FEMA NFIP Metadata Profile[1] for

Draft, Preliminary and Final FIRM Datasets

Version 1.0.4

Legend:

Required Elements:

Text with Regular Font: Elements that appear in regular font were ***required*** in the Federal Geographic Data Committee (FGDC) standard and ***remain required*** for Federal Emergency Management Agency (FEMA) National Flood Insurance Program (NFIP) purposes. They are noted as "Optionality: Mandatory".

Text with Bold Font: Elements that appear in bold font were *required if applicable* in the FGDC standard but were <u>made *required*</u> for NFIP purposes. They are noted as "Optionality: Mandatory for FEMA".

Optional Elements:

Text with Gray Font: Elements that appear in gray font were ***required if applicable or optional*** in the FGDC standard and are ***optional*** for NFIP purposes. They are noted as "Optionality: Optional" or "Optionality: Optional for FEMA".

FEMA Business Rules and Recommendations:

Text highlighted in gray contains profile-specific comments, recommendations and business rules regarding the noted element. They are noted as "FEMA Business Rules".

Notes:

(1) An asterisk (*) after an element means that this element can be repeated an unlimited number of times. Example:

> 1.1.10 *OnLink** -- Online Linkage – etc. means onlink can be repeated. (Note that *OnLink* is the "official" abbreviation for Online Linkage and hence should be used as the column name in the database.)

(2) All required elements are shown in bold and regular text (no gray!). Optional elements (shown in gray text), if supplied are also supported.

(3) "MIP Submission Date" is the date on which an "intermediate" study artifact or Draft, Preliminary or Effective Flood Insurance Rate Map (FIRM) dataset was entered into the Mapping Information Platform (MIP) database.

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[1] Federal Geographic Data Committee (FGDC) Content Standard for Digital Geospatial Metadata (CSDGM), FGDC-STD-001-1998. Available at http://www.fgdc.gov/metadata/metadata.html.

(4) Draft FIRM metadata files should be named according to the convention: <CID>_DRAFT_metadata. Preliminary FIRM metadata files should be named according to the convention: <CID>_PRELIM_metadata. Final FIRM metadata files should be named according to the convention: <CID>_<effective date in yyyymmdd format>_metadata. The Community Identification (CID) number is a unique 6-digit number assigned to each community that has been identified under the NFIP. Countywide CID numbers follow the format of a 2-digit state Federal information Processing Standard (FIPS) followed by the 3-digit county FIPS and the letter 'C' (e.g., 01097C). Community-based CID numbers follow a format of a 2-digit state FIPS followed by the 4-digit FEMA community ID number. For example, 200351 is a CID whose 6-digit number indicates that is it a community-based study, whereas a 5-digit number with 'C' would indicate a countywide study.

1 *idinfo* – Identification Information – Basic information about the data set
> Optionality: Mandatory
> **FEMA Business Rules: This section is required for all FGDC-compliant metadata**

1.1 *Citation* -- Citation -- information to be used to reference the data set
> Optionality: Mandatory
> **FEMA Business Rules: The Citation section describes the Data Package.**

1.1.1 *Citeinfo* – Citation Information -- the recommended reference to be used for the data set.
> Optionality: Mandatory

1.1.1.1 *Origin** -- Originator -- the name of an organization or individual that developed the data set.
> Optionality: Mandatory
> Domain: free text
> **FEMA Business Rules: "*Federal Emergency Management Agency*"**

1.1.1.2 *Pubdate* -- Publication Date -- the date when the data set is published or otherwise made available for release.
> Optionality: Mandatory
> Domain: free date
> **FEMA Business Rules: Must be in the form of YYYYMMDD**
>
> **For Draft Digital Data and Preliminary FIRM Database the date is MIP Submission Date. For a Final FIRM Database product, the date is the Effective Date.**

1.1.1.3 *Pubtime* -- Publication Time -- the time of day when the data set is published or otherwise made available for
> Optionality: Optional
> Domain: "Unknown" free time

1.1.1.4 *Title* -- Title -- the name by which the data set is known.
> Optionality: Mandatory
> Domain:
> **FEMA Business Rules: Title should be of format: "*name of data-package type* for *MIP Project Title*", where name of data-package type reflects submission and MIP Project Title follows MIP Project Title rules**
>
> *Must have as part of the title: "FLOOD INSURANCE RATE MAP DATABASE, [county name], USA"*

1.1.1.5 *Edition* -- Edition -- the version of the title.
> Optionality: Mandatory for FEMA
> Domain:
> **FEMA Business Rules: This should match the latest VERSION_ID in the FIRM Database (e.g., "Version 2.3.3.2").**

1.1.1.6 *Geoform* -- Geospatial Data Presentation Form -- the mode in which the geospatial data are represented.

Optionality: Mandatory for FEMA
Domain:
FEMA Business Rules: Used to identify the type of NFIP dataset. Must be one of:
"FEMA-FIRM-Draft"
"FEMA-FIRM-Preliminary"
"FEMA-FIRM-Final"

1.1.1.7 *Serinfo* -- Series Information -- the identification of the series publication of which the data set is a part.
Optionality: Optional for FEMA

1.1.1.7.1 *Sername* -- Series Name -- the name of the series publication of which the data set is a part.
Optionality: Optional for FEMA
Domain: free text

1.1.1.7.2 *Issue* -- Issue Identification -- information identifying the issue of the series publication of which the data set is a part.
Optionality: Optional for FEMA
Domain: free text

1.1.1.8 *Pubinfo* -- Publication Information -- publication details for published data sets.
Optionality: Mandatory for FEMA

1.1.1.8.1 *Pubplace* -- Publication Place -- the name of the city (and state or province and country, if needed to identify the city) where the data set was published or released.
Optionality: Mandatory
Domain: free text
FEMA Business Rules: "Washington, DC"

1.1.1.8.2 *Publish* -- Publisher -- the name of the individual or organization that published the data set.
Optionality: Mandatory
Domain: free text
FEMA Business Rules: "Federal Emergency Management Agency"

1.1.1.9 *Othercit* -- Other Citation Details -- other information required to complete the citation.
Optionality: Optional for FEMA
Domain: free text

1.1.1.10 *Onlink** -- Online Linkage -- the name of an online computer resource that contains the data set. Entries should follow the Uniform Resource Locator (URL) convention of the Internet.
Optionality: Mandatory for FEMA
Domain:
FEMA Business Rules: The first occurrence should reference the online dataset location; additional onlink elements can be used to reference associated web pages or web map servers, etc. For FEMA-FIRM-Final: "*https://msc.fema.gov*"; for Draft FIRM: "*http://hazards.fema.gov*"; for

Preliminary FIRM: "*http://www.fema.gov/view-your-communitys-preliminary-flood-hazard-data-0*".

1.1.1.11 *Lworkcit* **-- Larger Work Citation -- the information identifying a larger work in which the data set is included.**
Optionality: Mandatory for FEMA
FEMA Business Rules: *Lworkcit refers to the FEMA case under which the data package was uploaded. The 'lworkcit' element is a compound element and does not take a value.*

1.1.1.11.1 Citeinfo
Optionality: Mandatory

FEMA Business Rules: *Note: This Citeinfo block is used to reference the FEMA Case study.*

1.1.1.11.1.1 *Origin**
Optionality: Mandatory

FEMA Business Rules: *Domain: "Federal Emergency Management Agency"*

1.1.1.11.1.2 *Pubdate*
Optionality: Mandatory

FEMA Business Rules: *Domain: "Unknown"*

1.1.1.11.1.3 *Pubtime*
Optionality: Optional

1.1.1.11.1.4 *Title*
Optionality: Mandatory
FEMA Business Rules: *Domain: Title must be "FEMA CASE num" where num is the case number associated to the project by FEMA of the form:*
" yy-rr-nnnnS"
where:
yy = year
rr = FEMA region number
nnnn = 4 character project code.

1.1.1.11.1.5 *Edition*
Optionality: Optional for FEMA

1.1.1.11.1.6 *Geoform*
Optionality: Optional for FEMA

1.1.1.11.1.7 *Serinfo/sername & serinfo/issue*
Optionality: Optional for FEMA

1.1.1.11.1.8 *Pubinfo/pubplace & pubinfo/publish*
Optionality: Optional for FEMA

1.1.1.11.1.9 *Othercit*
> Optionality: Optional for FEMA

1.1.1.11.1.10 *Onlink*
> Optionality: Optional

1.1.1.11.1.11 *Lworkcit*
> Optionality: Optional for FEMA

1.2 *Descript* -- Description -- a characterization of the data set, including its intended use and limitations.
> Optionality: Mandatory

1.2.1 *Abstract* -- Abstract -- a brief narrative summary of the data set.
> Optionality: Mandatory
> Domain:
> **FEMA Business Rules: *"The Flood Insurance Rate Map (FIRM) Database depicts flood risk information and supporting data used to develop the risk data. The primary risk classifications used are the 1-percent-annual-chance flood event, the 0.2-percent-annual-chance flood event and areas of minimal flood risk. The FIRM Database is derived from Flood Insurance Studies (FISs), previously published FIRMs, flood hazard analyses performed in support of the FISs and FIRMs and new mapping data, where available. The FISs and FIRMs are published by the Federal Emergency Management Agency (FEMA)."***
>
> **In addition to the preceding, required text, the Abstract should also describe the projection and coordinate system as well as a general statement about horizontal accuracy. (e.g., the file is georeferenced to the earth's surface using the Geographic Coordinate System (GCS) and North American Datum of 1983 (NSRS 2007).)**

1.2.2 *Purpose* -- Purpose -- a summary of the intentions with which the data set was developed.
> Optionality: Mandatory
> Domain: free text
> **FEMA Business Rules: *"The FIRM is the basis for floodplain management, mitigation, and insurance activities for the National Flood Insurance Program (NFIP). Insurance applications include enforcement of the mandatory purchase requirement of the Flood Disaster Protection Act, which "... requires the purchase of flood insurance by property owners who are being assisted by Federal programs or by Federally supervised, regulated or insured agencies or institutions in the acquisition or improvement of land facilities located or to be located in identified areas having special flood hazards," Section 2 (b) (4) of the Flood Disaster Protection Act of 1973. In addition to the identification of Special Flood Hazard Areas (SFHAs), the risk zones shown on the FIRMs are the basis for the establishment of premium rates for flood coverage offered through the NFIP. The FIRM Database presents the flood risk information depicted on the FIRM in a digital format suitable for use in electronic mapping applications. The FIRM Database serves to archive the information collected during the Flood Risk Project."***

1.2.3 *Suppl* -- Supplemental Information -- other descriptive information about the data set.
Optionality: Optional
Domain: free text

1.3 *Timeperd* --Time Period of Content -- time period(s) for which the data set corresponds to the currentness reference.
Optionality: Mandatory

1.3.1 *Timeinfo* – Time Period of Information – Information about date and time of event.
Optionality: Mandatory

1.3.1.1 *Sngdate* – Single Date/Time – means of encoding a single date and time.
Optionality: Mandatory

1.3.1.1.2 *Caldate* – Calendar Date – the year (and optionally month or month and day)
Optionality: Mandatory
Domain: single_date
FEMA Business Rules: Must be in the form of YYYYMMDD

For Draft Digital Data and Preliminary FIRM Database, the date is MIP Submission Date. For Final FIRM Database, the date is the Effective Date.

1.3.2 *Current* -- Currentness Reference -- the basis on which the time period of content information is determined.
Optionality: Mandatory
Domain:
FEMA Business Rules: For Draft Digital Data and Preliminary FIRM Database, Currentness Reference should be "MIP Submission Date". For Final FIRM Database, Currentness Reference should be "FIRM and FIS Effective Date".

Currentness Reference must synchronize with Progress element (1.4.1), see guidance under element 1.4.1.

1.4 *Status* -- Status -- the state of and maintenance information for the data set.
Optionality: Mandatory

1.4.1 *Progress* -- Progress -- the state of the data set.
Optionality: Mandatory
Domain: "Complete" "In work"
FEMA Business Rules: *For FEMA-FIRM-Draft and FEMA-FIRM-Preliminary: "In work". For FEMA-FIRM-Final (Effective): "Complete".*

Note that the Progress element must synchronize with Currentness Reference (1.3.2) as follows: when Progress is "In work", Currentness Reference is "MIP Submission Date"; alternatively, when Progress is "Complete", Currentness Reference is "FIRM and FIS Effective Date".

1.4.2 *Update* -- Maintenance and Update Frequency -- the frequency with which changes and additions are made to the data set after the initial data set is completed.
Optionality: Mandatory
Domain: **FEMA Business Rules:"*Unknown*"**

1.5 *Spdom* -- Spatial Domain - the geographic areal domain of the data set.
> Optionality: Mandatory

1.5.1 *Bounding* -- Bounding Coordinates - the limits of coverage of a data set expressed by latitude and longitude values in the order western-most, eastern-most, northern-most and southern-most. For data sets that include a complete band of latitude around the earth, the West Bounding Coordinate shall be assigned the value -180.0 and the East Bounding Coordinate shall be assigned the value 180.0
> Optionality: Mandatory

1.5.1.1 *Westbc* -- West Bounding Coordinate -- western-most coordinate of the limit of coverage expressed in longitude.
> Optionality: Mandatory
> Domain: -180.0 <= real number < 180.0

1.5.1.2 *Eastbc* -- East Bounding Coordinate -- eastern-most coordinate of the limit of coverage expressed in longitude.
> Optionality: Mandatory
> Domain: -180.0 <= real number <= 180.0

1.5.1.3 *Northbc* -- North Bounding Coordinate -- northern-most coordinate of the limit of coverage expressed in latitude.
> Optionality: Mandatory
> Domain: -90.0 <= real number <= 90.0;
> North Bounding Coordinate >= South Bounding Coordinate

1.5.1.4 *Southbc* -- South Bounding Coordinate -- southern-most coordinate of the limit of coverage expressed in latitude.
> Optionality: Mandatory
> Domain: -90.0 <= real number <= 90.0;
> South Bounding Coordinate <= North Bounding Coordinate

1.5.2 *Dsgpoly** -- Data Set G-Polygon -- coordinates defining the outline of an area covered by a data set.
> Optionality: Optional

1.5.2.1 *Dsgpolyo* -- Data Set G-Polygon Outer G-Ring -- the closed nonintersecting boundary of an interior area.
> Optionality: Optional

1.5.2.2 *Dsgpolyx* -- Data Set G-Polygon Exclusion G-Ring -- the closed nonintersecting boundary of a void area (or "hole" in an interior area).
> Optionality: Optional

1.6 *Keywords* -- Keywords -- words or phrases summarizing an aspect of the data set.
> Optionality: Mandatory

1.6.1 *Theme** -- Theme -- subjects covered by the data set (for a list of some commonly-used thesauri, see Part IV: Subject/index term sources in Network Development and MAchine-Readable Cataloging (MARC) Standards Office, 1988, USMARC code list for relators, sources and description conventions: Washington, Library of Congress).

Optionality: Mandatory
FEMA Business Rules: All metadata submissions must have two separate 'theme' elements, each referencing distinct topic category thesauri and keywords. The first theme element should reference the International Organization for Standardization (ISO) "*ISO 19115 Topic Category*" thesaurus (theme.themekt) and keywords (theme.themekey). The second 'theme' element should reference the "*FEMA NFIP Topic Category*" thesaurus and keywords.

1.6.1.1 *Themekt* -- Theme Keyword Thesaurus -- reference to a formally registered thesaurus or a similar authoritative source of theme keywords.
Optionality: Mandatory
Domain: "None" free text
FEMA Business Rules: *"ISO 19115 Topic Category" and "FEMA NFIP Topic Category"*

1.6.1.2 *Themekey** -- Theme Keyword -- common-use word or phrase used to describe the subject of the data set.
Optionality: Mandatory
Domain: free text
FEMA Business Rules: For the *"ISO 19115 Topic Category"* thesaurus, for FEMA Preliminary and Final FIRM Database submissions, these keywords are required*:*
***"hydrology", "environment", "inlandWaters", "structure", "transportation", and "elevation".* If appropriate, the *"oceans"* keyword should also be used.**

For the *"FEMA NFIP Topic Category"* thesaurus, for FEMA Preliminary and Final FIRM Database submissions, these keywords are required:
"FIRM" "FEMA Flood Hazard Zone", "FIRM Database", "Special Flood Hazard Area", "Flood Insurance Rate Map" "CBRS" "Coastal Barrier Resources System" "Riverine Flooding" "Coastal Flooding" "NFIP" "Base Flood Elevation" "SFHA" "Floodway"

1.6.2 *Place** -- Place -- geographic locations characterized by the data set.
Optionality: Mandatory for FEMA

1.6.2.1 *Placekt* -- Place Keyword Thesaurus -- reference to a formally registered thesaurus or a similar authoritative source of place keywords.
Optionality: Mandatory for FEMA
Domain: "None" "Geographic Names Information System" free text

1.6.2.2 *Placekey** -- Place Keyword -- the geographic name of a location covered by a data set.
Optionality: Mandatory for FEMA
FEMA Business Rules: *Domain: The following six (6) Place Keywords are required for each Place (1.6.2) element:*
- ***"REGION num" where num is the FEMA Region number.***
- ***"STATE abbreviation" where abbreviation is the 2-letter FIPS-standard state abbreviation (e.g., "STATE VA" for Virginia).***
- ***"COUNTY name" where name is the name of the county.***

- *"COUNTY-FIPS code" where code is the county FIPS code.*
- *"COMMUNITY name" where name is name of the community.*
- *"FEMA-CID code" where code is the FEMA Community ID code.*

Users may include additional Place Keyword elements using free text.

1.6.3 *Stratum** -- Stratum -- layered, vertical locations characterized by the data set.
        Optionality: Optional for FEMA

1.6.3.1 *Stratkt* -- Stratum Keyword Thesaurus -- reference to a formally registered thesaurus or a similar authoritative source of stratum keywords.
        Optionality: Optional for FEMA
        Domain: "None" free text

1.6.3.2 *Stratkey** -- Stratum Keyword -- the name of a vertical location used to describe the locations covered by a data set.
        Optionality: Optional for FEMA
        Domain: free text

1.6.4 *Temporal** -- Temporal -- time period(s) characterized by the data set.
        Optionality: Optional for FEMA

1.6.4.1 *Tempkt* -- Temporal Keyword Thesaurus -- reference to a formally registered thesaurus or a similar authoritative source of temporal keywords.
        Optionality: Optional for FEMA
        Domain: "None" free text

1.6.4.2 *Tempkey** -- Temporal Keyword -- the name of a time period covered by a data set.
        Optionality: Optional for FEMA
        Domain: free text

1.7 *Accconst* -- Access Constraints -- restrictions and legal prerequisites for accessing the data set. These include any access constraints applied to assure the protection of privacy or intellectual property and any special restrictions or limitations on obtaining the data set.
        Optionality: Mandatory
        Domain: **FEMA Business Rules: *"Restricted" "View-only" "None"***

1.8 *Useconst* -- Use Constraints -- restrictions and legal prerequisites for using the data set after access is granted. These include any use constraints applied to assure the protection of privacy or intellectual property and any special restrictions or limitations on using the data set.
        Optionality: Mandatory
        Domain:
        FEMA Business Rules: *"The hardcopy FIRM and FIRM Database and the accompanying FIS are the official designation of SFHAs and Base Flood Elevations (BFEs) for the NFIP. For the purposes of the NFIP, changes to the flood risk information published by FEMA may only be performed by FEMA and through the mechanisms established in the NFIP regulations (44 CFR Parts 59-78). These digital data are produced in conjunction with the hardcopy FIRMs and generally match the hardcopy map exactly. Acknowledgement of FEMA would be appreciated in products derived from these data."*

1.9 *Ptcontac* -- Point of Contact -- contact information for an individual or organization that is knowledgeable about the data set.
> Optionality: Mandatory for FEMA
> **FEMA Business Rules: This point of contact is the same one as the Distributor point of contact in Section 6. If the Originator (1.1.1) of the data chooses to distribute the data themselves, then this should be the contact information of the Distributor. Otherwise, this (and the Distributor point of contact) should be FEMA.**

1.9.1 Cntinfo -- Contact Information -- Identity of and means to communicate with, person(s) and organization(s) associated with the data set.
> Optionality: Mandatory

1.9.1.1 *Cntperp[2]* -- Contact Person Primary -- the name of the individual to which the contact type
> Optionality: Optional

1.9.1.1.1 *Cntper* -- Contact Person -- the name of the individual to which the contact type applies.
> Optionality: Optional
> Domain: free text

1.9.1.1.2 *Cntorg* -- Contact Organization -- the name of the organization to which the contact type applies.
> Optionality: Optional
> Domain: free text

1.9.1.2 *Cntorgp[2]* -- Contact Organization Primary -- the organization and the member of the organization associated with the data set. Used in cases where the association of the organization to the data set is more significant than the association of the person to the data set.
> Optionality: Mandatory for FEMA
> Domain: Compound

1.9.1.2.1 *Cntorg* -- Contact Organization -- the name of the organization to which the contact type applies.
> Optionality: Mandatory
> Domain:
> **FEMA Business Rules: *Federal Emergency Management Agency***

1.9.1.2.2 *Cntper* -- Contact Person -- the name of the individual to which the contact type applies.
> Optionality: Optional
> Domain: free text

1.9.1.3 *Cntpos* -- Contact Position -- the title of individual.
> Optionality: Optional
> Domain: free text

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[2] Note: Use of the *Cntinfo.Cntperp* and *Cntinfo.Cntorgp* elements is mutually exclusive. *Cntinfo.Cntorgp* is specified in this context as mandatory so the *Cntinfo.Cntperp* element must not be used here.

1.9.1.4 *Cntaddr** -- Contact Address -- the address for the organization or individual.
        Optionality: Mandatory

1.9.1.4.1 *Addrtype* -- Address Type -- the information provided by the address.
        Optionality: Mandatory
        Domain: **FEMA Business Rules:** *mailing*

1.9.1.4.2 *Address** -- Address -- an address line for the address.
        Optionality: Mandatory for FEMA
        Domain: **FEMA Business Rules:** *500 C Street, S.W.*

1.9.1.4.3 *City* -- City -- the city of the address.
        Optionality: Mandatory
        Domain: **FEMA Business Rules:** *Washington*

1.9.1.4.4 *State* -- State or Province -- the state or province of the address.
        Optionality: Mandatory
        Domain: **FEMA Business Rules:** *District of Columbia*

1.9.1.4.5 *Postal* -- Postal Code -- the ZIP or other postal code of the address.
        Optionality: Mandatory
        Domain: **FEMA Business Rules:** *20472*

1.9.1.4.6 *Country* -- Country -- the country of the address.
        Optionality: Mandatory for FEMA
        Domain: **FEMA Business Rules:** *USA*

1.9.1.5 *Cntvoice** -- Contact Voice Telephone -- the telephone number by which individuals can speak to the organization or individual.
        Optionality: Mandatory
        Domain: **FEMA Business Rules:** *1-877-336-2627*

1.9.1.6 *Cnttdd** -- Contact Telephone Device for the Deaf/Text Telephone (TDD/TTY) Telephone -- the telephone number by which hearing-impaired individuals can contact the organization or individual.
        Optionality: Optional
        Domain: free text

1.9.1.7 *Cntfax** -- Contact Facsimile Telephone -- the telephone number of a facsimile machine of the organization or individual.
        Optionality: Optional
        Domain: free text

1.9.1.8 *Cntemail** -- Contact Electronic Mail Address -- the address of the electronic mailbox of the organization or individual.
        Optionality: Mandatory for FEMA
        Domain:
        FEMA Business Rules: *miphelp@riskmapcds.com*

1.9.1.9 *Hours* -- Hours of Service -- time period when individuals can speak to the organization or individual.

> Optionality: Optional
> Domain: free text

1.9.1.10 *Cntinst* -- Contact Instructions -- supplemental instructions on how or when to contact the individual or organization.

> Optionality: Optional
> Domain: free text

1.10 *Browse** -- Browse Graphic -- a graphic that provides an illustration of the data set. The graphic should include a legend for interpreting the graphic.

> Optionality: Optional

1.10.1 *Browsen* -- Browse Graphic File Name -- name of a related graphic file that provides an illustration of the data set.

> Optionality: Optional
> Domain: free text

1.10.2 *Browsed* -- Browse Graphic File Description -- a text description of the illustration.

> Optionality: Optional
> Domain: free text

1.10.3 *Browset* -- Browse Graphic File Type -- graphic file type of a related graphic file.

> Optionality: Optional
> Domain: domain values in the table below; free text

Value	Definition
"CGM"	Computer Graphics Metafile
"EPS"	Encapsulated Postscript format
"EMF"	Enhanced Metafile
"GIF"	Graphic Interchange Format
"JPEG"	Joint Photographic Experts Group format
"PBM"	Portable Bit Map format
"PS"	Postscript format
"TIFF"	Tagged Image File Format
"WMF"	Windows metafile
"XWD"	X-Windows Dump

1.11 *Datacred* -- Data Set Credit -- recognition of those who contributed to the data set.

> Optionality: Optional
> Domain: free text

1.12 *Secinfo* -- Security Information -- handling restrictions imposed on the data set because of national security, privacy, or other concerns.

> Optionality: Optional
> **FEMA Business Rules: Security information is optional; however, if some of the data contains sensitive information (bridges, dams, etc), the publisher can specify that information in this Section.**

1.12.1 *Secsys* -- Security Classification System -- name of the classification system.

> Optionality: Optional

Domain: free text

1.12.2 *Secclass* -- Security Classification -- name of the handling restrictions on the data set.
Optionality: Optional
Domain: "Top secret" "Secret" "Confidential" "Restricted" "Unclassified" "Sensitive" free text

1.12.3 *Sechandl* -- Security Handling Description -- additional information about the restrictions on handling the data set.
Optionality: Optional
Domain: free text

1.13 *Native* -- Native Data Set Environment -- a description of the data set in the producer's processing environment, including items such as the name of the software (including version), the computer operating system, file name (including host-, path- and filenames) and the data set size.
Optionality: Mandatory for FEMA
FEMA Business Rules: This section is used to capture information about production of the FIRM Database. It must include the software release of any submitted geodatabase.

Domain is free text

Example: *"Original data development environment may vary. Finishing of the data is done using Esri's ArcGIS software."*

1.14 *Crossref* -- Cross Reference -- information about other, related data sets that are likely to be of interest.
Optionality: Mandatory for FEMA
FEMA Business Rules: The Cross Reference section is used to relate the Study Package to the Effective Map/FIS.

The Cross Reference section is used to cross-reference the effective hardcopy map, flood insurance text and raster version of the map.

1.14.1 *Citeinfo* – Citation Information -- the recommended reference to be used for the data set.
Optionality: Mandatory

1.14.1.1 *Origin**
Optionality: Mandatory
FEMA Business Rules: *Federal Emergency Management Agency*

1.14.1.2 *Pubdate*
Optionality: Mandatory
FEMA Business Rules: *Represents the Effective Date.*

1.14.1.3 *Pubtime*
Optionality: Optional

1.14.1.4 *Title*
Optionality: Mandatory

FEMA Business Rules: Domain: Name of the Effective Map and/or Flood Insurance Study (e.g., _Flood Insurance Rate Map, Flood County, USA_.)

1.14.1.5 _Edition_
> Optionality: Optional

1.14.1.6 _Geoform_
> Optionality: Mandatory for FEMA

1.14.1.7 _Serinfo.sername & serinfo.issue_
> Optionality: Optional

1.14.1.8 _Pubinfo.pubplace & pubinfo.publish_
> Optionality: Mandatory for FEMA

1.14.1.9 _Othercit_
> Optionality: Optional

1.14.1.10 _Onlink*_
> Optionality: Mandatory for FEMA

1.14.1.11 _Lworkcit_
> Optionality: Optional

2 _dataqual_ -- Data Quality Information -- General assessment of the quality of the data set
> Optionality: Mandatory for FEMA
> **FEMA Business Rules: This section is required for all FIRM Database submissions.**

2.1 _Attracc_ -- Attribute Accuracy -- an assessment of the accuracy of the identification of entities and assignment of attribute values in the data set.
> Optionality: Mandatory for FEMA

2.1.1 _Attraccr_ -- Attribute Accuracy Report -- an explanation of the accuracy of the identification of the entities and assignments of values in the data set and a description of the tests used.
> Optionality: Mandatory
> Domain:
> **FEMA Business Rules: _"The FIRM Database consists of vector files and associated attributes produced in conjunction with the hardcopy FEMA FIRM. The published effective FIRM and FIRM Database are issued as the official designation of the SFHAs. As such they are adopted by local communities and form the basis for administration of the NFIP. For these purposes they are authoritative. Provisions exist in the regulations for public review, appeals and corrections of the flood risk information shown to better match real world conditions. As with any engineering analysis of this type, variation from the estimated flood heights and floodplain boundaries is possible. Details of FEMA's requirements for the FISs and flood mapping process that produces these data are available in the Guidelines and Standards for Flood Risk Analysis and Mapping. Attribute accuracy was tested by manual comparison of source graphics with hardcopy plots and a symbolized display on an interactive computer graphic system."_**

"Independent quality control testing of the FIRM Database was also performed."

"To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the FIS report that accompanies this FIRM Database. Users should be aware that BFEs shown in the S_BFE table may represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report must be used in conjunction with the FIRM for purposes of construction and/or floodplain management. The 1-percent-annual-chance water-surface elevations shown in the S_XS table match the regulatory elevations shown in the FIS report."

2.1.2 *Qattracc** -- Quantitative Attribute Accuracy Assessment -- a value assigned to summarize the accuracy of the identification of the entities and assignments of values in the data set and the identification of the test that yielded the value.

> Optionality: Optional

2.1.2.1 *Attraccv* -- Attribute Accuracy Value -- an estimate of the accuracy of the identification of the entities and assignments of attribute values in the data set.

> Optionality: Optional
> Domain: "Unknown" free text

2.1.2.2 *Attracce* -- Attribute Accuracy Explanation -- the identification of the test that yielded the Attribute Accuracy Value.

> Optionality: Optional
> Domain: free text

2.2 *Logic* -- Logical Consistency Report -- an explanation of the fidelity of relationships in the data set and tests used.

> Optionality: Mandatory
> Domain:
> **FEMA Business Rules:** *"When FEMA revises an FIS, adjacent studies are checked to ensure agreement between flood elevations at the boundaries. Likewise flood elevations at the confluence of streams studied independently are checked to ensure agreement at the confluence. The FIRM and the FIS are developed together and care is taken to ensure that the elevations and other features shown on the flood profiles in the FIS agree with the information shown on the FIRM. However, the elevations as shown on the FIRM may represent rounded whole-foot elevations. They must be shown so that a profile recreated from the elevations on the FIRM will match the FIS profiles within one half of one foot."*

2.3 *Complete* -- Completeness Report -- information about omissions, selection criteria, generalization, definitions used and other rules used to derive the data set.

> Optionality: Mandatory
> Domain:

FEMA Business Rules: *"Data contained in the FIRM Database files reflect the content of the source materials. Features may have been eliminated or generalized on the source graphic, due to scale and legibility constraints. With new mapping, FEMA plans to maintain full detail in the spatial data it produces. However, older information is often transferred from existing maps where some generalization has taken place. Flood risk data are developed for communities participating in the NFIP for use in insurance rating and for floodplain management. Flood hazard areas are determined using statistical analyses of records of river flow, storm tides and rainfall; information obtained through consultation with the communities; floodplain topographic surveys and hydrological and hydraulic analysis. Generally, regulatory water surface elevations and/or a regulatory floodway are published only for developed or developing areas of communities. For areas where little or no development is expected to occur, FEMA may generate flood risk data without published water surface elevations. Typically, only drainage areas that are greater than one square mile and with an average of one foot of flood depth or greater are studied."*

2.4 *Posacc* -- **Positional Accuracy -- an assessment of the accuracy of the positions of spatial objects.**
Optionality: Mandatory for FEMA

2.4.1 *Horizpa* -- **Horizontal Positional Accuracy -- an estimate of accuracy of the horizontal positions of the spatial objects.**
Optionality: Mandatory for FEMA

2.4.1.1 *Horizpar* -- Horizontal Positional Accuracy Report -- an explanation of the accuracy of the horizontal coordinate measurements and a description of the tests used.
Optionality: Mandatory
Domain: free text
FEMA Business Rules: *"The FIRM Database consists of vector files and associated attributes produced in conjunction with the hardcopy FEMA FIRM. The published effective FIRM and FIRM Database are issued as the official designation of the SFHAs. As such they are adopted by local communities and form the basis for administration of the NFIP. For these purposes they are authoritative. Provisions exist in the regulations for public review, appeals and corrections of the flood risk information shown to better match real world conditions. As with any engineering analysis of this type, variation from the estimated flood heights and floodplain boundaries is possible. Details of FEMA's requirements for the FISs and flood mapping process that produces these data are available in the Guidelines and Standards for Flood Risk Analysis and Mapping[3]. Horizontal accuracy was tested by manual comparison of source graphics with hardcopy plots and a symbolized display on an interactive computer graphic system. Independent quality control testing of the FIRM Database was also performed."*

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[3] Guidelines and Standards for Flood Risk Analysis and Mapping can be found at:
http://www.fema.gov/media-library/assets/documents/34953

2.4.1.2 *Qhorizpa** -- Quantitative Horizontal Positional Accuracy Assessment -- numeric value assigned to summarize the accuracy of the horizontal coordinate measurements and the identification of the test that yielded the value.

> Optionality: Optional

2.4.1.2.1 *Horizpav* -- Horizontal Positional Accuracy Value -- an estimate of the accuracy of the horizontal coordinate measurements in the data set expressed in (ground) meters.

> Optionality: Optional
> Domain: free real

2.4.1.2.2 *Horizpae* -- Horizontal Positional Accuracy Explanation – the identification of the test that yielded the Horizontal Positional Accuracy Value.

> Optionality: Optional
> Domain: free text

2.4.2 *Vertacc* -- Vertical Positional Accuracy -- an estimate of accuracy of the vertical positions in the data set.

> Optionality: Mandatory for FEMA

2.4.2.1 *Vertaccr* -- Vertical Positional Accuracy Report -- an explanation of the accuracy of the vertical coordinate measurements and a description of the tests used.

> Optionality: Mandatory
> Domain:
> **FEMA Business Rules: *"The FIRM Database consists of vector files and associated attributes produced in conjunction with the hardcopy FEMA FIRM. The published effective FIRM and FIRM Database are issued as the official designation of the SFHAs. As such they are adopted by local communities and form the basis for administration of the NFIP. For these purposes they are authoritative. Provisions exist in the regulations for public review, appeals and corrections of the flood risk information shown to better match real world conditions. As with any engineering analysis of this type, variation from the estimated flood heights and floodplain boundaries is possible. Details of FEMA's requirements for the FISs and flood mapping process that produces these data are available in the Guidelines and Standards for Flood Risk Analysis and Mapping.***
>
> ***The reliability of the floodplain boundary delineation is quantified by comparing the computed flood elevation to the ground elevation at the mapped floodplain boundary. The tolerance for how precisely the flood elevation and the ground elevation must match varies based on the flood risk class, which is a function of population, population density and/or anticipated growth in floodplain areas. A horizontal accuracy of +/- 38 feet is used to determine the compliance with the vertical tolerances defined for each risk class. The range of differences between the ground elevation (defined from the topographic data used for the Flood Risk Project) and the computed flood elevation is between +/- 1.0 foot at the 95% confidence interval for areas with high population within the floodplain and/or high anticipated growth and Special Flood Hazard Areas (SFHAs) with high flood risk to +/- one-half the contour interval at the 85% confidence interval for areas with low population and densities within the floodplain and small or no anticipated growth and SFHAs with low***

flood risk. Independent quality control testing of the FIRM Database was also performed."

2.4.2.2 *Qvertpa** -- Quantitative Vertical Positional Accuracy Assessment -- numeric value assigned to summarize the accuracy of vertical coordinate measurements and the identification of the test that yielded the value.
>Optionality: Optional

2.4.2.2.1 *Vertaccv* -- Vertical Positional Accuracy Value -- an estimate of the accuracy of the vertical coordinate measurements in the data set expressed in (ground) meters.
>Optionality: Optional
>Domain: free real

2.4.2.2.2 *Vertacce* -- Vertical Positional Accuracy Explanation – the identification of the test that yielded the Vertical Positional Accuracy Value.
>Optionality: Optional
>Domain: free text

2.5 *Lineage* -- Lineage -- information about the events, parameters and source data which constructed the data set, and information about the responsible parties.
>Optionality: Mandatory

2.5.1 *Srcinfo** -- Source Information -- list of sources and a short discussion of the information contributed by each.
>Optionality: Mandatory for FEMA
>**FEMA Business Rules: All FIRM datasets (draft, preliminary, final) must reference all sources used in their production. Publishers should create a <u>unique</u> source information entry for each of the following types of input sources that were used:**
>- **BASE**
>- **FIRM**
>- **FHBM**
>- **FBFM**
>- **LOMC**
>- **FIS**
>- **STUDY**
>- **SURVEY**
>- **TOPO**
>- **TSDN**
>- **REF**
>
>**Each source information element must be uniquely labeled by the source citation abbreviation "lineage/srcinfo/srccitea" element (2.5.1.5). Use guidance described in the *FIRM Database Technical Reference* Table 3: "The Mapping Partner shall assign each data source a Source Citation Abbreviation (e.g., BASE1, BASE2, BASE3)." Source citation abbreviation elements may be subsequently referenced by optional "lineage/procstep/srcused" elements (2.5.2.2). Particular emphasis is also placed on the use of the "lineage/srcinfo/srccitea" elements as source references for the features/layers of the FIRM dataset listed by Entity Types (5.1.1) elements.**

2.5.1.1 *Srccite* -- Source Citation -- reference for a source data set.
Optionality: Mandatory

2.5.1.1.1 *Citeinfo*
Optionality: Mandatory

2.5.1.1.1.1 Origin*
Optionality: Mandatory

2.5.1.1.1.2 Pubdate
Optionality: Mandatory

2.5.1.1.1.3 Pubtime
Optionality: Optional

2.5.1.1.1.4 Title
Optionality: Mandatory

2.5.1.1.1.5 Edition
Optionality: Optional for FEMA

2.5.1.1.1.6 Geoform
Optionality: Optional for FEMA

2.5.1.1.1.7 Serinfo.sername & serinfo.issue
Optionality: Optional for FEMA

2.5.1.1.1.8 Pubinfo.pubplace & pubinfo.publish
Optionality: Optional for FEMA

2.5.1.1.1.9 Othercit
Optionality: Optional for FEMA

2.5.1.1.1.10 Onlink*
Optionality: Optional

2.5.1.1.1.11 Lworkcit
Optionality: Optional for FEMA

2.5.1.2 *Srcscale* -- Source Scale Denominator -- the denominator of the representative fraction on a map (for example, on a 1:24000-scale map, the Source Scale Denominator is 24000).
Optionality: Optional for FEMA
Domain: integer > 1
FEMA Business Rules: Note: This is an integer number and must not contain a comma character, decimal point nor the numerator part of the representative fraction.

2.5.1.3 *Typesrc* -- Type of Source Media -- the medium of the source data set.
Optionality: Mandatory
Domain: **FEMA Business Rules: *"online" "CD-ROM" "DVD-ROM" free text***

2.5.1.4 *Srctime* -- Source Time Period of Content -- time period(s) for which the source data set corresponds to the ground.
>> Optionality: Mandatory

2.5.1.4.1 *Timeinfo* – Time Period of Information – Information about date and time of event.
>> Optionality: Mandatory

2.5.1.4.1.1 *Sngdate* – Single Date/Time – means of encoding a single date and time.
>> Optionality: Mandatory

2.5.1.4.1.1.1 *Caldate* – Calendar Date – the year (and optionally month or month and day)
>> Optionality: Mandatory

2.5.1.4.2 *Srccurr* -- Source Currentness Reference -- the basis on which the source time period of content information of the source data set is determined.
>> Optionality: Mandatory
>> Domain: "ground condition" "publication date" free text

2.5.1.5 *Srccitea* -- Source Citation Abbreviation -- short-form alias for the source citation.
>> Optionality: Mandatory
>> Domain:
>> **FEMA Business Rules: Can be one of the following (Note that if more than one instance of a source was used, then the citation abbreviations are numbered; e.g., BASE1, BASE2, etc.):**
>> **- BASE**
>> **- FIRM**
>> **- FHBM**
>> **- FBFM**
>> **- LOMC**
>> **- FIS**
>> **- STUDY**
>> **- SURVEY**
>> **- TOPO**
>> **- TSDN**
>> **- REF**

2.5.1.6 Srccontr -- Source Contribution -- brief statement identifying the *information contributed by the source to the data set.*
>> Optionality: Mandatory
>> Domain: free text

2.5.2 *Procstep** -- Process Step -- information about a single event.
>> Optionality: Mandatory

2.5.2.1 *Procdesc* -- Process Description -- an explanation of the event and related parameters or tolerances.
>> Optionality: Mandatory
>> Domain: **FEMA Business Rules: First occurrence of Process Description must state:**
>> ***"The FIRM Database is compiled in conjunction with the hardcopy FIRM and the final FIS report. The specifics of the hydrologic and hydraulic analyses***

performed are detailed in the FIS report. The results of these studies are submitted in digital format to FEMA. These data and unrevised data from effective FIRMs are compiled onto the base map used for FIRM publication and checked for accuracy and compliance with FEMA standards."

Passive vertical datum conversions should be documented in this section.

Additional occurrences optional.

2.5.2.2 *Srcused** -- Source Used Citation Abbreviation -- the Source Citation Abbreviation of a data set used in the processing step.
>Optionality: Optional for FEMA
>Domain: Source Citation Abbr. <srccitea> from the Source info entries for the data set.

>**FEMA Business Rules: A comma delimited list of <srccitea> values is NOT VALID. Each <srccitea> must be listed individually using one or more <srcused> elements.**

2.5.2.3 *Procdate* -- Process Date -- the date when the event was completed.
>Optionality: Mandatory
>Domain: free date
>**FEMA Business Rules: Must be in the form of YYYYMMDD**

>**For Draft Digital Data and Preliminary FIRM Database the date is MIP submission date. For a Final FIRM Database product, the date is the effective date.**

>**See also Section 1.1.1.2 and Section 1.3.1**

2.5.2.4 *Proctime* -- Process Time -- the time when the event was completed.
>Optionality: Optional
>Domain: free time

2.5.2.5 *Srcprod* -- Source Produced Citation Abbreviation -- the Source Citation Abbreviation of an intermediate data set that (1) is significant in the opinion of the data producer, (2) is generated in the processing step and (3) is used in later processing steps.
>Optionality: Optional for FEMA
>Domain: Source Citation Abbr. from the Source info entries for the data set.

2.5.2.6 *Proccont* -- Process Contact -- the party responsible for the processing step information.

>Optionality: Optional

2.5.2.6.1 *Cntinfo* – Contact Information -- Identity of, and means to communicate with, person(s) and organization(s) associated with the data set.
>Optionality: Optional

2.5.2.6.1.1 *Cntperp*[4] -- Contact Person Primary -- the name of the individual to which the contact
type.
Optionality: Optional

2.5.2.6.1.1.1 *Cntper* -- Contact Person -- the name of the individual to which the contact type
applies.
Optionality: Optional
Domain: free text

2.5.2.6.1.1.2 *Cntorg* -- Contact Organization -- the name of the organization to which the contact
type applies.
Optionality: Optional
Domain: free text

2.5.2.6.1.2 *Cntorgp*[4] -- Contact Organization Primary -- the organization, and the member of the
organization associated with the data set. Used in cases where the association of the organization
to the data set is more significant than the association of the person to the data set.
Optionality: Optional
Domain: Compound

2.5.2.6.1.2.1 *Cntorg* -- Contact Organization -- the name of the organization to which the contact
type applies.
Optionality: Optional
Domain: free text

2.5.2.6.1.2.2 *Cntper* -- Contact Person -- the name of the individual to which the contact type
applies.
Optionality: Optional
Domain: free text

2.5.2.6.1.3 *Cntpos* -- Contact Position -- the title of individual.
Optionality: Optional
Domain: free text

2.5.2.6.1.4 *Cntaddr** -- Contact Address -- the address for the organization or individual.
Optionality: Optional

2.5.2.6.1.4.1 *Addrtype* -- Address Type -- the information provided by the address.
Optionality: Optional
Domain: "mailing" "physical" "mailing and physical", free text

2.5.2.6.1.4.2 *Address** -- Address -- an address line for the address.
Optionality: Optional
Domain: free text

2.5.2.6.1.4.3 *City* -- City -- the city of the address.
Optionality: Optional
Domain: free text

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[4] Note: Use of the *Cntinfo.Cntperp* and *Cntinfo.Cntorgp* elements is mutually exclusive.

2.5.2.6.1.4.4 *State* -- State or Province -- the state or province of the address.
> Optionality: Optional
> Domain: free text

2.5.2.6.1.4.5 *Postal* -- Postal Code -- the ZIP or other postal code of the address.
> Optionality: Optional
> Domain: free text

2.5.2.6.1.4.6 *Country* -- Country -- the country of the address.
> Optionality: Optional
> Domain: free text

2.5.2.6.1.5 *Cntvoice** -- Contact Voice Telephone -- the telephone number by which individuals can speak to the organization or individual.
> Optionality: Optional
> Domain: free text

2.5.2.6.1.6 *Cnttdd** -- Contact TDD/TTY Telephone -- the telephone number by which hearing impaired individuals can contact the organization or individual.
> Optionality: Optional
> Domain: free text

2.5.2.6.1.7 *Cntfax** -- Contact Facsimile Telephone -- the telephone number of a facsimile machine of the organization or individual.
> Optionality: Optional
> Domain: free text

2.5.2.6.1.8 *Cntemail** -- Contact Electronic Mail Address -- the address of the electronic mailbox of the organization or individual.
> Optionality: Optional
> Domain: free text

2.5.2.6.1.9 *Hours* -- Hours of Service -- time period when individuals can speak to the organization or individual.
> Optionality: Optional
> Domain: free text

2.5.2.6.1.10 *Cntinst* -- Contact Instructions -- supplemental instructions on how or when to contact the individual or organization.
> Optionality: Optional
> Domain: free text

2.6 *Cloud* -- Cloud Cover -- area of a data set obstructed by clouds, expressed as a percentage of the spatial extent.
> Optionality: Optional
> Domain: 0 <= Integer <= 100 "Unknown"

3 Spdoinfo – Spatial Data Organization Information – the mechanism used to represent spatial information in the data set.
> Optionality: Optional for FEMA

FEMA Business Rules: This section NOT required for FIRM Database submissions.

3.1 *Indspref* -- Indirect Spatial Reference -- name of types of geographic features, addressing schemes or other means through which locations are referenced in the data set.
> Optionality: Optional for FEMA
> Domain: free text

3.2 *Direct* -- Direct Spatial Reference Method -- the system of objects used to represent space in the data set.
> Optionality: Optional for FEMA
> Domain: **FEMA Business Rules: "Vector" "Raster"**

3.3 *Ptvctinf*[5] -- Point and Vector Object Information -- the types and numbers of vector or nongridded point spatial objects in the data set.
> Optionality: Optional
> **FEMA Business Rules: This element or <spdinfo.rastinfo>, not both.**

3.3.1 *Sdtsterm** -- SDTS Terms Description -- point and vector object information using the terminology and concepts from Spatial Data Transfer Standard (SDTS)
> Optionality: Optional
> **FEMA Business Rules: Must occur 3 times for Point, String and GT-polygon composed of chains.**

3.3.1.1 *Sdtstype* -- SDTS Point and Vector Object Type -- name of point and vector spatial objects used to locate zero-, one- and two-dimensional spatial locations in the data set.
> Optionality: Optional
> Domain:
> **FEMA Business Rules: "Point", "String" and "GT-polygon composed of chains"**

3.3.1.2 *Ptvctnt* -- Point and Vector Object Count -- the total number of the point or vector object type occurring in the data set.
> Optionality: Optional
> Domain: Integer > 0

3.3.2 *Vpfterm* -- VPF Terms Description -- point and vector object information using the terminology and concepts from Department of Defense, 1992, Vector Product Format (VPF) (MILSTD-600006)
> Optionality: Optional

3.3.2.1 *Vpflevel* -- VPF Topology Level -- the completeness of the topology carried by the data set. The levels of completeness are defined in Department of Defense, 1992, Vector Product Format (MIL-STD-600006).
> Optionality: Optional
> Domain: $0 <= Integer <= 3$

3.3.2.2 *Vpfinfo** -- VPF Point and Vector Object Information -- information about VPF point and vector objects

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[5] Note: Use of the *spdoinfo.ptvctinf* and *spdoinfo.rastinfo* elements is mutually exclusive.

Optionality: Optional

3.3.2.2.1 *Vpftype* -- VPF Point and Vector Object Type -- name of point and vector spatial objects used to locate zero-, one- and two-dimensional spatial locations in the data set.
Optionality: Optional
Domain: "Node" "Edge" "Face" "Text"

3.3.2.2.2 *Vpfcnt* -- VPF Point and Vector Object Count.
Optionality: Optional
Domain: Integer > 0

3.4 *Rastinfo*[5] -- Raster Object Information -- the types and numbers of raster spatial objects in the data set.
Optionality: Optional
FEMA Business Rules: This must not be included if <spdinfo.ptvctinf> is used.

3.4.1 *Rasttype* -- Raster Object Type -- raster spatial objects used to locate zero-, two- or three-dimensional locations in the data set.
Optionality: Optional
Domain: "Point" "Pixel" "Grid Cell" "Voxel"

3.4.2 *Rowcount* -- Row Count -- the maximum number of raster objects along the ordinate (y) axis. For use with rectangular raster objects.
Optionality: Optional
Domain: Integer > 0

3.4.3 *Colcount* -- Column Count -- the maximum number of raster objects along the abscissa (x) axis. For use with rectangular raster objects.
Optionality: Optional
Domain: Integer > 0

3.4.4 *Vrtcount* -- Vertical Count -- the maximum number of raster objects along the vertical (z) axis. For use with rectangular volumetric raster objects (voxels).
Optionality: Optional
Domain: Integer > 0

4 *Spref* -- Spatial Reference Information – the description of the reference frame for and the means to encode coordinates in the data set.
Optionality: Mandatory for FEMA
FEMA Business Rules: This section is required for all FIRM Database submissions.

4.1 *Horizsys* -- Horizontal Coordinate System Definition -- the reference frame or system from which linear or angular quantities are measured and assigned to the position that a point occupies. (4.2.1 or 4.2.2 or 4.2.3)
Optionality: Mandatory
FEMA Business Rules: Must specify either Geograph (4.1.1) OR Planar (4.1.2) OR Local (4.1.3), exclusive.

4.1.1 *Geograph*[6] -- Geographic -- the quantities of latitude and longitude which define the position of a point on the Earth's surface with respect to a reference spheroid.
> Optionality: Mandatory if applicable

4.1.1.1 *Latres* -- Latitude Resolution -- the minimum difference between two adjacent latitude values expressed in Geographic Coordinate Units of measure.
> Optionality: Mandatory if applicable
> Domain: real > 0.0

4.1.1.2 *Longres* -- Longitude Resolution -- the minimum difference between two adjacent longitude values expressed in Geographic Coordinate Units of measure.
> Optionality: Mandatory if applicable
> Domain: real > 0.0

4.1.1.3 *Geogunit* -- Geographic Coordinate Units -- units of measure used for the latitude and longitude values.
> Optionality: Mandatory if applicable
> Domain: "Decimal degrees" "Decimal minutes" "Decimal seconds" "Degrees and decimal minutes" "Degrees, minutes, and decimal seconds" "Radians" "Grads"

4.1.2 *Planar** -- Planar[6] -- the quantities of distances, or distances and angles, which define the position of a point on a reference plane to which the surface of the Earth has been projected.
> Optionality: Mandatory if applicable

4.1.2.1 *Mapproj*[7] -- Map Projection -- the systematic representation of all or part of the surface of the Earth on a plane or developable surface.
> Optionality: Mandatory if applicable

4.1.2.1.1 Mapprojn – Map Projection Name – name of the map projection.
> Optionality: Mandatory if applicable
> Domain: "Albers Conical Equal Area" "Azimuthal Equidistant" "Equidistant Conic" "Equirectangular" "General Vertical Nearsided Projection" "Gnomonic" "Lambert Azimuthal Equal Area" "Lambert Conformal Conic" "Mercator" "Modified Stereographic for Alaska" "Miller Cylindrical" "Oblique Mercator" "Orthographic" "Polar Stereographic" "Polyconic" "Robinson" "Sinusoidal" "Space Oblique Mercator" "Stereographic" "Transverse Mercator" "van der Grinten" free text

4.1.2.1.2 *[map projection parameters for selected projection, e.g. projection center, meridian, false easting/northing, etc[1]]*
> Optionality: Mandatory if applicable

4.1.2.2 *Gridsys*[7] -- Grid Coordinate System -- a plane-rectangular coordinate system usually based on, and mathematically adjusted to, a map projection so that geographic positions can be readily transformed to and from plane coordinates.
> Optionality: Mandatory if applicable

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[6] Note: Use of the *horizsys.geograph*, *horizsys.planar* and *horizsys.local* elements is mutually exclusive (i.e. only one of these can be used).

[7] Note: Use of the *planar.mapproj*, *planar.gridsys* and *planar.localp* elements is mutually exclusive (i.e. only one of these can be used).

4.1.2.2.1 *Gridsysn* -- Grid Coordinate System Name -- name of the grid coordinate system.
Optionality: Mandatory if applicable
Domain: "Universal Transverse Mercator" "Universal Polar Stereographic"
"State Plane Coordinate System 1927" "State Plane Coordinate System 1983"
"ARC Coordinate System" "other grid system"

4.1.2.2.2 [grid system parameters for selected grid system. E.g., Universal Transverse Mercator (UTM) or state zone]
Optionality: Mandatory if applicable

4.1.2.3 *Localp*[7] -- Local Planar -- any right-handed planar coordinate system of which the z-axis coincides with a plumb line through the origin that locally is aligned with the surface of the Earth.
Optionality: Mandatory if applicable

4.1.2.3.1 *Localpd – Local planar description*
Optionality: Mandatory if applicable

4.1.2.3.2 *Localpgi – Georeference Information*
Optionality: Mandatory if applicable

4.1.2.4 *Planci* -- Planar Coordinate Information -- information about the coordinate system developed on the planar surface.
Optionality: Mandatory if applicable

4.1.2.4.1 Plance – planar coordinate encoding method (Domain: "coordinate pair" "distance and bearing" "row and column")
Optionality: Mandatory if applicable

4.1.2.4.2 Coordrep[8] *– coordinate representation (specify either coordrep OR distbrep NOT BOTH)*
Optionality: Mandatory if applicable

4.1.2.4.2.1 Absres – Abscissa resolution (Domain: real)
Optionality: Mandatory if applicable

4.1.2.4.2.2 Ordres – Ordinate resolution (Domain: real)
Optionality: Mandatory if applicable

4.1.2.4.3 Distbrep[8] *– distance and bearing representation*
Optionality: Optional for FEMA

4.1.2.4.3.1 Distres – Distance resolution (Domain: real)
Optionality: Optional for FEMA

4.1.2.4.3.2 Bearres – Bearing resolution (Domain: real)
Optionality: Optional for FEMA

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[8] Note: Use of the *planci.coordrep* and *planci.distbrep* elements is mutually exclusive.

4.1.2.4.3.3 Bearunit – Bearing units (Domain: "Decimal degrees" "Decimal minutes" "Decimal seconds" "Degrees and decimal minutes" "Degrees, minutes, and decimal seconds" "Radians" "Grads")
Optionality: Optional for FEMA

4.1.2.4.3.4 Bearrefd – Bearing reference direction (Domain: "North" "South")
Optionality: Optional for FEMA

4.1.2.4.3.5 Bearrefm – Bearing reference meridian (Domain: "Assumed" "Grid" "Magnetic" "Astronomic" "Geodetic")
Optionality: Optional for FEMA

4.1.2.4.4 Plandu – planar distance units
Optionality: Mandatory if applicable

4.1.3 *Local*[6] -- Local -- a description of any coordinate system that is not aligned with the surface of the Earth.
Optionality: Mandatory if applicable

4.1.3.1 *Localdes* -- Local Description -- a description of the coordinate system and its orientation to the surface of the Earth.
Optionality: Mandatory if applicable
Domain: free text

4.1.3.2 *Localgeo* -- Local Georeference Information -- a description of the information provided to register the local system to the Earth (e.g. control points, satellite ephemeral data, inertial navigation data).
Optionality: Mandatory if applicable
Domain: free text

4.1.4 *Geodetic* -- Geodetic Model -- parameters for the shape of the earth.
Optionality: Mandatory for FEMA

4.1.4.1 *Horizdn* -- Horizontal Datum Name -- the identification given to the reference system used for defining the coordinates of points.
Optionality: Mandatory for FEMA
Domain: "North American Datum of 1927" "North American Datum of 1983" free text

4.1.4.2 *Ellips* -- Ellipsoid Name -- identification given to established representations of the Earth's shape.
Optionality: Mandatory
Domain: "Clarke 1866" "Geodetic Reference System 80" free text

4.1.4.3 *Semiaxis* -- Semi-major Axis -- radius of the equatorial axis of the ellipsoid.
Optionality: Mandatory
Domain: real > 0.0

4.1.4.4 *Denflat* -- Denominator of Flattening Ratio -- the denominator of the ratio of the difference between the equatorial and polar radii of the ellipsoid when the numerator is set to 1.
Optionality: Mandatory

Domain: Denominator of Flattening > 0.0

4.2 *Vertdef* **-- Vertical Coordinate System Definition -- the reference frame or system from which vertical distances (altitudes or depths) are measured.**
Optionality: Mandatory for FEMA

4.2.1 *Altsys* **-- Altitude System Definition -- the reference frame or system from which altitudes (elevations) are measured. The term "altitude"' is used instead of the common term "elevation" to conform to the terminology in Federal Information Processing Standards 70-1 and 173.**
Optionality: Mandatory for FEMA

4.2.1.1 *Altdatum* -- Altitude Datum Name -- the identification given to the surface taken as the surface of reference from which altitudes are measured.
Optionality: Mandatory
Domain: "National Geodetic Vertical Datum of 1929" "North American Vertical Datum of 1988" free text

4.2.1.2 *Altres** -- Altitude Resolution -- the minimum distance possible between two adjacent altitude values, expressed in Altitude Distance Units of measure.
Optionality: Mandatory
Domain: real > 0.0

4.2.1.3 *Altunits* -- Altitude Distance Units -- units in which altitudes are recorded.
Optionality: Mandatory
Domain: "meters" "feet" free text

4.2.1.4 *Altenc* -- Altitude Encoding Method -- the means used to encode the altitudes.
Optionality: Mandatory
Domain: "Explicit elevation coordinate included with horizontal coordinates" "Implicit coordinate" "Attribute values"

4.2.2 *Depthsys* -- Depth System Definition -- the reference frame or system from which depths are measured.
Optionality: Optional for FEMA

4.2.2.1 *Depthdn* -- Depth Datum Name -- the identification given to surface of reference from which depths are measured.
Optionality: Optional for FEMA
Domain: see FGDC standard

4.2.2.2 *Depthres** -- Depth Resolution -- the minimum distance possible between two adjacent depth values, expressed in Depth Distance Units of measure.
Optionality: Optional for FEMA
Domain: real > 0.0

4.2.2.3 *Depthdu* -- Depth Distance Units -- units in which depths are recorded.
Optionality: Optional for FEMA
Domain: "meters" "feet" free text

4.2.2.4 *Depthem* -- Depth Encoding Method -- the means used to encode depths.

Optionality: Optional for FEMA
Domain: "Explicit depth coordinate included with horizontal coordinates"
"Implicit coordinate" "Attribute values"

5 *eainfo* –**Entity and Attribute Information – details about information content of the data set, including entity types, their attributes and the domains from which attribute values may be assigned.**

Optionality: Mandatory for FEMA
FEMA Business Rules: This section is required to summarize information about the different pieces of a submission.

5.1 *Detailed** -- Detailed Description -- description of the entities, attributes, attribute values and related characteristics encoded in the data set.

Optionality: Mandatory
FEMA Business Rules: Users must specify from the table below the entities that are provided with their submission (Source: FEMA *FIRM Database Technical Reference*). Only spatial FIRM Database tables used in a submission should be included as entities.

enttypl	enttypd
S_Alluvial_Fan	Location and attributes for alluvial fan areas shown on the FIRM.
S_Base_Index	Location and attributes for a tiling index for raster data used for the FIRM base map.
S_BFE	Location and attributes for base flood elevation lines shown on the FIRM.
S_CBRS	Location and attributes for Coastal Barrier Resources System units shown on the FIRM.
S_Cst_Gage	Location and attributes for the coastal gages for the study area.
S_Cst_Tsct_Ln	Location and attributes for coastal transect lines shown on the FIRM.
S_Datum_Conv_Pt	Location and attributes for points used to calculate vertical datum conversion factors.
S_FIRM_Pan	Location and attributes for FIRM hardcopy map panels.
S_Fld_Haz_Ar	Location and attributes for flood insurance risk zones shown on the FIRM.
S_Fld_Haz_Ln	Location and attributes for boundaries of flood insurance risk zones shown on the FIRM.
S_Gage	Location and attributes for riverine gages used to determine discharges for the study area.
S_Gen_Struct	Location and attributes for flood control structures shown on the FIRM.
S_HWM	Location and attributes for historic high water marks for the study area.
S_Hydro_Reach	Location and attributes for lines that represent the connectivity between the subbasins and flow direction between nodes within the study area.
S_Label_Ld	Location and attributes for leader lines for labels shown on the FIRM.

enttypl	enttypd
S_Label_Pt	Location and attributes for labels shown on the FIRM.
S_Levee	A spatial dataset consisting of lines that represent the centerlines of levees.
S_LiMWA	A spatial data set consisting of lines that depict the limit of 18-inch or greater coastal waves in a Coastal AE Zone.
S_LOMR	Location and attributes for LOMRs incorporated into the FIRM.
S_Nodes	Location and attributes of points that depict locations of computed discharges for the 10-, 4-, 2-, 1- and 0.2-percent-annual-chance floods.
S_PFD_Ln	Location and attributes for the primary frontal dune features for the coastal study area.
S_PLSS_Ar	Location and attributes of sections, townships and ranges shown on the FIRM.
S_Pol_Ar	Location and attributes for political jurisdictions shown on the FIRM.
S_Profil_Basln	A spatial data set consisting of lines showing the flow path used for floodplain modeling and mapping.
S_Riv_Mrk	Location and attributes for river mile markers shown on the FIRM.
S_Stn_Start	A spatial data set consisting of points indicating the location of the reference point that was used as the origin for distance measurements along streams and rivers.
S_Subbasins	Location and attributes for subbasins used in the hydrologic analysis.
S_Submittal_Info	A spatial data set consisting of polygons depicting the extents of the studied area.
S_Topo_Confidence	A spatial dataset consisting of polygons depicting areas of low confidence topographic data.
S_Trnsport_Ln	Location and attributes for roads, railroads and other transportation features shown on the FIRM.
S_Tsct_Basln	A spatial data set consisting of lines that represent the 0.0-foot elevation contour used for coastal modeling and mapping.
S_Wtr_Ar	Location and attributes for hydrography features shown on the FIRM.
S_Wtr_Ln	Location and attributes for hydrography features shown on the FIRM.
S_XS	Location and attributes for cross-section lines in the area covered by the FIRM.

5.1.1 *Enttyp* -- Entity Type -- the definition and description of a set into which similar entity instances are classified.

> Optionality: Mandatory

5.1.1.1 *Enttypl* -- Entity Type Label -- the name of the entity type.

Optionality: Mandatory
Domain: free text
FEMA Business Rules: See table above.

5.1.1.2 *Enttypd* -- Entity Type Definition -- the description of the entity type.
Optionality: Mandatory
Domain: free text
FEMA Business Rules: See table above.

5.1.1.3 *Enttypds* -- Entity Type Definition Source -- the authority of the definition.
Optionality: Mandatory
Domain:
FEMA Business Rules: "*FEMA FIRM Database Technical Reference (available* at http://www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping *and on the FEMA Risk MAP Knowledge Sharing Site.)"

5.1.2 *Attr** -- Attribute -- a defined characteristic of an entity.
Optionality: Optional for FEMA

5.1.2.1 *Attrlabl* -- Attribute Label -- the name of the attribute.
Optionality: Optional for FEMA
Domain: free text

5.1.2.2 *Attrdef* -- Attribute Definition -- the description of the attribute.
Optionality: Optional for FEMA
Domain: free text

5.1.2.3 *Attrdefs* -- Attribute Definition Source -- the authority of the definition.
Optionality: Optional for FEMA
Domain: free text

5.1.2.4 *Attrdomv** -- Attribute Domain Values -- the valid values that can be assigned for an attribute.
Optionality: Optional for FEMA

5.1.2.4.1 *Edom – enumerated domain (value & definition & source)*
Optionality: Optional for FEMA

5.1.2.4.2 *Rdom – range domain*
Optionality: Optional for FEMA

5.1.2.4.3 *Codesetd – codeset domain*
Optionality: Optional for FEMA

5.1.2.4.4 *Udom – unrepresentable domain*
Optionality: Optional for FEMA

5.1.2.5 *Begdatea** -- Beginning Date of Attribute Values -- earliest or only date for which the attribute values are current. In cases when a range of dates are provided, this is the earliest date for which the information is valid.

> Optionality: Optional
> Domain: free date

5.1.2.6 *Enddatea** -- Ending Date of Attribute Values -- latest date for which the information is current. Used in cases when a range of dates are provided.
> Optionality: Optional
> Domain: free date

5.1.2.7 *Attrvai* -- Attribute Value Accuracy Information -- an assessment of the accuracy of the assignment of attribute values.
> Optionality: Optional

5.1.2.7.1 Attrva – attribute value accuracy
> Optionality: Optional

5.1.2.7.2 Attrvae – attribute value accuracy explanation
> Optionality: Optional

5.1.2.8 *Attrmfrq* -- Attribute Measurement Frequency -- the frequency with which attribute values are added.
> Optionality: Optional
> Domain: "Unknown" "As needed" "Irregular" "None planned" free text

5.2 *Overview** -- Overview Description -- summary of and citation to detailed description of, the information content of the data set.
> Optionality: Mandatory for FEMA

5.2.1 *Eaover* -- Entity and Attribute Overview -- detailed summary of the information contained in a data set.
> Optionality: Mandatory
> Domain:
> **FEMA Business Rules: "*The FIRM Database is made up of several data themes containing both spatial and attribute information. These data together represent the current flood risk for the subject area as identified by FEMA. The attribute tables include SFHA locations, flood zone designations, BFEs, political entities, cross-section locations, FIRM panel information and other data related to the NFIP.*"**

5.2.2 *Eadetcit** -- Entity and Attribute Detail Citation -- reference to the complete description of the entity types, attributes, and attribute values for the data set.
> Optionality: Mandatory
> Domain:
> **FEMA Business Rules: First occurrence:**
> **"*FEMA's FIRM Database Technical Reference contains a detailed description of each attribute code and a reference to other relevant information.*"**
>
> **Second occurrence – only list tables actually submitted with the Flood Risk Project:**
> **"*The following tables are included in this data set: L_Comm_Info L_Comm_Revis L_Cst_Model L_Cst_Struct L_Cst_Tsct_Elev L_ManningsN L_Meetings L_MT2_LOMR L_Mtg_POC L_Pan_Revis L_Pol_FHBM*"**

L_Profil_Bkwtr_El L_Profil_Label L_Profil_Panel L_Source_Cit L_Summary_Discharges L_Summary_Elevations L_Survey_Pt L_XS_Elev L_XS_Struct S_Alluvial_Fan S_Base_Index S_BFE S_CBRS S_Cst_Gage S_Cst_Tsct_Ln S_Datum_Conv_Pt S_FIRM_Pan S_Fld_Haz_Ar S_Fld_Haz_Ln S_Gage S_Gen_Struct S_HWM S_Hydro_Reach S_Label_Ld S_Label_Pt S_Levee S_LiMWA S_Nodes S_PFD_Ln S_PLSS_Ar S_Pol_Ar S_Profil_Basln S_Riv_Mrk S_Stn_Start S_Subbasins S_Submittal_Info S_Topo_Confidence S_Trnsport_Ln S_Tsct_Basln S_Wtr_Ar S_Wtr_Ln S_XS Study_Info"

6 *distinfo** – Distribution Information – information about the distributor of and options for obtaining the data set.

> Optionality: Mandatory for FEMA
> **FEMA Business Rules: This section is required for all FIRM Database submissions.**
>
> **The distributor of the data is either FEMA or the publisher of the metadata.**

6.1 *Distrib* -- Distributor -- the party from whom the data set may be obtained.

> Optionality: Mandatory
> **FEMA Business Rules: If FEMA is the Distributor (6.1.1) of the data, then for FEMA-FIRM-Final, use MSC contact information else use MIP contact information for FEMA-FIRM-Draft and FEMA-FIRM-Preliminary. If FEMA is not the Distributor of the FIRM Database, then contact information for the Distributor must be provided in Section 6.1.1.**

6.1.1 Cntinfo -- Contact Information -- Identity of and means to communicate with, person(s) and organization(s) associated with the data set.

> Optionality: Mandatory

6.1.1.1 *Cntperp[2]* -- Contact Person Primary -- the name of the individual to which the contact type.

> Optionality: Optional
>
> **FEMA Business Rules: Contact Person Primary (Cntperp 6.1.1.1) is not used; Contact Organization Primary (Cntorgp 6.1.1.2) serves as primary contact.**

6.1.1.2 *Cntorgp[2]* -- Contact Organization Primary -- the organization and the member of the organization associated with the data set. Used in cases where the association of the organization to the data set is more significant than the association of the person to the data set.

> Optionality: Mandatory
> Domain: Compound

6.1.1.2.1 *Cntorg* -- Contact Organization -- the name of the organization to which the contact type applies.

> Optionality: Mandatory
> Domain: **FEMA Business Rules: "*FEMA, Flood Map Service Center*" or free text**

6.1.1.2.2 Cntper -- Contact Person -- the name of the individual to which the contact type applies.

Optionality: Optional
Domain: free text

6.1.1.3 *Cntpos* -- Contact Position -- the title of individual.
Optionality: Optional
Domain: free text

6.1.1.4 *Cntaddr** -- Contact Address -- the address for the organization or individual.
Optionality: Mandatory

6.1.1.4.1 *Addrtype* -- Address Type -- the information provided by the address.
Optionality: Mandatory
Domain: **FEMA Business Rules: "*mailing*" or free text**

6.1.1.4.2 *Address** -- Address -- an address line for the address.
Optionality: Mandatory for FEMA
Domain: **FEMA Business Rules: "*P.O. Box 3617*" or free text**

6.1.1.4.3 *City* -- City -- the city of the address.
Optionality: Mandatory
Domain: **FEMA Business Rules: "Oakton" or free text**

6.1.1.4.4 *State* -- State or Province -- the state or province of the address.
Optionality: Mandatory
Domain: **FEMA Business Rules: "Virginia" or free text**

6.1.1.4.5 Postal -- Postal Code -- the ZIP or other postal code of the address.
Optionality: Mandatory
Domain: **FEMA Business Rules: "*22124*"** or free text

6.1.1.4.6 *Country* -- Country -- the country of the address.
Optionality: Mandatory for FEMA
Domain: FEMA Business Rules: "*USA*" or free text

6.1.1.5 *Cntvoice** -- Contact Voice Telephone -- the telephone number by which individuals can speak to the organization or individual.
Optionality: Mandatory
Domain: **FEMA Business Rules: "*1-877-336-2627*" or free text**

6.1.1.6 *Cnttdd** -- Contact TDD/TTY Telephone -- the telephone number by which hearing-impaired individuals can contact the organization or individual.
Optionality: Optional
Domain: free text

6.1.1.7 *Cntfax** -- Contact Facsimile Telephone -- the telephone number of a facsimile machine of the organization or individual.
Optionality: Optional
Domain: free text

6.1.1.8 *Cntemail** -- Contact Electronic Mail Address -- the address of the electronic mailbox of the organization or individual.

Optionality: Mandatory for FEMA
Domain: **FEMA Business Rules: _miphelp@riskmapcds.com_ or free text**

6.1.1.9 *Hours* -- Hours of Service -- time period when individuals can speak to the organization or individual.
Optionality: Optional
Domain: free text

6.1.1.10 *Cntinst* -- Contact Instructions -- supplemental instructions on how or when to contact the individual or organization.
Optionality: Mandatory for FEMA
Domain: **FEMA Business Rules: _"Data requests must include the full name of the community or county and the FIRM panel number(s) covered by the request."_**

6.2 *Resdesc* -- Resource Description -- the identifier by which the distributor knows the data set.
Optionality: Optional for FEMA
Domain: free text

6.3 *Distliab* -- Distribution Liability -- statement of the liability assumed by the distributor.
Optionality: Mandatory
Domain:
FEMA Business Rules: _"No warranty expressed or implied is made by FEMA regarding the utility of the data on any other system nor shall the act of distribution constitute any such warranty."_

6.4 *Stdorder** -- Standard Order Process -- the common ways in which the data set may be obtained or received and related instructions and fee information.
Optionality: Mandatory for FEMA
FEMA Business Rules: Note: the child elements, <nondig> (6.4.1) and <digform> (6.4.2) are mutually exclusive (i.e., only one can occur within a given <stdorder> element).

6.4.1 *Nondig* -- Non-digital Form -- the description of options for obtaining the data set on non-computer- compatible media.
Optionality: Optional
Domain: free text

6.4.2 *Digform** -- Digital Form -- the description of options for obtaining the data set on computer-compatible media
Optionality: Mandatory

6.4.2.1 *Digtinfo* -- Digital Transfer Information - description of the form of the data to be distributed.
Optionality: Mandatory

6.4.2.1.1 *Formname* -- Format Name -- the name of the data transfer format.
Optionality: Mandatory
Domain: domain values from the "Data Formats" listed in table below.

FEMA Business Rules: Valid formats for Draft, Preliminary and Final FIRM:

Vector Data Formats	Description
"Esri Shapefile"	Esri Shapefile (.SHP)

6.4.2.1.2 Formvern – format version
            Optionality: Optional

6.4.2.1.3 Formverd – format version date
            Optionality: Optional

6.4.2.1.4 Formspec - Format specification
            Optionality: Optional

6.4.2.1.5 Formcont – format information content
            Optionality: Optional

6.4.2.1.6 Filedesc – file decompression technique
            Optionality: Optional for FEMA

6.4.2.1.7 Transize – transfer size
            Optionality: Optional

6.4.2.2 *Digtopt* -- Digital Transfer Option -- the means and media by which a data set is obtained from the distributor.
            Optionality: Mandatory

6.4.2.2.1 *Onlinopt* - [9]Online Option* -- information required to directly obtain the data set electronically.
            Optionality: Mandatory

6.4.2.2.1.1 *Computer** -- Computer Contact Information -- instructions for establishing communications with the distribution computer.
            Optionality: Mandatory

6.4.2.2.1.1.1 *Networka - network address*
            Optionality: Mandatory

6.4.2.2.1.1.1.1 *Networkr* - Resource name*
            Optionality: Mandatory
            Domain:
            FEMA Business Rules: For Draft FIRM: "*http://hazards.fema.gov*" or URL where dataset may be obtained. For Preliminary FIRM: "*http://www.fema.gov/view-your-communitys-preliminary-flood-hazard-data-0*". For Effective FIRM: "*https://msc.fema.gov*".

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[9] digform/digtinfo/digtopt/onlinopt and digform/digtinfo/digtopt/offoptn are mutually exclusive (e.g., one or the other but not both must be specified)

6.4.2.2.1.2 *Accinstr* -- Access Instructions -- instructions on the steps required to access the data set.
Optionality: Optional

6.4.2.2.1.3 *Oncomp* – Online Computer and Operating system
Optionality: Optional

6.4.2.2.2 *Offoptn*[9] -- Offline Option -- information about media-specific options for receiving the *data set.*
Optionality: Optional

6.4.2.2.2.1 *Offmedia – Offline Media*
Optionality: Optional

6.4.2.2.2.2 *Reccap – recording capacity*
Optionality: Optional

6.4.2.2.2.3 *Recfmt – recording format*
Optionality: Optional

6.4.2.2.2.4 *Compat – compatibility information*
Optionality: Optional

6.4.3 *Fees* -- Fees -- the fees and terms for retrieving the data set.
Optionality: Mandatory
Domain: **FEMA Business Rules: "Contact Distributor"** free text

6.4.4 *Ordering* -- Ordering Instructions -- general instructions and advice about and special terms and services provided for, the data set by the distributor.
Optionality: Optional
Domain: free text

6.4.5 *Turnarnd* -- Turnaround -- typical turnaround time for the filling of an order.
Optionality: Optional
Domain: free text

6.5 *Custom* -- Custom Order Process -- description of custom distribution services available and the terms and conditions for obtaining these services.
Optionality: Optional for FEMA
Domain: free text

6.6 *Techpreq* -- Technical Prerequisites -- description of any technical capabilities that the consumer must have to use the data set in the form(s) provided by the distributor.
Optionality: Optional
Domain: free text

6.7 *Availabl* -- Available Time Period -- the time period when the data set will be available from the distributor.
Optionality: Optional
Domain: timeperiod (single, multiple, range of dates)

7 *metainfo* – Metadata Reference Information – information on the currentness of the metadata information and the responsible party.

> Optionality: Mandatory
> **FEMA Business Rules: This section is required for all FGDC-compliant metadata.**

7.1 *Metd* -- Metadata Date -- the date that the metadata were created or last updated.

> Optionality: Mandatory
> Domain: single_date
> **FEMA Business Rules: Must be in the form of YYYYMMDD**

7.2 *Metrd* -- Metadata Review Date -- the date of the latest review of the metadata entry.

> Optionality: Optional
> Domain: free date; Metadata Review Date later than Metadata Date
> **FEMA Business Rules: *This element may be used when a FIRM Database is revised or amended, etc.***

7.3 *Metfrd* -- Metadata Future Review Date -- the date by which the metadata entry should be reviewed.

> Optionality: Optional
> Domain: free date; Metadata Future Review Date later than Metadata Review Date

7.4 *Metc* -- Metadata Contact -- the party responsible for the metadata information.

> Optionality: Mandatory

7.4.1 *Cntinfo* – Contact Information -- Identity of and means to communicate with, person(s) and organization(s) associated with the data set.

> Optionality: Mandatory

7.4.1.1 *Cntperp*[10] -- Contact Person Primary -- the name of the individual to which the contact type.

> Optionality: Mandatory
> Domain: Compound

7.4.1.1.1 Cntper -- Contact Person -- the name of the individual to which the contact type applies.

> Optionality: Mandatory
> Domain: free text

7.4.1.1.2 *Cntorg* -- Contact Organization -- the name of the organization to which the contact type applies.

> Optionality: Mandatory
> Domain: free text

7.4.1.2 *Cntorgp*[10]-- Contact Organization Primary -- the organization and the member of the organization associated with the data set. Used in cases where the association of the organization to the data set is more significant than the association of the person to the data set.

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[10] Note: Use of the *Cntinfo.Cntperp* and *Cntinfo.Cntorgp* elements is mutually exclusive. *Cntinfo.Cntperp* is specified in this context as mandatory so the *Cntinfo.Cntorgp* element must not be used here.

Optionality: Optional
FEMA Business Rules: Contact Organization Primary (Cntorgp 7.4.1.2) is not used; Contact Person Primary (Cntperp 7.4.1.1) serves as primary contact.

7.4.1.3 *Cntpos* **-- Contact Position -- the title of individual.**
Optionality: Mandatory for FEMA
Domain: **FEMA Business Rules:** *Federal Insurance and Mitigation Administration*

7.4.1.4 *Cntaddr** -- Contact Address -- the address for the organization or individual.
Optionality: Mandatory

7.4.1.4.1 *Addrtype* -- Address Type -- the information provided by the address.
Optionality: Mandatory
Domain: free text

7.4.1.4.2 *Address** **-- Address -- an address line for the address.**
Optionality: Mandatory for FEMA
Domain: free text

7.4.1.4.3 *City* -- City -- the city of the address.
Optionality: Mandatory
Domain: free text

7.4.1.4.4 *State* -- State or Province -- the state or province of the address.
Optionality: Mandatory
Domain: free text

7.4.1.4.5 Postal -- Postal Code -- the ZIP or other postal code of the address.
Optionality: Mandatory
Domain: free text

7.4.1.4.6 *Country* **-- Country -- the country of the address.**
Optionality: Mandatory for FEMA
Domain: free text

7.4.1.5 *Cntvoice** -- Contact Voice Telephone -- the telephone number by which individuals can speak to the organization or individual.
Optionality: Mandatory
Domain: free text

7.4.1.6 *Cnttdd** -- Contact TDD/TTY Telephone -- the telephone number by which hearing-impaired individuals can contact the organization or individual.
Optionality: Optional
Domain: free text

7.4.1.7 *Cntfax** -- Contact Facsimile Telephone -- the telephone number of a facsimile machine of the organization or individual.
Optionality: Optional
Domain: free text

7.4.1.8 *Cntemail** **-- Contact Electronic Mail Address -- the address of the electronic mailbox of the organization or individual.**
>> Optionality: Mandatory for FEMA
>> Domain: free text

7.4.1.9 *Hours* -- Hours of Service -- time period when individuals can speak to the organization or individual.
>> Optionality: Optional
>> Domain: free text

7.4.1.10 *Cntinst* -- Contact Instructions -- supplemental instructions on how or when to contact the individual or organization.
>> Optionality: Optional
>> Domain: free text

7.5 *Metstdn* -- Metadata Standard Name -- the name of the metadata standard used to document the data set.
>> Optionality: Mandatory
>> Domain: "FGDC Content Standard for Digital Geospatial Metadata" free text

7.6 *Metstdv* -- Metadata Standard Version -- identification of the version of the metadata standard used to document the data set.
>> Optionality: Mandatory
>> Domain: "FGDC-STD-001-1998", free text

7.7 *Mettc* -- Metadata Time Convention -- form used to convey time of day information in the
>> metadata entry. Used if time of day information is included in the metadata for a
>> data set.
>> Optionality: Optional for FEMA
>> Domain: "local time" "local time with time differential factor" "universal time"

7.8 *Metac* -- Metadata Access Constraints -- restrictions and legal prerequisites for accessing the metadata. These include any access constraints applied to assure the protection of privacy or intellectual property and any special restrictions or limitations on obtaining the metadata.
>> Optionality: Optional
>> Domain: free text

7.9 *Metuc* -- Metadata Use Constraints -- restrictions and legal prerequisites for using the metadata after access is granted. These include any metadata use constraints applied to assure the protection of privacy or intellectual property and any special restrictions or limitations on using the metadata.
>> Optionality: Optional
>> Domain: free text

7.10 *Metsi* -- Metadata Security Information -- handling restrictions imposed on the metadata because of national security, privacy or other concerns.
>> Optionality: Optional

7.10.1 *Metscs* -- Metadata Security Classification System -- name of the classification system for the metadata.

7.10.2 *Metsc* -- Metadata Security Classification -- name of the handling restrictions on the metadata.
Optionality: Optional
Domain: "Top secret" "Secret" "Confidential" "Restricted" "Unclassified" "Sensitive" free text

7.10.3 *Metshd* -- Metadata Security Handling Description -- additional information about the restrictions on handling the metadata.
Optionality: Optional
Domain: free text

7.11 *Metextns** -- Metadata Extensions a reference to extended elements to the standard which may be defined by a metadata producer or a user community. Extended elements are elements outside the Standard but needed by the metadata producer. If extended elements are created, they must follow the guidelines in Appendix D, Guidelines for Creating Extended Elements to the Content Standard for Digital Geospatial Metadata.
Optionality: Mandatory for FEMA

7.11.1 *Onlink** -- Online Linkage -- the name of an online computer resource that contains the metadata extension information for the data set. Entries should follow the Uniform Resource Locator convention of the Internet.
Optionality: Mandatory for FEMA
Domain:
FEMA Business Rules: Two onlinks are required:
- Link to URL on MIP for information on this profile:
http://hazards.fema.gov
- Link to the data's Ethernet POWERLINK Standardization Group (EPSG) code (in the form of a URL). More info about EPSG code can be found at:
http://www.epsg.org.

7.11.2 *Metprof* -- Profile Name -- the name given to a document that describes the application of the Standard to a specific user community.
Optionality: Mandatory for FEMA
Domain:
FEMA Business Rules: *"FEMA NFIP Metadata Content and Format Standard"*

Document Management History

Revision History

Version Number	Version Date	Summary of Changes	Team/Author
1.0	Dec 16, 2005	Released for public review.	NSP Metadata Expert Group
1.0.1	April 6, 2006	Restrict caldate (1.3.1.1.2) element to only a single date value; update description of source information and source citation abbreviation elements (2.5.1).	NSP Metadata Expert Group
1.0.2	July 2013	Updated to align metadata profiles with revised _FIRM Database Technical Reference_ and _Data Capture Standards Technical Reference_ content.	RAMPP
1.0.3	December 2013	Revised for 508 compliance and new FIRM Database data distribution options (Preliminary website and NFHL downloads).	RAMPP
1.0.4	November 2014	Revised Native Data Set Environment (1.13) to remove specific reference to personal geodatabase, noted that passive vertical datum conversions should be documented in Process Description (2.5.2.1), updated reference to Flood Map Service Center, removed PGDB as required submittal format, updated URLs, updated reference to table of SOURCE_CIT abbreviations in the _FIRM Database Technical Reference_.	RAMPP