDATE	Date		

Field Alias	Required?	Field Name	Data Type	Guidance	Valid Entries
Date of Creation	N	CREATE_DATE	Date		
Model Submission	Y	MODEL_SUBMIT	Text	With which submission was this model provided to TWDB and uploaded to MS2?	Tech Memo, Draft Plan, Final Plan, Not Submitted
Associated FME	N	ASSCFME_ID	Text	FME IDs of strategies compared, comma-separated if multiple	
Associated FMS	N	ASSCFMS_ID	Text	FMS IDs of strategies compared, comma-separated if multiple	
Associated FMP	N	ASSCFMP_ID	Text	FMP IDs of strategies and projects compared, comma-separated if multiple	
Associated Models	Y	ASSOC_MODELS	Text	Associated Model IDs from other models in the ModelCoverage feature class. Comma-separated if multiple.	
Flood Planning Cycle 1 Project ID	N	CYCLE1_ID	Text	Model_ID from 2020-2023 cycle, if applicable	

Guidelines:

This feature class records the spatial extent of each model used to identify FMP, FME, and FMSs within RFPGs. All models should be represented in a single polygon in this feature class. The model coverage area should be a single contiguous polygon, though it is possible for model coverage to be discontinuous. In this case, the service area should still be represented by a single record in this feature set.

While all H&H Models and associated metadata are required to be submitted to TWDB as part of the regional flood plan, the same files are also required to be uploaded to the TDIS MS2 application. The RFPGs are responsible for ensuring all data are consistent.

4   GIS Tips

4.1   Spatial Join to Create a Delimited-List Field

4.1.1   Overview

These instructions cover using Spatial Join in ArcGIS Pro or ArcMap to fill a field for a polygon feature with a delimited list of every polygon intersected in another feature class. For illustration, this procedure will fill a COUNTY field in a Watershed feature class with every county intersected by the watershed.

Note that the Spatial Join will fail if any of the results exceed the field size. HUC12s and Watersheds are potentially too numerous for the field length for very large project areas and the field should be left as Null in these cases.
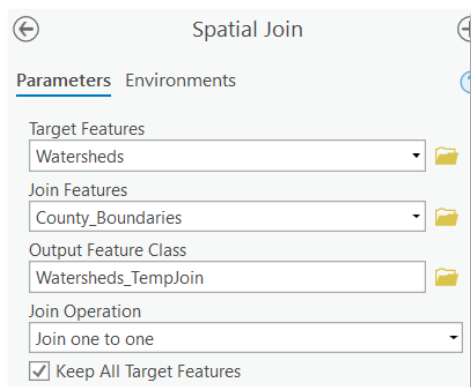
The goal is a COUNTY field such as this one:

WS_ID	WS_NAME	RF	RFPG_NA	COUNTY
08000001	Upper Oy...	8	Lower Br...	Fort Bend,Waller
08000002	Middle O...	8	Lower Br...	Brazoria,Fort Bend
08000003	Austin Ba...	8	Lower Br...	Brazoria,Fort Bend
08000004	Lower Oy...	8	Lower Br...	Brazoria
08000005	Freeport...	8	Lower Br...	Brazoria
08000006	Palo Pinto...	8	Lower Br...	Palo Pinto
08000007	Rocky Blu...	8	Lower Br...	Palo Pinto,Erath
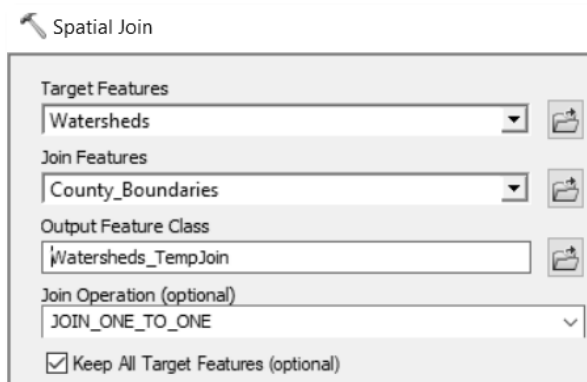
4.1.2   Steps for ArcGIS Pro or ArcMap

1. Open the Spatial Join tool.
    a. If in ArcMap, use the version available through Geoprocessing, as the Geoprocessing version has more functionality.
2. In the Spatial Join window, enter the following parameters:
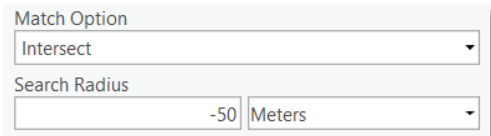
Pro   ArcMap
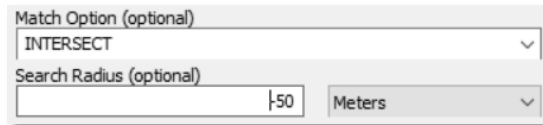
3. For the Match Option, use Intersect with a small negative Search Radius to omit polygons that only share boundaries.

Pro   ArcMap

4. For the Field Map:

a. For ArcGIS Pro:
    i. Use the "+" sign next to Output Fields to create a temporary field.
    ii. With that field selected in the left column, fill out the right column with Merge Rule = "Join" and Delimiter=",".
    iii. Then select Add New Source and choose County_Boundaries with field CNTY_NM.
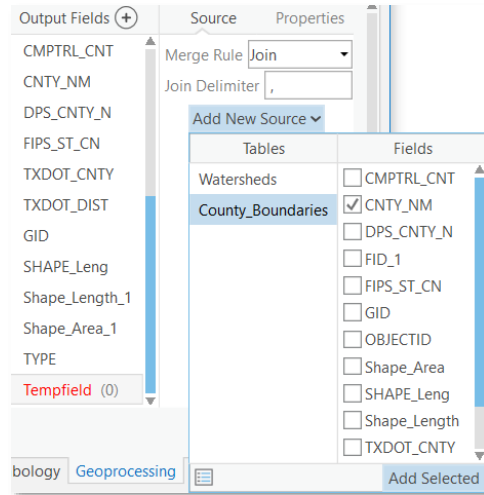
    iv. Click Add Selected.
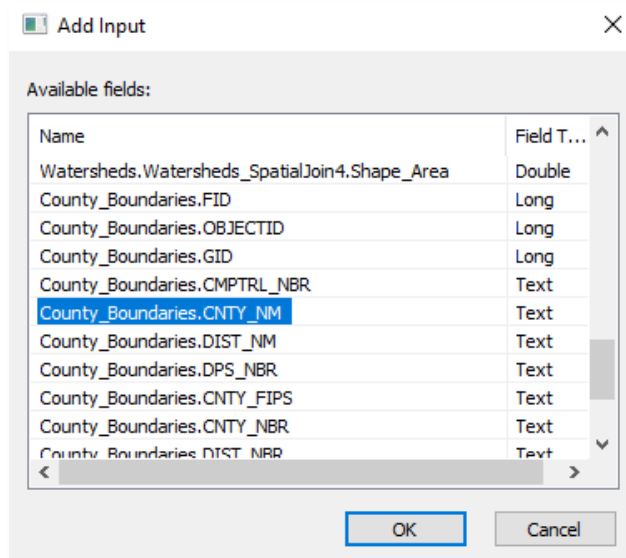
b. For ArcMap:
    i. Use the "+" sign at the right of the Field Map area to add a new field.
    ii. Fill out the Output Field Properties with Name, Alias, Type="Text", Length=254, Merge Rule= "Join", and Delimiter=",".
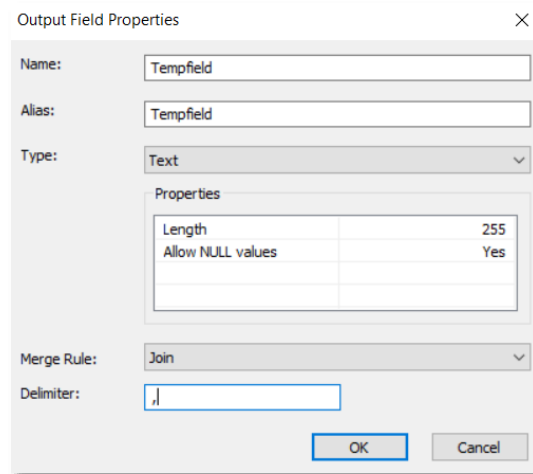
Click OK.
    iii. Right click the new field and choose Add Input Field. Select the CNTY_NM field from the County_Boundaries dataset.

Click OK.

5. Run the tool.
6. Use Attribute Join on WS_ID to join the spatial join output to the Watershed layer.
7. Use Calculate Field to copy the temporary field to COUNTY in the Watershed layer.
8. Remove the Attribute Join.
9. Delete the temporary spatial join output.

4.2 Using a Query on a Delimited Field

A SQL query with the LIKE operator can be used in Definition Query or Select by Attributes to select from a delimited list. To select all entries with "Willacy" in the COUNTY list, use SQL query

COUNTY LIKE '%Willacy%'

In ArcGIS Pro, the dropdown choice of "contains the text" results in the use of the LIKE operator.

4.3 Assigning Critical Facilities to Polygons

Two methods can be used to assign points to polygons such as when critical facilities are to be assigned to an appropriate building polygon. Spatial Join method of assigning points to polygons would be adequate for rural areas and areas where the points in critical facilities and buildings have significant overlap. The Near and Join Field method is more tedious but yields the best results for assigning points to polygons as it finds the nearest feature and allows the user to be selective of which fields to join. Note the methods listed here are suggestions for the RFPGs and are not meant to provide a "catch-all" solution for the critical facility points to building polygons assignment issue as RFPGs are expected to use any methodologies necessary to ensure the accuracy of data submitted.

The utilization of these methods may result in the assignment of multiple buildings from a critical facility point. This is acceptable for critical facility types such as Medical and Water Treatment, which are often comprised of several buildings. It is recommended the RFPGs vet the data used by external sources prior to assigning points to polygons.

1.1.1   Method 1: Spatial Join

This method is best used for rural areas or areas where points in critical facilities and buildings have overlap. The search radius should be adjusted depending on the building density of the join area.

1. Open the Spatial Join tool

2. Enter the appropriate parameters where:

    a. Target Feature: Building (Polygon)

    b. Join Feature: Critical Facilities (Point)

    c. Join Operation: One to One

    d. Match Option: Closest

    e. Search Radius: 50m

3. Click "Run"

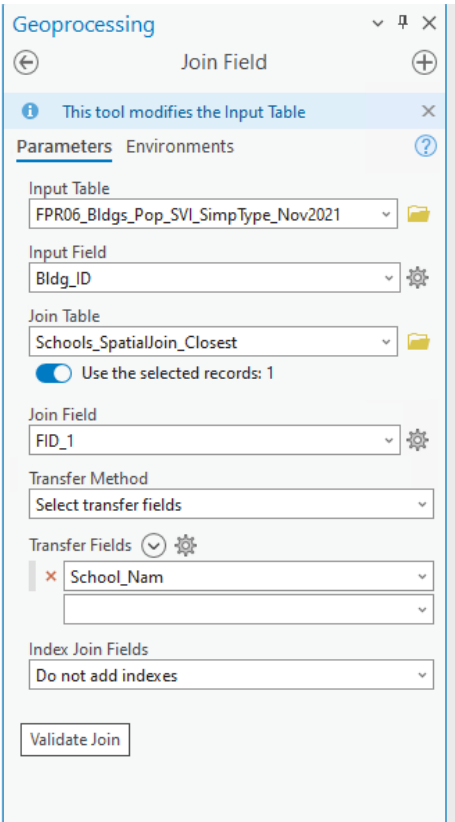### 1.1.2   Method 2: Near and Join Field

This method identifies and calculates the distance between the input feature and the nearest feature in another layer, which allows the user to review the point to polygon assignments prior to committing to a change. The Search Radius parameter in the Near tool may be adjusted depending on the urban density of the area. Note this method modifies the Input Table.

1. Open the Near tool.

2. Enter the appropriate parameters below:

  a. Input Features: Critical Facilities

  b. Near Features: Buildings

  c. Method: Planar

  d. Field Name: These fields auto-populate when the input/near features are populated (NEAR_FID and NEAR_DIST)
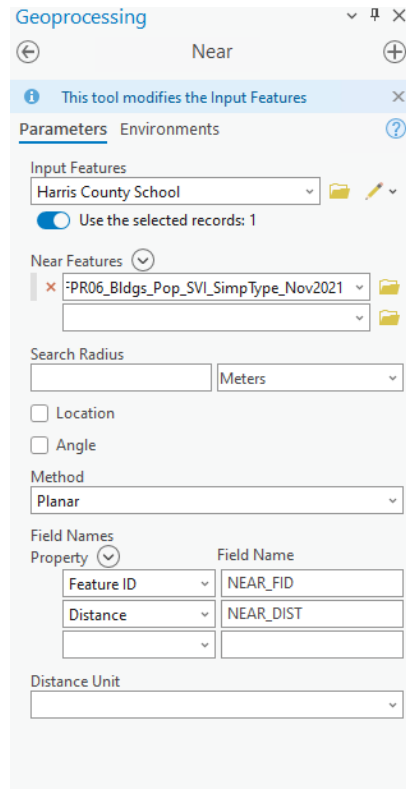
3. Click "Run"

4. Open Join Field tool.

5. Enter the appropriate parameters below:

  a. Input Join Table: Buildings

  b. Input Join Field: Building ID number

  c. Join Table: Critical Facilities

  d. Join Table Field: Newly created field name from Step 2d

  e. Transfer Fields: Selection of associated fields

6. Click "Run"