

Q3 FLOOD DATA SPECIFICATIONS

DRAFT
June 1995

TABLE OF CONTENTS

Introduction	iii
FEMA's SFHA Data Library	1
Q3 Raster FIRM Specifications	7
Q3 Flood Data Coverage Specifications	9
Q3-DLG Specifications	23
Metadata Specifications	47
Q3 Raster FIRM Metadata	51
Q3 Flood Data Coverage Metadata	63
Q3-DLG Metadata	79
Appendix A - UTM Zones	A-1
Appendix B - Glossary	B-1

This page intentionally left blank.

INTRODUCTION

INTRODUCTION

Background

In response to increasing losses from flood hazards nationwide, the Congress of the United States passed the National Flood Insurance Act of 1968. The 1968 Act established the National Flood Insurance Program (NFIP). Subsequently, the 1968 Act was further expanded by the Flood Disaster Protection Act of 1973. The 1968 Act provided for the availability of flood insurance within communities that were willing to adopt floodplain management programs to mitigate future flood losses. The act also required the identification of all floodplain areas within the United States and the establishment of flood-risk zones within those areas. The responsibility for administration of the NFIP falls with the Federal Insurance Administration of the Federal Emergency Management Agency (FEMA).

The risk data to identify floodplain areas, as required by the Act, are acquired through Flood Insurance Studies (FISs). FISs are hydrologic and hydraulic studies of flood risks developed by FEMA. Using the results of a FIS, FEMA prepares a Flood Insurance Rate Map (FIRM) that depicts the spatial extent of Special Flood Hazard Areas (SFHAs), and other thematic features related to flood risk assessment. SFHAs are areas subject to inundation by a flood having a one-percent or greater probability of being equaled or exceeded during any given year. This flood, which is referred to as the 100-year flood (or base flood), is the national standard on which the floodplain management and insurance requirements of the NFIP are based.

FEMA publishes the FIRM and distributes it to a wide range of users; private citizens, community officials, insurance agents and brokers, lending institutions, and other Federal agencies. The FIRM is the basis for floodplain management, mitigation, and insurance activities of the NFIP. Insurance applications include enforcement of the mandatory purchase requirement of the 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 or facilities located or to be located in identified areas having special flood hazards" (Section 2(b)(4) of the 1973 Act). In addition to the identification of SFHAs, the risk zones shown on the FIRMs are the basis for the establishment of premium rates for flood coverage offered through the NFIP.

At present, FISs have been completed and FIRMs published for virtually all communities in the nation having flood risks. Flood risks have been assessed in approximately 20,400 communities nationwide. These studies, conducted at a cost of over \$900,000,000, have resulted in the publication of over 80,000 different FIRM panels. Typically, 6-8 million FIRMs are distributed each year by FEMA to users. Over 2.5 million flood insurance policies have been written through the NFIP, providing coverage against the peril of flood for over \$200

billion in property nationwide.

In addition to initial flood hazard identification studies, FEMA is responsible for maintaining the FIRMs as communities grow, as new or better scientific and technical data concerning flood risks becomes available, and as some FISs become outdated by the construction of flood control projects or the urbanization of rural watersheds. It is expected that with completion of all initial flood hazard identification studies, there will be a need on a continuing basis to update several thousand FIRMs per year.

History of the Automation of NFIP Mapping

Developments in the fields of automated cartography and Geographic Information Systems (GIS) technology during the 1980's led to FEMA's study of the potential of automating NFIP mapping and engineering. After a series of technology assessment and pilot projects, FEMA concluded that existing technology made conversion of NFIP mapping and engineering to an automated basis feasible. In Fiscal Year 1992, FEMA implemented a ten year automation program, beginning with the conversion of FIRMs to a digital format.

Q3 Flood Data Product Background

Starting with Hurricane Hugo, the Federal Insurance Administration has attempted to support disaster relief operations with digital Flood Insurance Rate Maps (FIRMs). Disaster loan closings by the Small Business Administration (SBA), Temporary Housing, Individual Assistance and Family Grant Programs, and Temporary Housing Programs all require and flood hazard assessment. When flood map reading is automated to support these actions, significant time savings, and improvements in map reading quality, can be accomplished, while speeding access of disaster relief to victims.

More recently, increased funding for post-disaster mitigation activities has lead to the extensive use of Geographic Information System (GIS) and digital FIRMs for planning activities. Applications include selection of sites for relocation, prioritizing eligibility for home buyout programs, and identifying repeatedly damage properties in special flood hazard areas.

To support disaster operations, the Risk Assessment Branch has developed specifications for a digital "Emergency FIRM," or Quality Level 3 DFIRM (Q3) that can be created rapidly and at minimal costs. This product has the advantage of being far less costly, in time and resources to produce than the Quality Level 1 engineered digital product, the Digital Flood Insurance Rate Map (DFIRM), or the complete Quality Level 2 thematic flood risk overlay created from existing paper FIRMs, the DFIRM-Digital Line Graph (DFIRM-DLG).

The Q3 Flood Data product is designed to serve the needs of FEMA for both Response and Recovery activities, as well as NFIP flood insurance policy marketing initiatives. This product is designed to allow rapid access to and distribution of digital FIRM data, and is designed to be compatible with all existing FIRM-DLG and DFIRM-DLG data already available and underway.

NFIP Digital FIRM Products

FEMA has collected digital FIRM data to three basic product levels. These are the DFIRM (including the hardcopy DFIRM and the DFIRM-DLG), also known as Quality Level 1 or Q1; the FIRM-DLG, or Quality Level 2 data (Q2); and now the Q3 Flood Data, or Quality Level 3. These three product levels are further defined as follows:

Q1: Digital Flood Insurance Rate Map - (DFIRM) - The Digital Flood Insurance Rate Map (DFIRM) is comprised of all digital data required to create the hardcopy FIRM. This includes base map information, graphics, text, shading, and other geographic and graphic data required to create the final hardcopy FIRM product to FEMA standards and specifications. This product serves the purposes of map design and provides the from which the Digital Line Graph (DLG) thematic product of the flood risks is extracted to create the DFIRM-DLG. This product is generally produced in a county-wide format. DFIRMs are subjected to community review and approval and are, therefore, the official basis for implementing the regulations and requirements of the NFIP within the community. Specifications for the digitizing of DFIRMs are consistent with those required for mapping at the scale of 1:24,000, or better.

Digital Flood Insurance Rate Map -DLG (DFIRM - DLG) - This product is created by extracting the flood risk thematic data from the DFIRM. The format of this product is the U.S. Geological Survey Digital Line Graph Level 3 Optional format, as described in the Standards for Digital Flood Insurance Rate Maps. The DFIRM-DLG does not include base map information, nor does it include graphic data required to create a hardcopy FIRM. This product is intended to be the primary means of transferring flood risk data depicted by FIRMs to GISs through a public domain data exchange format. The DFIRM-DLGs are tiled to the U.S. Geological Survey 1:24,000 scale topographic map series.

Q2: FIRM-DLG - The FIRM-DLG is a product developed by digitizing and/or scanning and vectorizing the existing hardcopy FIRM to create a thematic vector overlay of flood risks. This product differs from the DFIRM as it is not tied to a base map, is not used to produce a new version of the hardcopy FIRM, and is not subjected to community review. FIRM-DLGs are intended to faithfully duplicate the existing hardcopy FIRM and provide users with automated flood risk data that is comparable to that they would derive from the hardcopy FIRM. To this end, edge-matching errors, overlaps and underlaps in coverage, and similar problems are not corrected during digitizing or scanning as they are during the DFIRM-DLG production. Specifications for the digitizing of FIRM-DLGs are consistent with those required for mapping at the scale of 1:24,000. The format of this product is also the U.S. Geological Survey Digital Line Graph Level 3 Optional format.

Q3: Q3 Flood Data - The Q3 Flood Data are developed by scanning and vectorizing the existing hardcopy FIRM to create

a raster product suitable for viewing or printing, and a thematic vector overlay of flood risks. Q3 Flood Data are intended to capture all FIRM data in the raster file, but vectorize only certain features from the existing hardcopy FIRM. The vectorized features include:

- 100-year and 500-year floodplain areas, including Zone V areas, limited floodway areas, and zone designations
- Coastal Barrier Resources Act areas
- political areas, including community identification number
- FIRM panel areas, including panel number and suffix
- 7.5-minute quadrangle areas

Sources that reflect updates effected by Letters of Map Correction (Letter of Map Revision (LOMR), Letter of Map Amendment (LOMA)) are utilized in the preparation of Q3 Flood Data files. These revisions are included in the Q3 Flood Data if they are mappable at the publication scale of the source graphic.

Edge-matching errors, overlaps and underlaps in coverage, and similar problems are not corrected during digitizing or scanning and vectorizing.

The hardcopy FIRMs from which the Q3 Flood Data vector data are extracted contain no horizontal control. The specifications for the horizontal control of Q3 Flood Data vector data are consistent with those required for mapping at the scale of 1:24,000. The horizontal controlling of these data is typically performed by fitting the vectors to a georeferenced raster 7.5-minute quadrangle file. The raster files generated by scanning the hardcopy FIRMs are not georeferenced.

The Q3 Flood Data files in vector format are distributed in USGS Digital Line Graph, compatible with FEMA document FIA-21/October 1993.

Applications of Digital FIRM Products

The conversion of FIRMs to a digital format is expected to have many benefits. However, users must bear in mind that the simple conversion of FIRM to a digital format does not inherently improve the engineering quality of the product. Many of the same difficulties with interpretation of flood risk data, and the requirement for users to apply sound judgement in methods selected for decision making and map interpretation remains unchanged.

DFIRMs and DFIRM-DLGs

As stated above, the hardcopy DFIRM replaces the hardcopy FIRM as the official basis for implementing the regulations and requirements of the NFIP within the community. The DFIRM-DLG thematic data is simply a digital version of the hardcopy DFIRM. Thus, any revisions, appeals, or other requests for changes to

DFIRMs can be made under the same mechanisms as those developed for the hardcopy format FIRMs. The only change the DFIRM-DLG represents is the format of the data. Existing NFIP regulations and procedures are not impacted by this change. However, the end user does have the option of submitting requests for revisions to FEMA in a digital format.

With increased frequency, highly detailed large scale digital mapping is becoming available. DFIRMs may utilize these data as a source (new engineering data collected using photogrammetric techniques) or as a base map. Communities whose digital base mapping files were utilized as the base map for the DFIRM will find that they may use the DFIRM-DLG files for all determination and enforcement regulations.

FIRM-DLGs

The FIRM-DLG is a digital representation of the hardcopy FIRM. As stated above, it is not tied to a base map, is not used to produce a new version of the hardcopy FIRM, and is not subjected to community review. FIRM-DLGs are intended to provide users with automated flood risk data that is comparable to that they would derive from the hardcopy FIRM. These data may be used in various GIS applications including in/out queries, with the caveat that sound judgement must be used in interpreting the FIRM-DLG data. The "good faith standard" was developed by FEMA as a means for helping the user to define whether their application is appropriate to the data. This standard is defined in the introduction to FEMA's Standards for Digital Flood Insurance Rate Maps.

Q3 Flood Data

The Q3 Flood Data do not replace the existing hardcopy FIRM, or, if one exists, DFIRM product. The product has been designed to support planning activities, some Community Rating System (CRS) activities and insurance marketing.

The Q3 Flood Data product has limited application for engineering analysis, particularly for site design, or rating of flood insurance policies for properties located within SFHAs.

As stated above, the Q3 Flood Data are developed by scanning and vectorizing the existing hardcopy FIRM to create a raster product suitable for viewing or printing, and a thematic vector overlay of flood risks. Q3 Flood Data contain only certain features from the existing hardcopy FIRM. These features include the 100-year and 500-year floodplain boundaries, Coastal Barrier Resources Act boundaries, political boundaries, FIRM panel neatlines, and 7.5-minute quadrangle neatlines. They are designed to answer basic in/out queries, but do not provide Base Flood Elevations.

Sources that reflect updates effected by Letters of Map Correction (Letter of Map Revision (LOMR), Letter of Map Amendment (LOMA)) are utilized in the preparation of Q3 Flood Data files. These revisions are included in the Q3 Flood Data if they are mappable at the publication scale of the source graphic.

Edge-matching errors, overlaps and underlaps in coverage, and similar problems

are not corrected during digitizing or scanning and vectorizing. The specifications for the horizontal control of Q3 Flood Data vector data are consistent with those required for mapping at the scale of 1:24,000.

As with the FIRM-DLG, the Q3 Flood Data are not tied to a base map, are not used to produce a new version of the hardcopy FIRM, and are not subjected to community review. Q3 Flood Data are intended to provide users with automated flood risk data suitable for In/Out queries.

The Q3 Flood Data product can be a valuable tool to assist in screening property addresses within a GIS to determine flood risks. However, as the geographic processing performed to develop the Q3 Flood Data may introduce differences with the source hardcopy FIRMs, users must apply considerable care and judgement in the application of this product. For instance, the Q3 Flood Data may be overlaid on highly detailed large scale community base mapping data, but, if parcel level determinations are made, they must be prefaced with information about the accuracy of the data from which they are derived.

Quality Control/Quality Assurance

There will be no independent quality control/quality assurance program for the Q3 Flood Data. However, the Q3 Flood Data will be passed through checking routines contained in FEMA's Q3QA Checking Software. The data will be accompanied by documentation showing that the coverages have been evaluated and passed. A contract vehicle will be used to establish a "help line," through which problems with data can be identified and fed back to FEMA for resolution.

Policy for Use

1. For the development of applications for the Q3 Flood Data, it is the responsibility of the user to:
 - a) Obtain and review the technical documentation of the Q3 Flood Data, with particular regard to the limitation of this product;
 - b) Establish minimum mapping and accuracy standards required for the proposed application;
 - c) Obtain digital base maps and ancillary data of appropriate scale, resolution and accuracy to support the applications; and
 - d) Determine whether Q3 Flood Data is based on the currently effective FIRM panel.
2. The quality, accuracy and reasonableness of any applications developed using Q3 Flood Data is the sole responsibility of the end-user.
3. The Q3 Flood Data product is not a suitable for engineering applications such as detailed site design and development plans, Letters of Map Correction, or submittals for FIRM Map Revisions.

4. For the purposes of the Community Rating System (CRS), Q3 Flood Data may be used for:

- a) Calculations of SFHA areas, and similar applications that require geographic calculations and measures;
- b) Partial fulfillment of GIS provisions per the provisions of Section 440, "Flood Data Maintenance; and
- c) Development of "notification" list of potentially flood-prone properties, per the provisions of Section 330; and
- d) Partial fulfillment of credits for the performance of flood determinations, when performed in conformance with guidelines for determination presented at section 5 of this document.

5. The Q3 Flood Data can support flood determinations in a limited fashion, in conformance with the "Good Faith" standard, if used within the following guidelines:

- a) A source of address or property location data is obtained and combined with Q3 Flood Data in a manner that conforms to standards of care outlined in Section 1, above.
- b) The accuracy, resolution and variations from the source FIRMs require that no determination as to flood prone status of a property can be made within 250 feet of a SFHA boundary.
- c) The end user has verified that the Q3 Flood Data DFIRM panel and suffix conforms to the panel and suffix of the currently effective FIRM.
- d) The end user has confirmed the availability of flood insurance in the community for which the determination is to be offered.
- e) For properties located within 250 feet of the SFHA boundary, or within the SFHA, the zone and BFE are confirmed with the source FIRM or DFIRM.

Distribution of Q3 Flood Data

The Q3 Flood Data will be distributed through the FEMA Internet server. Users will be allowed to download these data, along with associated data standards and metadata files. Q3 Flood Data products shall be provided in public domain data transfer formats. Although the Federal government supports several digital geospatial data models, the DLG3 standard of the US Geological Survey (USGS) offers one of the more efficient, and widely recognized data formats for the distribution of vector data. DLG3 supports basic topology (spatial relationships between data elements) in a vector data model, but is limited in the area of feature annotation, non-numeric data elements, and named features.

FEMA utilizes the UTM projection and coordinate systems for its distributed geospatial vector data. UTM data may be easily reprojected using a public

domain software module such as USGS' General Cartographic Transformation Package (GCTP). The use of UTM will facilitate the integration of FEMA data with other USGS data sets, such as US Geodata (DLG), Digital Orthoquads (DOQ), or Digital Raster Graphic (DRG).

Future of NFIP Digital Map Products

DLG3 was adopted by FEMA as the appropriate data model for the distribution and storage of digital FIRM products. DLG3 shall function as FEMA's data distribution format until specifications for data distribution that meet Spatial Data Transfer Standards (SDTS) (FIPS 173) can be implemented.

USGS is planning to migrate to the DLG-E (Enhanced) data model from the existing DLG3 model during the second half of the 1990s. DLG-E is designed for the capture, storage, and processing of USGS' spatial data. DLG-E data will be distributed by USGS in SDTS format. DLG-E will provide an internal data structure with a more flexible method of storing feature characteristics, metadata, and topological (spatial relationships) information for two-dimensional data. DLG-E will permit features and attributes to be handled separately, with classification criteria for over 200 feature types. An additional improvement will be the inclusion of feature names (e.g. stream or road names) and the treatment of spatial elements as objects. This "object-oriented" data model will allow for multiple spatial relationships among features to be identified and queried by their natural classification groups, such as the Florida Keys or the Great Lakes.

USGS' National Mapping Division (NMD) continues its work pertinent to the DLG-E model, and its transfer to SDTS. Many software vendors have implemented, or are in the process of implementing, SDTS translators. With development continuing on all aspects of these data models, immediate application of the SDTS is not feasible.

FEMA is investigating the use of the DLG-E data model for data storage and processing. FEMA plans to adopt the SDTS standards for distribution of its geospatial digital data in compliance with the Federal standards, when development of appropriate specifications and mechanisms have been finalized.

Availability, Ordering and Questions Concerning Q3 Flood Data

Any questions concerning the availability, costs, ordering, or comments on the Q3 Flood Data standard, use of digital data for FIRM revision requests, and similar issues may be addressed to:

Federal Emergency Management Agency
Mitigation Directorate
500 C St., S.W.
Washington, D.C. 20472

This page intentionally left blank.

FEMA'S SFHA DATA LIBRARY

FEMA'S SFHA DATA LIBRARY

FEMA has many in-house requirements for GIS applications that utilize Special Flood Hazard Area (SFHA) data. In addition, FEMA distributes SFHA data that they have collected to other users in a public domain data format. This section addresses the data structure for data FEMA maintains for in-house use.

Subsequent sections will address the specifications for the data sets that are maintained in-house, and for those that are distributed to the public.

The objective of the FEMA SFHA Data Library is to establish a library of digital geospatial data that will serve the needs of FEMA for both the Response and Recovery activities of the Emergency Support Team (EST), and NFIP flood insurance policy marketing activities. The design of the library is intended to meet three primary requirements. First, it must allow rapid access to and distribution of SFHA data in a variety of formats to meet specific end-user requirements. Second, existing FIRM-DLG and DFIRM-DLG data must be able to be utilized in addition to newly created Q3 Flood Data sets. The library's data design must accommodate the use, retrieval, and update of significant data from these data sets, including those that contain more features than the Q3 Flood Data files. Third, the library's design must accommodate a wide variety of applications, both current and future, and allow for easy maintenance, retrieval, and query of the available data.

FEMA's SFHA Data Library is currently designed to maintain three types of data relevant to the Q3 Flood Data. These are: (1) raster topographic 7.5-minute quadrangles (RQUADS or DRGs), (2) Q3 Raster FIRM panels (RFIRMs), and (3) vector Q3 Flood Data files.

Rasterized (scanned image) topographic 7.5-minute quadrangles (RQUADS) represent one component of FEMA's SFHA Data Library. The raster quadrangles may be used as a georeferenced base map for Q3 Flood Data viewing and analysis.

The availability of raster quadrangle data will allow an inexpensive and easily transportable means by which to evaluate and overlay digital FIRM data as well as other vector data such as U.S. Bureau of the Census TIGER files, USGS DLG files, etc. It is also envisioned that the procedures used in the production of the Q3 Flood Data vector files may utilize the georeferenced raster quadrangle files as a backdrop to aid in adding horizontal control to the Q3 Flood Data files. The raster quadrangle images will not allow for address queries. For those functions, vector data such as TIGER files or community base mapping files with addresses are required. FEMA does not intend to distribute these raster quadrangle files, as they will be available to the public from the U.S. Geological Survey. FEMA will utilize files prepared by USGS as they are available.

Rasterized 7.5-minute quadrangles will not necessarily be produced for every county converted to Q3 Flood Data format. They will be produced as needed by the Q3 Flood Data production process. Any images required by the FEMA SFHA Library that are not produced during Q3 Flood Data capture will be acquired by

other means.

For seamless viewing within the SFHA Data Library, the images are planned to be resampled into a geographic coordinate system. The collar information would be removed, and an image index would be created so that multiple images could be displayed within a viewing window.

The Q3 Raster FIRM is another component of the FEMA SFHA Data Library. The Q3 raster FIRM is a raster image of a scanned FEMA Flood Insurance Rate Map including all legend and border information. It is not georeferenced to the earth's surface. A Q3 Raster FIRM may be useful as a source or background layer in a GIS, as a means to QC/QA other digital products, and as a source for the collection and revision of Q3 Flood Data coverages and Q3-DLG data. In addition, it is intended to be of a quality that will support direct reprinting of a hardcopy FIRM from the image file. See the Q3 Raster FIRM Specifications section for more information on this item.

The Q3 Flood Data files are the third and most important component of the FEMA SFHA Data Library. The Q3 Flood Data files are intended to be maintained in FEMA's SFHA Data Library as ARC/INFO polygon coverages, tiled by U.S. Bureau of the Census county equivalent units. The Q3 Flood Data polygon coverages will be delivered and maintained in FEMA's SFHA Data Library in double precision format using decimal degrees geographic coordinates horizontally referenced to the North American Datum of 1927 (NAD27). The same data will be distributed to the public in Digital Line Graph format as Q3-DLGs. The Q3-DLGs will be distributed in the Universal Transverse Mercator (UTM) projection and coordinates horizontally referenced to NAD27. If a county falls within more than one UTM zone, the zone to the west will be used for the entire county.

The Q3 Flood Data coverages are developed by scanning and/or vectorizing the existing hardcopy FIRM to create a thematic overlay of flood risks in vector format. Q3 Flood Data coverages contain only certain features from the existing hardcopy FIRM. Edge-matching errors, overlaps and underlaps in coverage, and similar problems are not corrected during digitizing or scanning.

The specifications for the horizontal control of Q3 Flood Data in vector format are consistent with those required for mapping at the scale of 1:24,000.

The polygon features in the files are attributed with coding that is consistent with FEMA's other digital FIRM products, including the DFIRM-DLGs, FIRM-DLGs, and Q3-DLGs. See Table 3, Q3.PAT Definition, in the Q3 Flood Data Coverage Specifications section for a description of the polygon feature attributes. See the Q3-DLG Specifications section for more information on the format for data distribution.

Deliverables to FEMA's SFHA Data Library of these Q3 Flood Data items (the Q3 Raster FIRMs, the vector Q3 Flood Data coverages, and the Q3-DLGs) will be on magnetic medium, in UNIX format, archived using the tape archive format (*tar*). The files will be contained in directories and named using the directory and naming convention outlined later in this section. (See Figure 1).

FEMA's GIS services have many hardware and software tools available. The mixed environment includes both UNIX and DOS/Windows based hardware running MapInfo,

ARC/INFO, and Emergency Information System (EIS) software. The Environmental Systems Research Institute, Inc. (ESRI) ARC/INFO data format for UNIX workstations has been chosen for the FEMA SFHA Data Library because it offers the greatest flexibility and utility for development, applications, and management of digital geospatial SFHA data. Conversion from the ARC/INFO data format to the MapInfo format is provided by the MapInfo program ArcLink. EIS has adopted the ESRI ArcView2 desktop mapping software as their platform for map display and query.

Many of FEMA's GIS services involve the need to determine if a structure is in or out of the SFHA. Thus, the outline of the SFHA is one of the most critical components of the SFHA Data Library. The location of the structure may be estimated in one of several ways. FEMA's proposed National Inventory of Structures would contain highly accurate structures locations for individual addresses. Until this proposed inventory is implemented, structure information is expected to be derived from somewhat less accurate sources, including U.S. Census Bureau TIGER Line files. The structure data will take the form of geographic point locations with associated relational attributes, including the address, that allow linkage to ownership and flood insurance policy information.

Other GIS services currently required of the FEMA SFHA Data Library include activities that are commonly reported by U.S. Bureau of the Census county equivalent units. Thus, the county equivalent unit is proposed as the tiling structure for data in the FEMA SFHA Data Library. This will allow for a way to filter queries, and allow the data to be stored using a "Librarian" concept. This librarian concept is currently based on the ARC/INFO Librarian utility. The structure, purpose, and capabilities of the ARC/INFO Librarian utility are fully documented and illustrated in the ARC/INFO User's Guide, *Using Map Libraries: Spatial Management and Librarian Command References*.

The county boundaries shown on the FIRM maps will, in some cases, not correspond to the county equivalent boundaries in the U.S. Census Bureau TIGER Line files. Where this is the case, a coverage containing the revised county boundary (based on the FIRM county boundary) will be submitted with the Q3 Flood Data coverages to be inserted in the county boundary tiling and indexing file. This will eliminate gaps in FIRM coverage that could be created if the tiling boundary did not correspond to the coverage boundary. If included, the naming convention for this file shall be consistent with the other file names for the county, with the extension of the letter "b" added (e.g. c06048b).

Three geographic data themes have been identified for the initial development of the FEMA SFHA Data Library. These themes are described in Table 1.

THEME	NAME	FEATURE TYPE
Flood Insurance Rate Maps	Q3	Vector Polygon

USGS 7.5-Minute Quadrangle Maps	RQUAD	Color Raster Image
Flood Insurance Rate Maps	RFIRM	Binary Raster Image

TABLE 1: SFHA Data Library Thematic Layers

Estimates of the data storage requirements for nationwide coverage of each theme is presented in Table 2.

THEME	SPACE	FORMAT
Flood Insurance Rate Maps	5 GB	ARC/INFO Polygon Coverages
USGS 7.5-Minute Quadrangle Maps	600 GB	TIFF 4-bit Compressed
Flood Insurance Rate Maps	1000 GB	TIFF Binary CCITT Compressed

TABLE 2: SFHA Data Library Storage Estimates

Based on these estimates, complete on-line storage of the vector Q3 Flood Data layers is reasonable using magnetic disk technology. However, storage for the image data may require an alternate method, such as erasable CD-ROM or read/write optical disk technology. Associated and vector base mapping datasets used in the GIS applications of the SFHA data may consume an additional 50 GB of storage space.

As stated above, many GIS services currently required of the FEMA SFHA Data Library include activities that are commonly reported by U.S. Bureau of the Census county equivalent units. Thus, the county equivalent unit is proposed as the tiling structure for SFHA and base mapping data layers in the FEMA SFHA Data Library. This allows for a way to filter queries, and allows the data to be stored using the Librarian concept. Data sets will be entered into the FEMA SFHA Data Library as county equivalent units. The county tiling structure defines the spatial organization of the data, and allows for the data to be indexed much like the index of an atlas.

Each tile in the SFHA Library will be defined as a directory, named using the State and County FIPS codes as follows:

cxxccc

where:c = the character "c"
 xx = the two-digit State FIPS code

ccc = The three-digit County FIPS code

Within each library tile directory (one per county), there will be at least three subdirectories. The subdirectory, *q3* comprises the Q3 Flood Data in ARC/INFO polygon coverage format for the entire county. These files will also be named using the State and County FIPS code naming convention discussed above (e.g. c06048). A suffix of '-a', '-b', ...'-z' may be used for counties delineated by more than one non-contiguous area. Within this subdirectory will also be the *info* and the metadata files that accompany the coverages. The metadata files will be named using the same naming convention as the coverages, with the addition of the letter "m" at the end (e.g. c06048m). See Figure 1, FEMA SFHA Data Library Diagram.

The directory *rquad* will contain subdirectories for *Latitude* and *Longitude*. The *Longitude* subdirectories will contain the USGS 7.5-minute quadrangle raster image files (Digital Raster Graphics files or DRGs), named using the USGS unique quadrangle identifier (e.g. 37095-a6.tif). A complete description of USGS's quadrangle identification system may be found in several USGS publications, including each *State Catalogue of Topographic and Other Published Maps*. In order for these images to be used with ARC/INFO and ArcView2 software, each image must be accompanied by georeferencing information contained in an associated world file that uses the same naming convention as the image, with the extension .tfw (e.g. 37095-a6.tfw). In addition, each USGS 7.5-minute quadrangle raster image file will be accompanied by its metadata file, named with the extension .tfm (e.g. 37095-a6.tfm). See Figure 1, FEMA SFHA Data Library Diagram.

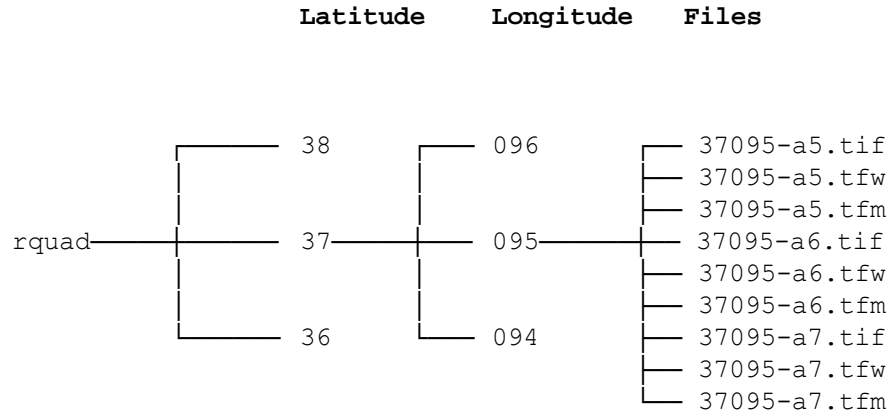
The directory *rfirm* will contain the raster FIRM image files. These files will be contained in subdirectories for each *State FIPS Code* and each *Community Identification Number* or *Countywide Identification Number*. The subdirectory for each community will contain the image files for each effective FIRM panel as well as the index. The community subdirectories will be named using the FEMA Community Identification Number preceded by the State FIPS code (e.g. 060125). Individual map panel images will be stored within each community subdirectory. Each image file will be named using the four digit map panel number followed by the map panel suffix and the extension .tif (e.g. 0004b.tif) Panel number 0000 will be used for the map index panels. Each raster FIRM image file directory will be accompanied by its metadata file, also named with the extension .tfm (e.g. 0124.tfm). See Figure 1, FEMA SFHA Data Library Diagram.

The following sections describe in further detail the data files to be stored in the FEMA SFHA Data Library: Q3 Raster FIRM Specifications, Q3 Flood Data Coverage Specifications, and Metadata Specifications.

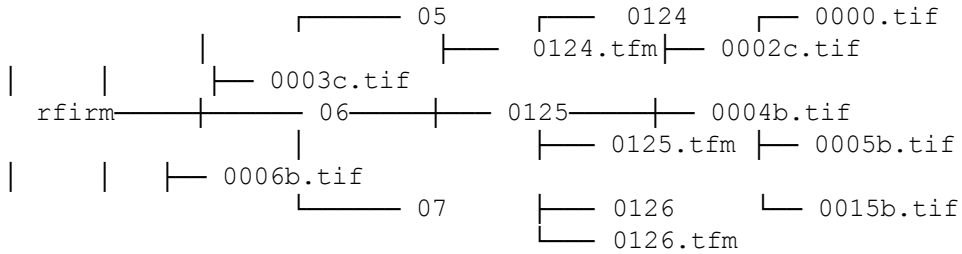
The final section, Q3-DLG Specifications addresses the data format of the Q3 Flood Data vector files that will be made available by FEMA to the public.

**Figure 1
FEMA SFHA Data Library Diagram**

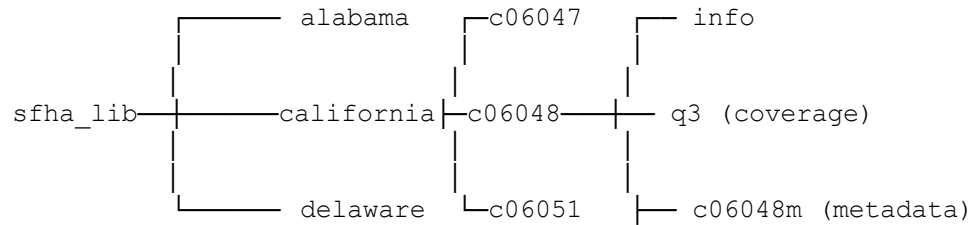
Data Type



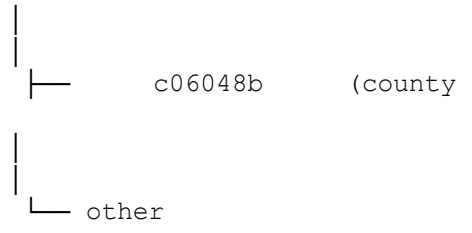
State Co/Comm. Files



State CountyCoverages, etc.



outline)



This page intentionally left blank.

Q3 RASTER FIRM SPECIFICATIONS

Q3 RASTER FIRM SPECIFICATIONS

The Q3 Raster FIRM file is a raster image of a scanned FEMA Flood Insurance Rate Map including all legend and border information. It is not georeferenced to the earth's surface. A Q3 Raster FIRM is useful as a source or background layer in a GIS, as a means to QC/QA other digital products, and as a source for the collection and revision of Q3 Flood Data coverages and Q3-DLG data. In addition, it is intended to be of a quality that will support direct reprinting of a hardcopy FIRM from the image file.

The Q3 Raster FIRM is a scanned image of the original source FIRM. Some differences may be detected between the source graphic used and the Q3 Raster FIRM due to the gray values assigned a particular area. Data completeness for Q3 Raster FIRM data files reflect the content of the source map.

Q3 Raster FIRM files are produced by scanning a Flood Insurance Rate Map negative on a high resolution scanner. Scanning resolution is 400 dpi. The raw scan file may be enhanced for uniform gray tones. This may include image processing to remove the background and any "noise", edge enhancement and smoothing, and setting the gray tones to uniform values for the SFHA areas. The final image file is output as a 400 dpi binary TIFF file compressed using CCITT Group 4 compression.

If the negative used to print the original FIRM panel is not available, the following procedures will be followed. If the FIRM panel is a Z-fold, a new negative shall be created from the color separation elements (artwork) stored in FEMA's Technical Evaluation Contractors' libraries. The new negative will be used for scanning. If the FIRM panel is an 11x17, the paper copy will be scanned.

For DFIRM panels, where the hardcopy map was produced from digital files, the actual digital files used to print the hardcopy will be output into a TIFF format. No scanning of the hardcopy will be necessary. The files will be 400 dpi, binary TIFF files, compressed using CCITT Group 4 compression.

Each image file will be named using the four digit map panel number followed by the map panel suffix and the extension .tif (e.g. 0004b.tif) Panel number 0000 will be used for the map index panels. Within the FEMA SFHA Data Library, the subdirectory *rfirm* will contain the raster FIRM image files. These files will be contained in subdirectories for each *State FIPS Code* and each *Community Identification Number* or *Countywide Identification Number*. The subdirectory for each community will contain the image files for each effective FIRM panel as well as the index. The community subdirectories will be named using the FEMA Community Identification Number preceded by the State FIPS code (e.g. 060125). Individual map panel images will be stored within each community subdirectory. Each image file will be named using the four digit map panel number followed by the map panel suffix and the extension .tif (e.g. 0004b.tif) Panel number 0000 will be used for the map index panels. Each raster FIRM image community or county subdirectory will be accompanied by its

metadata file, named with the extension .tfm (e.g. 0124.tfm). See Figure 1, FEMA SFHA Data Library Diagram.

This page intentionally left blank.

Q3 FLOOD DATA COVERAGE SPECIFICATIONS

Q3 FLOOD DATA COVERAGE SPECIFICATIONS

The Environmental Systems Research Institute, Inc. (ESRI) ARC/INFO data format for UNIX workstations was chosen for the FEMA SFHA Data Library because it offers the greatest flexibility and utility for development, applications, and management of digital geospatial SFHA data. Conversion from the ARC/INFO data format to other formats used by the FEMA GIS will be facilitated by this data model.

The Q3 Flood Data coverages are intended to be maintained in FEMA's SFHA Data Library as ARC/INFO polygon coverages, tiled by U.S. Bureau of the Census county equivalent units. This allows for a way to filter queries, and allows the data to be stored using a "Librarian" concept. This librarian concept is currently based on the ARC/INFO Librarian utility, which has been implemented in the FEMA GIS. The structure, purpose, and capabilities of the ARC/INFO Librarian utility are fully documented and illustrated in the ARC/INFO User's Guide, *Using Map Libraries: Spatial Management and Librarian Command References*.

The county boundaries shown on the FIRM maps will, in some cases, not correspond to the county equivalent boundaries in the U.S. Census Bureau TIGER Line files. Where this is the case, a coverage containing the revised county boundary (based on the FIRM county boundary) will be submitted with the Q3 Flood Data coverages to be inserted in the county boundary tiling and indexing file. This will eliminate gaps in FIRM coverage that could be created if the tiling boundary did not correspond to the coverage boundary.

The Q3 Flood Data coverages are developed by scanning and vectorizing the existing hardcopy FIRM to create a thematic overlay of flood risks in vector format. Q3 Flood Data coverages contain only certain features from the existing hardcopy FIRM. Edge-matching errors, overlaps and underlaps in coverage, and similar problems are not corrected during digitizing or scanning. The specifications for the horizontal control of Q3 Flood Data vector data are consistent with those required for mapping at the scale of 1:24,000. The polygon features in the files are attributed with coding that is consistent with FEMA's other digital FIRM products, including the DFIRM-DLGs, FIRM-DLGs, and Q3-DLGs.

Each tile in the SFHA Library will be defined as a directory, named using the State and County FIPS codes as follows:

cxxccc

where:c = the character "c"
xx = the two-digit State FIPS code
ccc = The three-digit County FIPS code

Within each library tile directory (one per county), there will be three

subdirectories. The subdirectory, q3 comprises the Q3 Flood Data in ARC/INFO polygon coverage format for the entire county. These files will also be named using the State and County FIPS code naming convention discussed above (e.g. c06048). A suffix of '-a', '-b', ...'-z' may be used for counties delineated by more than one non-contiguous area. Within this subdirectory will also be the info and the metadata files that accompany the coverages. The metadata files will be named using the same naming convention as the coverages, with the addition of the letter "m" at the end (e.g. c06048m). One metadata file will accompany each countywide Q3 Flood Data coverage. See Figure 1, FEMA SFHA Data Library Diagram.

The Q3 Flood Data are contained in one single countywide polygon coverage. The features that are stored in the coverage include the political areas shown on the FIRMS, labelled with their State and County FIPS codes and their FEMA Community Identification Number; the FIRM panel areas, labelled with their panel number and suffix; the 7.5-minute quadrangle areas overlaid on the county, labelled with their USGS quadrangle identification number; SFHA zones, labelled with their zone designation; and Coastal Barrier Resources Act defined areas (including Otherwise Protected Areas). A detailed description of these items follows.

The Q3 Flood Data polygon coverages will be delivered and maintained in FEMA's SFHA Data Library in double precision format using decimal degrees geographic coordinates horizontally referenced to the North American Datum of 1927 (NAD27). Polygon definition is limited to no more than 3000 points per polygon. Polygons of greater size are split into smaller areas. The tolerances for data in this format in Decimal Degrees as follows, with their approximate distance in meters noted:

Dangle Length	=	0.000000	=	0.0m
Fuzzy Tolerance	=	0.000009	=	1.0m
Weedtolerance	=	0.000009	=	1.0m
Graintolerance	=	0.000018	=	2.0m
Editdistance	=	0.000137	=	15.0m
Nodesnap	=	0.000018	=	2.0m
Arcsnap	=	0.000009	=	1.0m

The Q3 Flood Data polygon coverages will be delivered to FEMA's SFHA Data Library only after they have passed the checking routines contained in FEMA's Q3QA Checking Software. The coverages will be delivered accompanied by documentation showing that the coverages have been evaluated and passed.

Sources that reflect updates effected by Letters of Map Correction (Letter of Map Revision (LOMR), Letter of Map Amendment (LOMA)) were utilized in the preparation of Q3 Flood Data files. These revisions are included in the Q3 Flood Data if they are mappable at the publication scale of the source graphic.

The means for linking the other associated Q3 Flood Data to the coverages is maintained using feature items. The raster quadrangle image naming convention

is included as the **quad** item, and the raster FIRM image naming convention is included as the **panel** item.

The Q3 Flood Data coverages may be derived from DFIRM-DLGs, from FIRM-DLGs, from Q3-DLGs, or as stand-alone coverages. Certain items may not have been captured in previously digitized data sets or may have been captured differently from the current Q3 Flood Data specifications. These may include the following:

- Floodways may not have been captured in all older data sets.
- COBRA boundaries may not have been captured in all older data sets.
- All gutters may not have been captured in older data sets. Current Q3 Flood Data specifications call for the gutters to be captured and the SFHA areas to be differentiated from each other (e.g. A, AE, AO, AH, A99, AR, V, VE). The attribute code "IN" is included in the Q3 Flood Data specifications to account for generic SFHA areas where no gutters differentiate between SFHAs of different types.
- All 500-year floodplain boundaries may not have been captured in older data sets. Current Q3 Flood Data specifications call for the 500-year floodplain boundary to be captured. The attribute code "OUT" is included in the Q3 Flood Data specifications to account for generic Zone X areas where no 500-year boundary was captured to differentiate between different types of Zone X areas.
- FIRM neatlines for panels not printed may not have been captured in older data sets. If these features are not present, the area(s) covered by these undifferentiated panels not printed will be coded as community-based- or countywide-panel not printed areas, with the fields for panel number and panel suffix being coded with zeroes.
- The differentiation between panel types may not have been captured in older data sets. Countywide panels may not be distinguished from community based panels, and whether the panels are printed or not may not be differentiated. If these features are not present, the attribute code for panel type will not be populated. Panel numbers will still be present.
- The horizontal control of older data sets may have been consistent with those required for mapping at the scale of 1:100,000 instead of 1:24,000.

The following clarifications on how attributes should be applied to unusual cases are included for informational purposes. This list should not be considered to be all-inclusive.

- Q3 Flood Data files will show only Extraterritorial Jurisdictional Boundaries (ETJs) and no corporate limits, when both exist on the FIRMs, with the area inside the ETJs coded as within the community.

- Multi-county communities will be shown in their respective counties (i.e. split by the county boundary) where both counties are in the same digital format (i.e. both Q3). If the adjacent county has not yet been digitized, the community will be shown in its entirety, with the area belonging to the adjacent county "hooked onto" the digitized county. The "hook- on" area will be coded with its appropriate county attribute codes. When the adjacent county is converted to Q3 format, the "hook-on" area will be added to its rightful county.
- Pseudo-countywide map panels will be coded as community based panels. Each community area will be coded individually with its appropriate county and community identification numbers.
- The community based panel codes should be used when converting community based panels to Q3s. The countywide code should be used when coding panels shown as DFIRMs or when countywide panels are converted to Q3s.
- For areas of communities or counties covered by panels not printed, the preferred sources of political boundaries (by order of preference) is as follows:
 1. Adjacent FIRM
 2. FIRM index panel
 3. TIGER files
- Use only one UTM zone for a county. This must be reflected consistently in both the metadata and the coordinate values of the features in the files. For Q3s, use the westernmost zone for the county.
- Placeholding zeroes will be used in Q3s for any item for which a value is not available or appropriate.

- The bounding coordinates shown in the metadata files for Q3 Flood Data coverages will be the outside corners of the 7.5-minute quadrangle sheets that form an even rectangle around the county. If the 7.5-minute quadrangle corners fall in open bodies of water, are mapped on adjacent quads, etc., the corners of the quad will be generated based on the theoretical extent of the 7.5-minute quadrangle area (i.e. the quad outline will be completed and the corners of the completed quad will be used).

TABLE 3: Q3.PAT DEFINITION

POS	ITEM NAME	W	W	T	D	DESCRIPTION
1	AREA	8	12	F	4	Polygon area
9	PERIMETER	8	12	F	4	Polygon perimeter
17	Q3#	4	5	B	0	Record number
21	Q3-ID	4	5	B	0	Polygon ID
25	FIPS	5	5	C	-	State and County FIPS codes
30	COMMUNITY	4	4	C	-	FEMA Community ID number
34	FIRM_PANEL	11	11	C	-	FIRM panel number
45	QUAD	8	8	C	-	USGS quadrangle identifier (Key to RQUAD files)
53	ZONE	5	5	C	-	Flood hazard zone (See Table 4)
58	FLOODWAY	5	5	C	-	Floodway type (See Table 5)
63	COBRA	9	9	C	-	COBRA identifier (See Table 6)
72	SFHA	3	3	C	-	In/Out determination
76	SYMBOL	4	5	B	-	Polygon shade symbol (See Tables 4 and 8)
79	PANEL_TYP	4	4	C	-	Type of FIRM panel (See Table 7)
Redefined Items						
25	ST-FIPS	2	2	C	-	State FIPS code
27	CO-FIPS	3	3	C	-	County FIPS code
34	STATE	2	2	C	-	State FIPS code
36	PCOMM	4	4	C	-	FIRM community/county identifier
40	PANEL	5	5	C	-	FIRM panel number and suffix (Key to RFIRM files)
45	LAT	2	2	C	-	Origin latitude of 7.5-minute quad

TABLE 3: Q3.PAT DEFINITION						
POS	ITEM NAME	W	W	T	D	DESCRIPTION
47	LONG	3	3	C	-	Origin longitude of 7.5-minute quad
51	QUAD_UNIT	2	2	C	-	Index number to 7.5-minute quad

FIPS

This item contains the five-digit state and county FIPS code, as defined in the Federal Information Processing Standard Publication 6-4 (FIPS PUB 6-4), published by the National Institute of Standards and Technology. The state and county FIPS codes are further separated by the redefined items **ST-FIPS** and **CO-FIPS**.

COMMUNITY

This item contains the four-digit community identification number assigned by FEMA to each community that participates in the NFIP. This number may be found in the title block of each FIRM panel, or in the NFIP Community Status Book.

FIRM_PANEL

This item contains the eleven-digit FIRM panel number. The FIRM panel number is found in the title block of each FIRM panel. The FIRM panel number is further separated into its components by the redefined items **STATE**, (contains the state FIPS code), **PCOMM** (for countywide panels this is the county FIPS code plus the letter "C", for community based panels this is the community identification number), and **PANEL** (the panel number and suffix).

QUAD

This item contains the eight-digit USGS quadrangle identification number. This item identifies the alphanumeric map sheet identifier used by the USGS. The list of values for each state is published by USGS in the *State Indexes to Topographic and Other Map Coverage*. This item is further separated into its components by three redefined items. They are: **LAT** (the latitude, rounded down to the nearest whole degree, of the 7.5-minute quadrangle map sheet), **LONG** (the longitude, rounded down to the nearest whole degree, of the 7.5-minute quadrangle map sheet), and **QUAD_UNIT** (the alphanumeric map sheet identifier used by USGS, A1 through H8).

ZONE

This item contains a representation of the flood hazard zone designator. The flood hazard zones are defined in Table 4: SFHA Zone Definition.

FLOODWAY

This item contains a representation of the floodway type. The floodway types are defined in Table 5: Floodway Area Definition. Floodway, Flowage Easement, and State Encroachment Areas are included in the Q3 Flood Data files if they are portrayed on the source graphic (the FIRM) used for data capture. If they are portrayed on a separate map panel (the Flood Boundary Floodway Map) they will not be digitized at this time.

COBRA

This item indicates whether the area is inside or outside of a designated Coastal Barrier Area or Otherwise Protected Area. Only the extents of the Coastal Barrier Resources Act area boundaries are portrayed in the Q3 Flood Data files. The boundaries between Coastal Barrier Resources Act areas and Otherwise Protected Areas and between areas with different designation dates are not included in the Q3 Flood Data files. Users should refer to the FIRM for such information. The COBRA types are defined in Table 6: COBRA Area Definition.

SFHA

This item indicates whether the area is in or out of the SFHA. It is derived from the area's Zone designation. The SFHA definitions that correspond with each of the Zone types are shown in Table 4.

SYMBOL

This item represents a polygon shade symbol that is unique to the Zone, Floodway and COBRA area definitions. See Table 9. Users should note that in order to replicate these colors, a Q3 Shadeset must be installed.

PANEL_TYP

This item contains a representation of the FIRM panel type. See Table 7: FIRM Panel Type Definition.

TABLE 4: SFHA ZONE DEFINITION

Zone Name	ZONE	SFHA	SYMBOL	Description
Zone V	V	In	1	An area inundated by 100-year flooding with velocity hazard (wave action); no BFEs have been determined.
Zone VE	VE	In	2	An area inundated by 100-year flooding with velocity hazard (wave action); BFEs have been determined.
Zone A	A	In	3	An area inundated by 100-year flooding, for which no BFEs have been determined.
Zone AE	AE	In	4	An area inundated by 100-year flooding, for which BFEs have been determined.
Zone AO	AO	In	5	An area inundated by 100-year flooding (usually sheet flow on sloping terrain), for which average depths have been determined; flood depths range from 1 to 3 feet.
Zone AO (Alluvial Fan)	AOVEL	In	6	An alluvial fan inundated by 100-year flooding (usually sheet flow on sloping terrain), for which average flood depths <u>and</u> velocities have been determined; flood depths range from 1 to 3 feet.
Zone AH	AH	In	7	An area inundated by 100-year flooding (usually an area of ponding), for which BFEs have been determined; flood depths range from 1 to 3 feet.
Zone A99	A99	In	8	An area inundated by 100-year flooding, for which no BFEs have been determined. This is an area to be protected from the 100-year flood by a Federal flood protection system under construction.
Zone D	D	Out	9	An area of undetermined but possible flood hazards.
Zone AR	AR	In	10	An area inundated by flooding, for which BFEs or average depths have been determined. This is an area that was previously, and will again, be protected from the 100-year flood by a Federal flood protection system whose restoration is Federally funded and

TABLE 4: SFHA ZONE DEFINITION

Zone Name	ZONE	SFHA	SYMBOL	Description
				underway.
Zone X (500-year)	X500	Out	11	An area inundated by 500-year flooding; an area inundated by 100-year flooding with average depths of less than 1 foot or with drainage areas less than 1 square mile; or an area protected by levees from 100-year flooding.
Zone X	X	Out	12	An area that is determined to be outside the 100- and 500-year floodplains.
100-year Flood Discharge Contained in Channel	100IC	In	13	An area where the 100-year flooding is contained within the channel banks and the channel is too narrow to show to scale. An arbitrary channel width of 3 meters is shown. BFEs are not shown in this area, although they may be reflected on the corresponding profile.
500-year Flood Discharge Contained in Channel	500IC	Out	14	An area where the 500-year flooding is contained within the channel banks and the channel is too narrow to show to scale. An arbitrary channel width of 3 meters is shown.
Floodway Contained in Channel	FWIC	In	15	An area where the floodway is contained within the channel banks and the channel is too narrow to show to scale. An arbitrary channel width of 3 meters is shown. BFEs are not shown in this area, although they may be reflected on the corresponding profile.
Flood Prone Area	FPQ	In	16	An area designated as a "Flood Prone Area" on a map prepared by USGS and the Federal Insurance Administration. This area has been delineated based on available information on past floods. This is an area inundated by 100-year flooding for which no BFEs have been determined.
Area in SFHA	IN	In	17	An area designated as within a "Special Flood Hazard Area" (or SFHA) on a FIRM. This is an area inundated by 100-year flooding for which BFEs or velocity may

TABLE 4: SFHA ZONE DEFINITION

Zone Name	ZONE	SFHA	SYMBOL	Description
				have been determined. No distinctions are made between the different flood hazard zones that may be included within the SFHA. These may include Zones A, AE, AO, AH, A99, AR, V, or VE.
Area Outside SFHA	OUT	Out	18	An area designated as outside a "Special Flood Hazard Area" (or SFHA) on a FIRM. This is an area inundated by 500-year flooding; an area inundated by 100-year flooding with average depths of less than 1 foot or with drainage areas less than 1 square mile; an area protected by levees from 100-year flooding; or an area that is determined to be outside the 100- and 500-year floodplains. No distinctions are made between these different conditions. These may include both shaded and unshaded areas of Zone X.
Area Not Included	ANI	Out	0	An area that is located within a community or county that is not mapped on any published FIRM.
Area of Undesignated Flood Hazard	UNDES	Out	0	A body of open water, such as a pond, lake ocean, etc., located within a community's jurisdictional limits, that has no defined flood hazard.

TABLE 5: Floodway Area Definition

Floodway Type	FLOODWAY	Symbol	Description
Floodway	FW	See Table 8	An area that includes the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water-surface elevation by more than a designated height. (Note: this area is normally in Zone AE.)
Flowage Easement Area	EASE	See Table 8	An area within a community, usually bordering a stream, that has more restrictive floodplain development criteria imposed upon it by the governing body (town, city, etc.) than the criteria imposed as a prerequisite to participation in the NFIP. (Note: Unlike the floodway, this area may overlap any other flood zone.)
State Encroachment Area	STATE	See Table 8	An area within a community, usually bordering a stream, that has more restrictive floodplain development criteria imposed upon it by the state, than the criteria imposed as a prerequisite to participation in the NFIP. (Note: Unlike the floodway, this area may overlap any other flood zone.)

TABLE 6: COBRA AREA DEFINITION

COBRA Type	COBRA	Symbol	Description
Inside COBRA or OPA area	COBRA_IN	See Table 8	An area designated as an Undeveloped Coastal Barrier Area or Otherwise Protected Area in which flood insurance is unavailable for structures newly built or substantially improved.
Outside COBRA or OPA area	COBRA_OUT	See Table 8	An area outside a designated Undeveloped Coastal Barrier Area or Otherwise Protected Area in which flood insurance is unavailable for structures newly built or substantially improved.

TABLE 7: FIRM PANEL TYPE DEFINITION

FIRM Panel Type	PANEL_TYP	Description
Community based - panel printed	CBPP	The portion of a community covered by a community based map sheet (panel). A community may consist of more than one FIRM panel. The FIRM panel is further identified by its FIRM panel number, and its suffix.
Community based - panel not printed	CBNP	The portion of a community covered by a community based map sheet (panel) that is not printed. The FIRM panel is further identified by its FIRM panel number, and its suffix.
Countywide - panel printed	CWPP	The portion of a community covered by a countywide map sheet (panel). A community may consist of more than one FIRM panel. The FIRM panel is further identified by its FIRM panel number, and its suffix.
Countywide - panel not printed	CWNP	The portion of a community covered by a countywide map sheet (panel) that is not printed. The FIRM panel is further identified by its FIRM panel number, and its suffix.
Area outside FIRM panel neatline	AOPN	Any unpanelled areas of a participating county. It should be used to identify any areas that fall within a participating community but outside of the defined panelling scheme. It should not be confused with the Unmapped Community attribute, which should be used for unmapped or non-participating communities.
Unmapped community	UNMC	A jurisdiction that has not been mapped or identified by the National Flood Insurance Program (NFIP). It may be applied to a jurisdiction that has no maps because it has no Special Flood Hazard Area, or it may be applied to a jurisdiction that is not identified by the NFIP or is not participating in the NFIP.

TABLE 8: POLYGON SHADES		

Q3-DLG SPECIFICATIONS

Q3-DLG SPECIFICATIONS

The Q3-DLG is developed by scanning and vectorizing the existing hardcopy FIRM to create a thematic overlay of flood risks in vector format. Q3-DLGs contain only certain features from the existing hardcopy FIRM. Edge-matching errors, overlaps and underlaps in coverage, and similar problems are not corrected during digitizing or scanning. The specifications for the horizontal control of vector Q3 Flood Data are consistent with those required for mapping at the scale of 1:24,000. The polygon features in the files are attributed with coding that is consistent with both USGS's Digital Line Graph specifications and FEMA's Standards for Digital Flood Insurance Rate Maps.

Polygon definition is limited to no more than 3000 points per polygon. Polygons of greater size are split into smaller areas.

The Q3-DLG data are contained in one single countywide file. The features that are stored in the file include the political areas shown on the FIRMs, labelled with their State and County FIPS codes and their FEMA Community Identification Number; the FIRM panel areas, labelled with their panel number and suffix; the 7.5-minute quadrangle areas overlaid on the county, labelled with their USGS quadrangle identification number; SFHA zones, labelled with their zone designation; and Coastal Barrier Resources Act defined areas, labelled with their date and zone. These items are defined in detail in this chapter.

The means for linking other associated Q3 Flood Data to these files can be derived from these features. The raster FIRM image naming convention can be derived from the State FIPS code, County FIPS code, Panel number, and Suffix.

The Q3-DLGs will be distributed using the Universal Transverse Mercator (UTM) projection and coordinates, horizontally referenced to NAD27. If a county falls within more than one UTM zone, the zone to the west will be used for the entire county.

The Q3-DLGs will be distributed only after they have passed the checking routines contained in FEMA's Q3QA Checking Software. The Q3-DLGs will be accompanied by documentation showing that the coverages have been evaluated and passed.

Some user applications may be facilitated by converting the Q3-DLG files to other coordinate systems. UTM data may be easily reprojected using a public domain software module such as USGS' General Cartographic Transformation Package (GCTP). The use of UTM is intended to facilitate the integration of FEMA data with other USGS data sets, such as US Geodata (DLG), Digital Orthoquads (DOQ), or Digital Raster Graphic (DRG).

Q3-DLGs will contain no duplicate vertices. The line record listings of the x and y coordinates of the nodes and vertices that define the linear features will contain no duplicate records.

The tolerances used for the collection of the Q3-DLG data are as follows:

Dangle Length	=	0.0m
Fuzzy Tolerance	=	1.0m
Weedtolerance	=	1.0m
Graintolerance	=	2.0m
Editdistance	=	15.0m
Nodesnap	=	2.0m
Arcsnap	=	1.0m

FILE NAMING CONVENTION

In order to provide for efficient file retrieval and indexing, a standardized naming convention is required. The following convention is DOS compatible and allows the ability to uniquely identify any county area of digital FIRM data. All file names should be in lower case letters. The file name should be:

cssccc.dlg

where:

c = the character 'c'

ss =State FIPS Code. (Numeric code).

ccc =County FIPS Code. (Numeric code).

and:

a suffix of '-a', '-b','-z' may be added for counties described by more than one non-contiguous area (e.g. Hawaii).

One metadata file will accompany each county Q3-DLG file. The metadata files will be named using the same naming convention as the DLG files, with the exception of the letter "m" at the end (e.g. c06048.dlm).

GENERAL

The Federal Emergency Management Agency (FEMA) is collecting and distributing digital thematic data pertaining to flood hazard identification and flood insurance. The standards specified in this document pertain to the collection, processing and revision of Q3-DLG data intended for distribution by FEMA.

These standards are intended to facilitate the interchange and use of Q3-DLG data. Q3-DLG collection and processing systems must produce data that are compatible with other production systems not only within the Federal sector but also within other government and private sector organizations. Due to rapidly changing technologies in the mapping industries, these Q3-DLG standards cover a broad range of collection and processing systems. It is not the intent of this standard to inhibit usage of any procedure, but to set common standards which will allow data to be acceptable for entry into many different production systems. The basic applications of Q3-DLG data are to support automation of cartographic processes and automated spatial data analysis.

The Q3-DLG file structure is designed to accommodate all categories of spatial data represented on a conventional map. Node, line, and area data types are accepted. The attribute coding scheme is designed to accommodate basic thematic data categories such as political, map panel, and flood hazard zone features.

Data Sources

Q3-DLG data are usually derived by digitizing map features as line graph elements from cartographic source materials. The map name, community name, scale, and date of the source materials is contained in the metadata file.

Sources that reflect updates effected by Letters of Map Correction (Letter of Map Revision (LOMR), Letter of Map Amendment (LOMA)) are utilized in the preparation of Q3-DLG files. These revisions are included in the Q3-DLGs if they are mappable at the publication scale of the source graphic.

The Q3-DLGs are developed by scanning and vectorizing the existing hardcopy FIRM to create a thematic overlay of flood risks in vector format. Q3-DLGs contain only certain features from the existing hardcopy FIRM. Edge-matching errors, overlaps and underlaps in coverage, and similar problems are not corrected during digitizing or scanning. The specifications for the horizontal control of Q3-DLG vector data are consistent with those required for mapping at the scale of 1:24,000. The polygon features in the files are attributed with coding that is consistent with FEMA's other digital FIRM products, including the DFIRM-DLGs and FIRM-DLGs.

Data Content

The Q3-DLG files derived from the Flood Insurance Rate Maps (FIRMs) contain selected categories of thematic data in digital form; these data categories do not necessarily correspond to the traditional feature separates associated with the maps.

All Q3-DLG data are collected, processed, and archived as a single topologically structured file for the county.

Data Structure

The structure of the Q3-DLG data will be described by considering the following subject areas: levels of structuring, topology, and topological elements.

Levels of Structuring

The term Digital Line Graph (DLG) is used to describe a digital map data set in vector form. Q3-DLG data published by FEMA have a full range of attribute codes, have full topological structuring, and have passed certain quality-control checks. These three properties are required by users whose work includes both graphic and analytic applications.

Topology

Current data collection is directed toward producing fully topologically structured DLG data, referred to as DLG-3. The DLG-3 concept is based on graph theory in which a two-dimensional diagram is expressed as a directed graph composed of a set of nodes (topologically significant points), lines, and areas in a manner that explicitly expresses logical relationships. Applied to a map, this concept is used to encode the digital data with the spatial relationships between map elements that are obvious when the map is examined visually. The spatial relationships include such concepts as adjacency, proximity, and connectivity between features on the map. The abstraction of the map data according to the rules of graph theory preserves the spatial relationships inherent in the map graphic and creates a logical and consistent data file structure for computer processing.

A digital file of cartographic or geographic data that maintains the spatial relationships inherent in the map is called a topologically structured data file. A topologically structured data file can support simple graphic applications, such as plotting streams and floodplain boundaries, as well as more advanced applications, such as computations and analysis involving areas and lines and their spatial relationships.

Topological Elements

A DLG-3 file is composed of three separate, but related, elements: nodes, lines, and areas. Nodes define the location of the endpoints of every line, and a single node may mark the start or end of one or more lines. Thus, nodes occur at intersections of linear features and at other places on linear features where the feature is subdivided into separate line segments.

A line is an ordered set of points that describes the position and shape of a

linear feature on the map. Each line starts at a node and ends at a node, has an area to the left of its direction of travel, and has an area to the right of its direction of travel. The direction of travel is arbitrarily determined at the time of data capture. Lines connect to each other at nodes, and a line does not cross itself or any other line. A line may describe the boundary between two areal map features, such as counties, or may define a map feature by itself, such as a stream. A special line, called a degenerate line, is used to define features symbolized as isolated (non-connecting) point features on a map. A degenerate line starts and ends at the same node, has two identical coordinate pairs, has zero length, and has the same area to the left and right of the direction of travel; that is, it is totally enclosed inside one map area. Topologically, a degenerate line is considered to be a fully connected line, since the attached node has a node-line list count of two.

An area is a continuous, unbroken region of the map bounded by lines. Each area is identified in a DLG-3 data file by a unique area point located inside the area it represents. Also, every DLG data file will have at least two areas identified: one representing the area covered by the file and the other representing the area outside the coverage of the file. Polygons as unique features are not defined explicitly in a DLG file. However, polygons can be constructed using line-area linkages built into the DLG data structure.

Attribute Codes

In addition to locational and topological information, Q3-DLG data elements have explicitly encoded attributes. Attribute codes, also called feature codes or classification attributes, are used to describe the map information represented by a node, area, or line. For example, the attribute code for an area might identify a lake or swamp; the attribute code for a line might identify a stream, or shoreline. A listing of all the attribute codes currently assigned and used in Q3-DLG files is contained in this document.

Each attribute code identifies the major category to which a data element belongs, as well as the specific nature of the element. Codes also may provide additional descriptive information. All Q3 Flood Data elements are described by fourteen codes for a complete description. Since multiple attributes are needed to describe an element, the order is significant.

A DLG attribute code is composed of two distinct numeric fields: a three-digit major code, which identifies the major category to which the element belongs, and a four-digit minor code, which specifically describes the element. In the digital file, the major and minor attributes are encoded in two integer fields of six digits, right justified with leading blanks (FORTRAN 2I6 format). In this document, major codes are presented as three digits, and minor codes are presented as four digits. Leading zeros are shown for clarity; for example: 440 0245.

Major Attribute Codes

The first two digits of the major code uniquely identify the category to which the described element belongs. The third digit of the major code is used to modify the minor code in two ways:

- If zero, the minor code represents a description or classification of the element.
- If non-zero, the minor code which follows is a parameter requiring special interpretation according to instructions given in the codes for each category.

Minor Attribute Codes

The first digit of the minor code is normally zero. If non-zero, it is used as a modifier to provide additional information. The remaining three digits are normally used to indicate the cartographic interpretation to be applied to specific elements. The type of element described by a particular code usually can be determined from the range of value of the last three digits:

001 - 099 = nodes
100 - 199 = areas
200 - 299 = lines
300 - 399 = degenerate lines

400 - 499 = codes which may be applied to any element type
(nodes, lines, areas, or points)
601 - 699 = general descriptive codes

Only area codes are contained in the Q3-DLGs.

The last three digits (and occasionally all four digits) also may be used as a parameter code. Parameters are used when a minor code can legitimately assume a range of values, such as a panel number. The meaning of a parameter code is indicated by the (non-zero) third digit of the major code.

An example of a Major/Minor code pair is 440 0153, which indicates that an area is being described. The definition of the minor attribute codes is found in the following section.

Every area within a Q3 Flood Data county is identified using fourteen Major/Minor attribute code pairs. They are arranged in the following order: 410 ---, 410 State FIPS, 411 County FIPS, 412 CID, 420 ----, 421 Panel #, 422 Suffix, 420 170, 426 Latitude, 427 Longitude, 428 Quad ID, 440 Zone, 440 Floodway, 440 COBRA. Placeholders of zero are used for any item that does not require an attribute code or parameter code.

Specifications

Specifications for Q3-DLG data will be described by considering the following subject areas: coordinate systems, cell size and extent, and distribution format.

Coordinate Systems

The Q3-DLG data published by FEMA are expressed in the units of the respective ground coordinate systems: that is, meters in the Universal Transverse Mercator (UTM) system.

Cell Size and File Extent

The Q3-DLGs are stored and distributed in county units. The file extents will be the outermost four corners of the USGS 7.5-minute quadrangle map sheets on which the county falls.

Distribution Format

The Optional distribution format was designed to facilitate data usage. The topological relationships explicitly encoded include starting node, ending node, area to the left of direction of travel, and area to the right of the direction of travel for line elements, bounding lines for area elements, and bounded lines for node elements. These files can simplify processing requirements. For example, because topological linkages are explicitly encoded for all line, node, and area elements, a polygon data structure can be easily created. These linkages facilitate Geographic Information System (GIS) applications of Q3-DLG data as well as generation of graphic products.

The files are physically comprised of ASCII characters organized into fixed-length logical records of 80 characters (bytes). Bytes 1-72 of each record contain DLG data, and bytes 73-80 may be blank or contain a record sequence number.

The record types used in the Optional DLG distribution format may be categorized as header and data records.

The actual sequence of records in an Optional distribution format DLG file is as follows:

1. Header records

Ten file identification and
description records
Control point identification records
(one per control point)
Data category identification records
(one per data category in the file)

2. Data records

Node identification record Repeated
Node to-line linkage record(s) for each
Attribute Code record(s) node within a
data category

Area identification record

Area-to-line linkage record(s) Repeated
Attribute code record(s) for each
area within a
data category

Line identification record

Coordinate string record(s) Repeated
Attribute code record(s) line within a
data category

Descriptions of the contents of the various types of records in an Optional format Q3-DLG follow.

FILE HEADER INFORMATION

The header file is physically comprised of 8-bit ASCII characters organized into a fixed length logical record of 80 characters. The header information includes the name of the digital cartographic unit, map scale, date of original source material, date of last revision, and a banner. The following further defines the aforementioned:

Banner:

Defines the banner, which is comprised of information unique to the FIS. The banner is a string of up to 72 alphanumeric characters, with the following record format. All fields except the FIPS codes are left justified with trailing spaces.

FEMA Identifier. FEMA-Q3

Record length 12

Data Category. Flood Hazard Zones

Record length 20

County, State. County the FIRM covers, followed by a comma and its two-character state abbreviation.

Record length 30.

State FIPS code.State code should be two digits with leading zero if necessary.

Record length 2.

County FIPS code.County code should be three digits with leading zero(s),if necessary, followed by trailing space.

Record length 4.

Name of Cartographic Unit:

Defines the name of the county, followed by the state two-character designator. The name is a string of up to 40 alphanumeric characters.

Date of Original Source, Date of Revision:

Defines the year of the original digitization of the Flood Insurance Rate Map followed by a comma and the year of the latest revision date if applicable. The date may be a string of up to 10 alphanumeric characters.

Revision Date Qualifier:

Qualifier to discriminate revision date if present. Code is:

R = Restudy, L = Limited Map Maintenance Program (LMMP), V = Revision under parts 65, 67, 70.

Scale of Source Material:

Defines the map scale. Usually 24000.

UTM Coordinate Zone:

Defines the zone in the ground planimetric reference system. Appendix A lists the UTM coordinate zone codes.

Resolution:

Defines the true ground distance corresponding to one unit (0.001 inch at map scale) in the file internal coordinate system used in data collection.

<u>Scale</u>	<u>Resolution</u>
1:24,000	0.61M
1:25,000	0.635M
1:48,000	1.22M
1:62,500	1.587M

Horizontal Datum:

Defines the horizontal datum of the Q3-DLG.

Options are:0 = NAD 27

1 = NAD 83

2 = Puerto Rico

3 = Old Hawaiian

4 = Local

Vertical Datum:

Defines the vertical datum of the Q3-DLG.

Options are:0 = NGVD 29

1 = NAVD 88

2 = Local Mean Sea Level

Map Projection Parameters:

The Optional DLG distribution format includes 15 fields reserved for map projection parameters. These parameters are typically used as input for a coordinate transformation package.

When the ground coordinate system of a DLG is the Universal Transverse Mercator system, as in the case for all Q3-DLGs, only the first two of the 15 parameter fields are used:

1. Longitude of any point in UTM zone. Normally placed at the
2. Latitude of any point in UTM zone. center of the DLG cell.
- 3-15. Not used (=0).

A transformation to or from UTM using a coordinate transformation package can be controlled by specifying the UTM zone or by supplying the geographic

coordinate in parameters 1 and 2, from which the UTM zone is computed. FEMA Q3-DLGs require both to be present. The parameters are encoded as packed, degrees-minutes-seconds (DMS) as follows:

$$\text{degrees} * 1000000 + \text{minutes} * 1000 + \text{seconds}$$

Example: If degrees = +50, minutes = 30, and seconds = 36.25, then the parameter value is 50030036.25 stored as a REAL*8 variable, and "bbb0.500300362500000D 08" encoded in FORTRAN D24.15 format.

Control Point Label with Latitude and Longitude and X,Y Coordinates:

Defines a list of four control points, one for each corner of the map sheet with their latitude and longitude values in decimal degrees and the corresponding X,Y coordinates of each point in units of the ground planimetric coordinate system.

Data Category Identification Record:

Identifies the data category. Flood Hazard Zones

Sample Header File

An example of a header file is as follows:

```
FEMA-Q3    FLOOD HAZARD ZONES    FAIRFIELD CO, CT                09001
FAIRFIELD COUNTY, CT                1992                24000

      3      1      18      2 0.6100000000D+00      4      0      4      1 1 1
-0.7301804500000000D+08    0.4100304500000000D+08    0.0000000000000000D+00
 0.0000000000000000D+00    0.0000000000000000D+00    0.0000000000000000D+00
 0.0000000000000000D+00    0.0000000000000000D+00    0.0000000000000000D+00
 0.0000000000000000D+00    0.0000000000000000D+00    0.0000000000000000D+00
 0.0000000000000000D+00    0.0000000000000000D+00    0.0000000000000000D+00
0.100000000000D+01 0.000000000000D+00 0.000000000000D+00 0.000000000000D+00
SW      41.000000    -73.375000                636671.25    4539816.86
NW      41.125000    -73.375000                636412.66    4553693.75
NE      41.125000    -73.250000                646906.37    4553897.09
SE      41.000000    -73.250000                647184.87    4540020.07
FLOOD HAZARD ZONES      0      8      8 010      6      6 010      12      12      1
```

DATA RECORD INFORMATION

In the Optional DLG distribution format, topological linkages are explicitly encoded for node and area elements as well as for line elements.

Seven types of records are considered data records:

- Node and area identification records
- Node-to-line linkage records
- Area-to-line linkage records
- Line identification records (also contains line-to-node and line-to-area linkages)
- Coordinate string records
- Attribute code records
- Text records (not currently used)

USGS's Standards for Digital Line Graphs lists the record contents for DLG files in Optional format. Refer to this listing for additional data record specifications.

Outside Area

Each DLG provides a coherent description of that portion of the earth's surface covered by a county cell. To maintain topological consistency and to facilitate the combination (integration) of multiple counties, the area outside the county cell is specifically identified for each Q3-DLG. This area element, which must be the first area present in each Q3-DLG file, is assigned major and minor codes both equal to zero. For Q3-DLGs, this "universe polygon area" is coded with fourteen pairs of zeroes.

Placeholder Zeroes

For all features contained in the Q3-DLG for which no attribute code has been explicitly defined, the attribute code records must be zero. Attribute codes of 0 are used as placeholders to allow for adjoining areas to be readily combined with a minimum of additional processing. Placeholder zeroes will be used for any minor code field for which a value is not available or appropriate. The appropriate major code will be retained whenever possible.

ATTRIBUTE CODING

Major Minor

Code Code Descriptor Comments

OUTSIDE AREA

Area Attribute Codes

00000000Outside AreaEach Q3-DLG provides a coherent description of that portion of the earth's surface covered by a county cell. To maintain topological consistency and to facilitate the combination (integration) of multiple counties, the area outside the cell is specifically identified for each Q3-DLG file. This area element, which must be the first area present, is assigned a single attribute code with major and minor codes both equal to zero.

POLITICAL AREA ATTRIBUTES

Area Attribute Codes

4100101Community AreaThis code identifies a county, city, village, town, borough, township, or hamlet, or political subdivision thereof. The community has authority to adopt and enforce floodplain management regulations for the areas within its jurisdiction. The community is further identified by its state FIPS code (parameter code 410 00--), its county FIPS code (parameter code 411 0---), and its community number (parameter code 412 ----).

4100150UndefinedThis code identifies an area outside the Politicalpolitical boundaries of the studied community Areaor county.

Parameter Attribute Codes

410 00-- State FIPS CodeRight justified; 2 digits.

411 0--- County or CountyRight justified; 3 digits.
Equivalent FIPS
Code

412 ---- Community NumberRight justified; 4 digits.

Major Minor

Code Code Descriptor Comments

FEMA MAP PANEL AREA ATTRIBUTES

Area Attribute Codes

420	0150	Community-Based FIRM Panel	covered by a community-based map sheet (panel). A community may consist of more than one FIRM panel. The FIRM panel is further identified by its FIRM panel number (parameter code 421 ----), and its suffix (parameter code 422 00--).
420	0151	Area Outside FIRM Panel	participating county. It should be used to Neatlineidentify any areas that fall within a participating community but outside of the defined panelling scheme. It should not be confused with the Unmapped Community attribute, which should be used for unmapped or non-participating communities.
420	0152	Community-Based FIRM Panel	covered by a community-based map sheet (panel) Not Printedthat is not printed. The FIRM panel is further identified by its FIRM panel number (parameter code 421 ----), and its suffix (parameter code 422 00--).
420	0153	Countywide FIRM Panel	covered by a countywide map sheet (panel). A community may consist of more than one FIRM panel. The FIRM panel is further identified by its FIRM panel number (parameter code 421 ----), and its suffix (parameter code 422 00--).
420	0154	Countywide FIRM Panel	covered by a countywide map sheet (panel) that Not Printedis not printed. The FIRM panel is further identified by its FIRM panel number (parameter code 421 ----), and its suffix (parameter code 422 00--).
420	0155	Unmapped Community	This code identifies a jurisdiction that has not been mapped or identified by the National Flood Insurance Program (NFIP). It may be applied to a jurisdiction that has no maps because it has no Special Flood Hazard Area, or it may be applied to a jurisdiction that is not identified by the NFIP or is not participating in the NFIP.

Parameter Attribute Codes

- 421 ---- FIRM Panel Right justified; 4 digits.
Number
- 422 00-- FIRM Panel This code is used to encode the alphabetic
Alphaportion of the map panel number. The code
Charactersubstitutes the numeric equivalent 01 to 26 for the
letters A to Z. It is right justified; two
digits.

Major Minor

Code Code Descriptor Comments

USGS 7.5-MINUTE QUADRANGLE AREA ATTRIBUTES

Area Attribute Codes

- 420 0170 USGS This code identifies the portion of the county
Quadranglecovered by a given USGS 7.5-minute quadrangle map sheet.

Parameter Attribute Codes

- 426 ---- LatitudeThis code identifies the latitude, rounded down to the
nearest whole degree, of the 7.5-minute
quadrangle map sheet. A map sheet whose
southeast corner coordinates were -89° 15', 42°
30' would be represented by the Latitude code
42.
- 427 ---- LongitudeThis code identifies the longitude, rounded down to the
nearest whole degree, of the 7.5-minute
quadrangle map sheet. A map sheet whose
southeast corner coordinates were -89° 15', 42°
30' would be represented by the Longitude code
89.
- 428 ---- QuadrangleThis code identifies the alphanumeric map sheet
Identifieridentifier used by the USGS. Refer to the list of USGS codes
published in the *State Indexes to Topographic
and Other Map Coverage* for a list of these
values. The alphabetic portion of the
identifier is translated to its numeric
equivalent by substituting the numbers 1 to 8
for the letters A to H. Thus, the map sheet
identifier A1 would be represented by 11, and H8
would be represented by 88.

Major Minor

Code Code Descriptor Comments

FLOOD HAZARD ZONE AREA ATTRIBUTES

Area Attribute Codes

440	0150	Zone V	This code identifies an area inundated by 100-year flooding with velocity hazard (wave action); no BFEs have been determined. It is shown by symbol 1.
440	0151	Zone VE	This code identifies an area inundated by 100-year flooding with velocity hazard (wave action); BFEs have been determined. It is shown by symbol 2.
440	0152	Zone A	This code identifies an area inundated by 100-year flooding, for which no BFEs have been determined. It is shown by symbol 3.
440	0153	Zone AE	This code identifies an area inundated by 100-year flooding, for which BFEs have been determined. It is shown by symbol 4.
440	0154	Zone A0	This code identifies an area inundated by 100-year flooding (usually sheet flow on sloping terrain), for which average depths have been determined; flood depths range from 1 to 3 feet. It is shown by symbol 5.
440	0155	Zone A0 Fan)	This code identifies an alluvial fan inundated (Alluvial by 100-year flooding (usually sheet flow on sloping terrain), for which average flood depths <u>and</u> velocities have been determined; flood depths range from 1 to 3 feet. It is shown by symbol 6.
440	0156	Zone AH	This code identifies an area inundated by 100-year flooding (usually an area of ponding), for which BFEs have been determined; flood depths range from 1 to 3 feet. It is shown by symbol 7.
440	0157	Zone A99	This code identifies an area inundated by 100-year flooding, for which no BFEs have been determined. This is an area to be protected from the 100-year flood by a Federal flood protection system under construction. It is shown by symbol 8.
440	0158	Zone D	This code identifies an area of undetermined but possible flood hazards. It is shown by symbol 9.
440	0159	Zone AR	This code identifies an area inundated by flooding, for

which BFEs or average depths have been determined. This is an area that was previously, and will again, be protected from the 100-year flood by a Federal flood protection system whose restoration is Federally funded and underway. It is shown by symbol 10.

Major Minor

Code Code Descriptor Comments

FLOOD HAZARD ZONE AREA ATTRIBUTES (CONTINUED)

Area Attribute Codes

440 0160 Zone X This code identifies an area inundated by 500-
(500-year)year flooding; an area inundated by 100-year flooding with average
depths of less than 1 foot or with drainage
areas less than 1 square mile; or an area
protected by levees from 100-year flooding. It
is shown by symbol 11.

440 0161 Zone X This code identifies an area that is determined to be outside
the 100- and 500-year floodplains. It is shown
by symbol 12.

440 0170 100-year This code identifies an area where the 100-year
Flood flooding is contained within the channel banks
Discharge and the channel is too narrow to show to scale.
ContainedAn arbitrary channel width of 3 meters is shown.
in ChannelBFEs are not shown in this area, although they may be reflected on
the corresponding profile. It is labeled with
the note "100-year flood discharge contained in
channel". It is shown by symbol 13.

440 0171 500-year This code identifies an area where the 500-year
Flood flooding is contained within the channel banks
Dischargeand the channel is too narrow to show to scale.
ContainedAn arbitrary channel width of 3 meters is shown.
in ChannelIt is labeled with the note "500-year flood discharge contained in
channel". It is shown by symbol 14.

440 0172 Floodway This code identifies an area where the floodway
Containedis contained within the channel banks and the
in Channelchannel is too narrow to show to scale. An arbitrary
channel width of 3 meters is shown. BFEs are
not shown in this area, although they may be
reflected on the corresponding profile. It is
labeled with the note "Floodway contained in
channel". It is shown by symbol 15.

4400175 Flood Prone This code identifies an area designated as a
Area"Flood Prone Area" on a map prepared by USGS and the Federal
Insurance Administration. This area has been

delineated based on available information on past floods. This is an area inundated by 100-year flooding for which no BFEs have been determined. It is shown by symbol 16.

4400176 Area In SFHAThis code identifies an area designated as within a "Special Flood Hazard Area" (or SFHA) on a FIRM. This is an area inundated by 100-year flooding for which BFEs or velocity may have been determined. No distinctions are made between the different flood hazard zones that may be included within the SFHA. These may include Zones A, AE, AO, AH, A99, AR, V, or VE. It is shown by symbol 17.

Major Minor

Code Code Descriptor Comments

FLOOD HAZARD ZONE AREA ATTRIBUTES (CONTINUED)

Area Attribute Codes

4400177 Area This code identifies an area designated as Outsideoutside a "Special Flood Hazard Area" (or SFHA) SFHAon a FIRM. This is an area inundated by 500-year flooding; an area inundated by 100-year flooding with average depths of less than 1 foot or with drainage areas less than 1 square mile; an area protected by levees from 100-year flooding; or an area that is determined to be outside the 100- and 500-year floodplains. No distinctions are made between these different conditions. These may include both shaded and unshaded areas of Zone X. It is shown by symbol 18.

4400181 Area NotThis code identifies an area that is located Includedwithin a community or county that is not mapped on any published FIRM.

440 0191 Area of This code identifies a body of open water, such Undesignatedas a pond, lake, ocean, etc., located within a Flood Hazardcommunity's jurisdictional limits, that has no defined flood hazard.

Major Minor

Code Code Descriptor Comments

FLOODWAY AREA ATTRIBUTES

Area Attribute Codes

440 0710 Floodway This code identifies an area that includes the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water-surface elevation by more than a designated height. (Note: This area is normally in Zone AE; therefore, attribute code 440 0153 will also normally be used with this feature.)

440 0712 Flow Easement This code identifies an area within a community, usually bordering a stream, that has more restrictive floodplain development criteria imposed upon it by the governing body (town, city, etc.) than the criteria imposed as a prerequisite to participation in the NFIP. (Note: Unlike the floodway, this area may overlap any other flood zone, and will normally be associated with the attribute code for that zone.)

440 0713 State Encroachment This code identifies an area within a community, usually bordering a stream, that has more restrictive floodplain development criteria imposed upon it by the state, than the criteria imposed as a prerequisite to participation in the NFIP. (Note: Unlike the floodway, this area may overlap any other flood zone, and will normally be associated with the attribute code for that zone.)

Major Minor
Code Code Descriptor Comments

COASTAL BARRIER AREA ATTRIBUTES

Area Attribute Codes

440 0162 InsideThis code identifies an area designated as an
 Coastal Undeveloped Coastal Barrier Area or Otherwise
 BarrierProtected Area in which flood insurance is
 Areaunavailable for structures newly built or substantially
 improved.

440 0163 OutsideThis code identifies any area outside a
 Coastaldesignated Undeveloped Coastal Barrier Area or
 BarrierOtherwise Protected Area in which flood insurance
 Areas is unavailable for structures newly built or substantially improved.

TABLE 9: Q3-DLG ATTRIBUTE CODE DOMAIN	
Position	Domain
Major 1	410
Minor 1	101 or 150
Major 2	410
Minor 2	State FIPS code
Major 3	411
Minor 3	County FIPS code
Major 4	412
Minor 4	Community ID number
Major 5	420
Minor 5	150, 151, 152, 153, 154, or 155
Major 6	421
Minor 6	FIRM panel number
Major 7	422
Minor 7	FIRM suffix (as numeric)
Major 8	420
Minor 8	170
Major 9	426
Minor 9	Latitude of SE corner of quad
Major 10	427
Minor 10	Longitude of SE corner of quad
Major 11	428
Minor 11	Quadrangle identifier (11-88)
Major 12	440
Minor 12	Zone (150-161, 170-177, 181, or 191)
Major 13	440
Minor 13	Floodway type (710, 712, or 713)
Major 14	440
Minor 14	COBRA identifier (162 or 163)

CLARIFICATIONS/EXCEPTIONS

Every area within the county should be identified using fourteen Major/Minor attribute code pairs. They should be arranged in the following order: 410 ---, 410 State FIPS, 411 County FIPS, 412 CID, 420 ----, 421 Panel #, 422 Suffix, 420 170, 426 Latitude, 427 Longitude, 428 Quad ID, 440 Zone, 440 Floodway, 440 COBRA. Placeholders of zero shall be used for any item that does not require an attribute code or parameter code.

A given area should be covered by only one FIRM panel. In situations where multiple Flood Insurance Studies (FISs) are being mapped in digital format, the FIRM panel neatline code may identify a line that defines the perimeter of the intersection of the FIRM panel with the political boundary. The Q3-DLG would thus potentially show the corporate boundary of a community as the FIRM panel neatline.

All FIRM panel neatlines and 7.5-minute quadrangle neatlines will stop at the county boundary for the studied county. If the county boundary is not available from the FIRM panel source maps, the U.S. Census Bureau county equivalent area outline shall be used.

In areas where FIS data overlaps, a determination should be made as to which FIS is most accurate. Typically, it is the more detailed study, or the most recent. The panel code entered in the area of overlap should correspond to the panel number of the study that was used to determine the flood hazard zone.

Q3-DLGs will show only Extraterritorial Jurisdictional Boundaries (ETJs) and no corporate limits, when both exist on the FIRMs, with the area inside the ETJs coded as within the community.

Multi-county communities will be shown in their respective counties (i.e. split by the county boundary) where both counties are in the same digital format (i.e. both Q3-DLGs). If the adjacent county has not yet been digitized, the community will be shown in its entirety, with the area belonging to the adjacent county "hooked onto" the digitized county. The "hook-on" area will be coded with its appropriate county attribute codes. When the adjacent county is converted to Q3-DLG format, the "hook-on" area will be added to its rightful county.

Pseudo-countywide map panels will be coded as community based panels. Each community area will be coded individually with its appropriate county and community identification numbers.

The community based panel codes should be used when converting community based panels to Q3-DLGs. The countywide code should be used when coding panels shown as DFIRMs or when countywide panels are converted to Q3 Flood Data.

For areas of communities or counties covered by panels not printed, the preferred sources of political boundaries (by order of preference) is as follows:

1. Adjacent FIRM
2. FIRM index panel
3. TIGER files

Use only one UTM zone for a county. This must be reflected consistently in the Q3-DLG header, the metadata, and the coordinate values of the features in the files. For Q3-DLGs, use the westernmost zone for the county.

Placeholder zeroes will be used in Q3-DLGs for any minor code field for which a value is not available or appropriate. The appropriate major code will be retained whenever possible.

The bounding coordinates shown in the control points field of the Q3-DLG header files and the bounding coordinated field of the metadata files will be the outside corners of the 7.5-minute quadrangle sheets that form an even rectangle around the county. If the 7.5-minute quadrangle corners fall in open bodies of water, are mapped on adjacent quads, etc., the corners of the quad will be generated based on the theoretical extent of the 7.5-minute quadrangle area (i.e. the quad outline will be completed and the corners of the completed quad will be used).

For Q3-DLGs, the universe polygon area is coded with fourteen pairs of zeroes.

Floodway, Flowage Easement, and State Encroachment Areas are included in the Q3-DLG files if they are portrayed on the source graphic (the FIRM) used for data capture. If they are portrayed on a separate map panel (the Flood Boundary Floodway Map) they will not be digitized at this time.

The Q3-DLGs may be derived from DFIRM-DLGs, from FIRM-DLGs, from previously digitized data sets, or as newly prepared data files. Certain items may not have been captured in previously digitized data sets or may have been captured differently from the current Q3-DLG specifications. These may include the following:

- Floodways may not have been captured in all older data sets.
- COBRA boundaries may not have been captured in all older data sets.
- All gutters may not have been captured in older data sets. Current Q3 Flood Data specifications call for the gutters to be captured and the SFHA areas to be differentiated from each other (e.g. A, AE, AO, AH, A99, AR, V, VE). The attribute code "IN" is included in the Q3 Flood Data specifications to account for generic SFHA areas where no gutters differentiate between SFHAs of different types.
- All 500-year floodplain boundaries may not have been captured in older data sets. Current Q3 Flood Data specifications call for the 500-year floodplain boundary to be captured. The attribute code "OUT" is included in the Q3 Flood Data specifications to account for generic Zone X areas where no 500-year boundary was captured to

differentiate between different types of Zone X areas.

- FIRM neatlines for panels not printed may not have been captured in older data sets. If these features are not present, the area(s) covered by these undifferentiated panels not printed will be coded as community-based- or countywide-panel not printed areas, with the fields for panel number and panel suffix being coded with zeroes.
- The differentiation between panel types may not have been captured in older data sets. Countywide panels may not be distinguished from community based panels, and whether the panels are printed or not may not be differentiated. If these features are not present, the attribute code for panel type will not be populated. Panel numbers will still be present.
- The horizontal control of older data sets may have been consistent with those required for mapping at the scale of 1:100,000 instead of 1:24,000.

This page intentionally left blank.

METADATA SPECIFICATIONS

METADATA FILES

As part of FEMA's compliance with the Federal Geographic Data Committee's (FGDC) proposed FIPS standards, "metadata", or data about data, has become a significant concern in the storage and distribution of digital data (FGDC, "Content for Digital Geospatial Data Metadata", June 8, 1994). Metadata provides the user with detailed information concerning data sources, preparers, characteristics, and other pertinent issues, such as data dictionaries. Metadata also provides information about data availability, data applicability (fitness of use), and issues pertaining to access and transfer of data. In sum, Metadata is a necessary component for digital data for three reasons:

- maintains data integrity;
- provides information for the facilitation of data distribution;
- supplies information required to process and interpret data from an external source (cite FGDC, June 1994).

Metadata standardization is one critical part of the establishment of a National Spatial Data Infrastructure (NSDI) (Executive Order 12906) and the National Geospatial Data Clearinghouse or 'Clearinghouse'. The Clearinghouse is designed as a distributed network of geospatial data producers, managers, and users linked electronically, through a network such as Internet.

Metadata data standards are designed to provide flexibility for Clearinghouse participants. Among the initial actions for Clearinghouse development is the implementation of "Standardized Documentation of Data", effective January 1995. This step calls for the creation of an inventory of currently available digital geospatial data. Following the data inventory, participants are expected to develop a plan, in consultation with FGDC, for Clearinghouse implementation by April 1995. Procedurally, once an inventory of digital geospatial data has been generated (i.e. Standardized Documentation of Data), an agency must adopt a plan of public access to geospatial data. Concurrent with the creation of public access procedures, an agency must adopt internal procedures to ensure that the agency accesses the Clearinghouse before it expends funds for new data acquisition, in an effort to reduce data redundancy and duplication of efforts.

In order to facilitate FEMA's participation in the Clearinghouse and compliance with the FGDC guidelines, a metadata file shall accompany all FEMA digital FIRM data products. One metadata file shall be produced for each product type for each county that is maintained in digital format. The metadata file shall be in the form of a text file on the electronic medium containing the digital files. It shall follow the format described by the FGDC in "Content for Digital Geospatial Data Metadata", June 8, 1994, and contain all pertinent items.

Each county raster FIRM image directory will be accompanied by its metadata file, named with the extension .tfm (e.g 050124.tfm). The vector Q3 Flood Data metadata files will be named using the same naming convention as the coverages or the Q3-DLGs, with the addition of the letter "m" at the end (e.g.

c06048m or c06048.dlm). See Figure 1, FEMA SFHA Data Library Diagram for an overview of the relationship of file naming.

Three examples are provided of the metadata that shall accompany the three Q3 Flood Data products: the Q3 Raster FIRM, the vector Q3 Flood Data coverage and the vector Q3-DLG. The highlighted items are ones that are non-standard and should be entered for each county. Instructions for entering these items follows.

INSTRUCTIONS FOR ENTERING INFORMATION INTO METADATA TEMPLATE

Publication Date/Calendar Date

The date the Digital files are completed and ready for publication. Year is mandatory, month is optional.

County Name

The county covered by the digital files. County and State names must be provided.

Bounding Coordinates

The four corners in latitude and longitude of the four outside corners of the 7.5-minute quadrangle sheets that form an even rectangle around the county. If the 7.5-minute quadrangle corners fall in open bodies of water, are mapped on adjacent quads, etc., the corners of the quad will be generated based on the theoretical extent of the 7.5-minute quadrangle area (i.e. the quad outline will be completed and the corners of the completed quad will be used).

The bounding coordinates should be the same as the four control points in the Q3-DLG header file.

Cross Reference

For the Q3 Raster FIRMs, the Q3-DLGs and the hardcopy FIRMs should be cross-referenced. DFIRM-DLGs should also be cross-referenced for Q3 Raster FIRMs if they are available. For the Q3 Flood Data coverages and Q3-DLGs, the hardcopy FIRMs should be referenced. DFIRM-DLGs should be also be referenced for the Q3 Flood Data coverages and Q3-DLGs if they are available. The Q3 Raster FIRMs should be referenced if they will be made available, as well.

Source Information

This section should list all source documents used to generate the Q3 Flood Data files. It should include hardcopy sources, softcopy sources, and LOMCs.

For the Q3 Raster FIRMs, the metadata source list will be the hardcopy FIRMs or DFIRMs only.

For the Q3 Flood Data coverages and Q3-DLGs, the metadata source list will be the list of hardcopy FIRMs or DFIRMs, any workmaps or any digital study contractor files incorporated into the data sets, and any LOMCs that apply to the county. For Q3 Flood Data generated from non-countywide sources, (e.g. community based FIRMs, FIRM-DLGs) the metadata source list will include all communities included within the county. For Q3 Flood Data generated from countywide sources (including newly effective DFIRMs), the list will include all countywide panels. DFIRMs that convert the maps to countywide format as part of the map update will list all non-countywide FIRMs as their sources. The Q3 Flood Data files generated from those DFIRMs will list the countywide

DFIRMs as their source.

The FIRM source information requirement includes the community name, effective date, scale, list of effective panels, and abbreviation (e.g.FIRM1). With the exception of scale and abbreviation, this information may be obtained from FEMA's Community Information System (CIS).

The LOMC source information requirement includes the community name, determination date, title (e.g. LOMA, LOMR-F, etc.), affected panel(s), case number, type (e.g. 218-70), identifier (address, property description, etc.), determination (e.g. BFE Increase, Out as shown, etc.), whether the LOMC is included in the Q3 Flood Data file or not, and an abbreviation (e.g. LOMC1). All LOMCs that affect the county should be listed, whether they are all included or not. This information may also be derived from FEMA's CIS.

Process Steps

The list of source abbreviations (e.g. FIRM1 - FIRM23 and LOMC1) and a process date (year is mandatory, month is optional) are required.

Object Count

For vector Q3 Flood Data files, point and vector object counts are required for points, lines, and areas. These may be derived from the Q3 Flood Data coverage. For Q3 Raster FIRM files, the row and column count is required.

Spatial Reference Information

For Q3-DLGs, the UTM zone number must be entered.

Metadata Date

Should be the same date as the publication date.

This page intentionally left blank.

Q3 RASTER FIRM METADATA TEMPLATE

Following is a metadata "template" for the raster FIRM product prepared by FEMA. This template is derived from the Federal Geographic Data Committee's draft metadata recommendations, "Content Standards for Digital Geospatial Metadata" (6-8-94).

FGDC-Compliant Metadata for Q3 Raster FIRM File

Identification Information

Citation

Originator: Federal Emergency Management Agency

Publication Date: 1995

Title: Q3 Raster FIRMs, Sussex County, DE

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Description

Abstract: The Q3 Raster FIRMs are derived from the Flood Insurance Rate Maps (FIRMs) published by the Federal Emergency Management Agency (FEMA). The files are raster images of scanned FEMA Flood Insurance Rate Maps, including the collar information, not georeferenced to the earth's surface.

Purpose: 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 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 1973 Flood Disaster Protection Act).

In addition to the identification of Special Flood Hazard Areas, the risk zones shown on the FIRMs are the basis for the establishment of premium rates for flood coverage offered through the NFIP.

A Q3 Raster FIRM is useful as a source or background layer in a GIS, as a means to QC/QA other digital products, and as a source for the collection and revision of Q3 Flood Data Digital Line Graph (Q3-DLG) data.

Time Period of content

Single Date/Time

Calendar Date: 1995

Currentness Reference: Publication date

Status

Progress: Complete

Maintenance and Update Frequency: Irregular

Spatial Domain

Bounding Coordinates

West Bounding Coordinate: -75.375

East Bounding Coordinate: -75.250
North Bounding Coordinate: 39.000
South Bounding Coordinate: 38.875

Keywords

Theme

Theme Keyword Thesaurus: None
Theme Keyword: FEMA Flood Hazard Zones
Theme Keyword: Q3 Flood Data
Theme Keyword: Raster FIRM
Theme Keyword: Q3 Raster FIRM
Theme Keyword: Scanned FIRM

Place

Place Keyword Thesaurus: None
Place Keyword: Sussex County
Place Keyword: Delaware
Place Keyword: USA

Access Constraints: None

Use Constraints: None. Acknowledgement of the Federal Emergency Management Agency would be appreciated in products derived from these data.

Point of Contact

Contact Organization Primary

Contact Organization: Federal Emergency Management Agency,

Mitigation Directorate

Contact Address

Address Type: mailing address
Address: 500 C Street, S.W.
City: Washington
State or Province: District of Columbia
Postal Code: 20472

Contact Voice Telephone:

Native Data Set Environment: Original data development environment varies.

Cross Reference

Cross Reference Citation

Originator: Federal Emergency Management Agency
Publication Date: 1995
Title: Q3-DLG, Sussex County, DE

Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency

Cross Reference Citation

Originator: Federal Emergency Management Agency
Publication Date: 1995
Title: Flood Insurance Rate Maps, Sussex County, DE (See source

Information listing)

Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency

Cross Reference

Cross Reference Citation

Originator: Federal Emergency Management Agency
Publication Date: 1995
Title: DFIRM-DLG, Sussex County, DE

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Data Quality Information

Completeness Report: Data completeness for Q3 Raster FIRM data files reflect the content of the source graphic. Features may have been eliminated or generalized on the source graphic, due to scale and legibility constraints. 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 analysis of records of river flow, storm tides, and rainfall; information obtained through consultation with the communities: floodplain topographic surveys; and hydrological and hydraulic analysis. Both detailed and approximate analyses are employed. Generally, detailed analyses are used to generate flood risk data only for developed or developing areas of communities. For undeveloped areas where little or no development is expected to occur, FEMA uses approximate analyses to generate flood risk data. Typically, only drainage areas that are greater than 1 square mile are studied.

Flood Insurance Rate Maps continually undergo revisions and updates. Some of these revisions are effected by letter (Letter of Map Revision (LOMR), Letter of Map Amendment (LOMA)). Q3 Raster FIRM data will not reflect information effected by letter or information that is not mappable at the publication scale of the FIRM. To obtain the latest information, contact the address listed under contact address.

Lineage

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19830202

Title: Flood Insurance Rate Map, Town of Bethany Beach, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1050830001D

Source Scale Denominator:

Type of Source Media: stable base material

Source Time Period of Content

Single Date/Time

Calendar Date: 19830202

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM1

Source Contribution: source for scanned image

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19810116

Title: Flood Insurance Rate Map, Town of Bethel, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Other Citation Details: Panels: 1000550001A
Source Scale Denominator:
Type of Source Media: stable base material
Source Time Period of Content
Single Date/Time

Calendar Date: 19810116

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM2

Source Contribution: source for scanned image
Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19810116

Title: Flood Insurance Rate Map, Town of Blades, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000310001B

Source Scale Denominator:

Type of Source Media: stable base material

Source Time Period of Content

Single Date/Time

Calendar Date: 19810116

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM3

Source Contribution: source for scanned image
Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19810116

Title: Flood Insurance Rate Map, Town of Dagsboro, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000330001B

Source Scale Denominator:

Type of Source Media: stable base material

Source Time Period of Content

Single Date/Time

Calendar Date: 19810116

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM4

Source Contribution: source for scanned image
Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19830404

Title: Flood Insurance Rate Map, Town of Dewey Beach, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000560001B

Source Scale Denominator:

Type of Source Media: stable base material

Source Time Period of Content

Single Date/Time

Calendar Date: 19830404

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM5

Source Contribution: source for scanned image

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19850417

Title: Flood Insurance Rate Map, Town of Fenwick Island, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1050840001D

Source Scale Denominator:

Type of Source Media: stable base material

Source Time Period of Content

Single Date/Time

Calendar Date: 19850417

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM6

Source Contribution: source for scanned image

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19810916

Title: Flood Insurance Rate Map, Town of Frankford, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000370001B

Source Scale Denominator:

Type of Source Media: stable base material

Source Time Period of Content

Single Date/Time

Calendar Date: 19810916

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM7

Source Contribution: source for scanned image

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19780224
Title: Flood Insurance Rate Map, Town of Greenwood, DE
Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 100039 B

Source Scale Denominator:

Type of Source Media: stable base material

Source Time Period of Content

Single Date/Time

Calendar Date: 19780224

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM8

Source Contribution: source for scanned image

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19830202

Title: Flood Insurance Rate Map, Town of Henelopen Acres, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000530001C

Source Scale Denominator:

Type of Source Media: stable base material

Source Time Period of Content

Single Date/Time

Calendar Date: 19830202

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM9

Source Contribution: source for scanned image

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19810116

Title: Flood Insurance Rate Map, Town of Laurel, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000400001B

Source Scale Denominator:

Type of Source Media: stable base material

Source Time Period of Content

Single Date/Time

Calendar Date: 19810116

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM10

Source Contribution: source for scanned image

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19920803

Title: Flood Insurance Rate Map, City of Lewes, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000410000, 1000410001E, 1000410002E, 1000410003D

Source Scale Denominator:

Type of Source Media: stable base material

Source Time Period of Content

Single Date/Time

Calendar Date: 19920803

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM11

Source Contribution: source for scanned image

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19780714

Title: Flood Insurance Rate Map, City of Milford, DE (Kent & Sussex Counties)

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000420001C

Source Scale Denominator:

Type of Source Media: stable base material

Source Time Period of Content

Single Date/Time

Calendar Date: 19780714

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM12

Source Contribution: source for scanned image

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19780901

Title: Flood Insurance Rate Map, Town of Millsboro, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000430005B

Source Scale Denominator:

Type of Source Media: stable base material

Source Time Period of Content

Single Date/Time

Calendar Date: 19780901

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM13

Source Contribution: source for scanned image

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19810925

Title: Flood Insurance Rate Map, Town of Millville, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000440001B

Source Scale Denominator:

Type of Source Media: stable base material

Source Time Period of Content

Single Date/Time

Calendar Date: 19810925

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM14

Source Contribution: source for scanned image

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19780801

Title: Flood Insurance Rate Map, Town of Milton, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000450005B

Source Scale Denominator:

Type of Source Media: stable base material

Source Time Period of Content

Single Date/Time

Calendar Date: 19780801

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM15

Source Contribution: source for scanned image

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19800903

Title: Flood Insurance Rate Map, Town of Ocean View, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000460001B

Source Scale Denominator:

Type of Source Media: stable base material

Source Time Period of Content

Single Date/Time

Calendar Date: 19800903

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM16

Source Contribution: source for scanned image

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19920803

Title: Flood Insurance Rate Map, City of Rehoboth Beach, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1050860001C

Source Scale Denominator:

Type of Source Media: stable base material

Source Time Period of Content

Single Date/Time

Calendar Date: 19920803

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM17

Source Contribution: source for scanned image

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19790201

Title: Flood Insurance Rate Map, City of Seaford, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000480005B

Source Scale Denominator:

Type of Source Media: stable base material

Source Time Period of Content

Single Date/Time

Calendar Date: 19790201

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM18

Source Contribution: source for scanned image

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19910716

Title: Flood Insurance Rate Map, Town of Selbyville, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000380001A

Source Scale Denominator:

Type of Source Media: stable base material
Source Time Period of Content
Single Date/Time

Calendar Date: 19910716

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM19

Source Contribution: source for scanned image

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19920402

Title: Flood Insurance Rate Map, Town of Slaughter Beach, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000500001D

Source Scale Denominator:

Type of Source Media: stable base material

Source Time Period of Content

Single Date/Time

Calendar Date: 19920402

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM20

Source Contribution: source for scanned image

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19850403

Title: Flood Insurance Rate Map, Town of South Bethany, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000510001D

Source Scale Denominator:

Type of Source Media: stable base material

Source Time Period of Content

Single Date/Time

Calendar Date: 19850403

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM21

Source Contribution: source for scanned image

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19770107

Title: Flood Insurance Rate Map, Town of Bridgeville, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 100032 B
Source Scale Denominator:
Type of Source Media: stable base material
Source Time Period of Content
Single Date/Time

Calendar Date: 19770107

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM22

Source Contribution: source for scanned image
Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19920402

Title: Flood Insurance Rate Map, Sussex County, DE (Unincorporated Areas)

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000290000, 1000290025C, 1000290030D,
1000290035D, 1000290040C, 1000290045D, 1000290075C, 1000290085C,
1000290100C, 1000290105D, 1000290110D, 1000290115D, 1000290120D,
1000290175C, 1000290200C, 1000290205C, 1000290210D, 1000290215C,
1000290220D, 1000290250C, 1000290275C, 1000290280C, 1000290285D,
1000290290C, 1000290295E

Source Scale Denominator:

Type of Source Media: stable base material

Source Time Period of Content

Single Date/Time

Calendar Date: 19920402

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM23

Source Contribution: source for scanned image

Process Step

Process Description: Q3 Raster FIRM data were produced by scanning a stable base mylar negative version of the graphic materials on a high resolution scanner. Scanning resolution was 400 dpi. The raw scan file may have been enhanced to produce more uniform grey tones in the screened areas. The file was output as a TIFF file, 400 dpi, binary, compressed using CCITT Group 4 compression. Some differences may be detected between the source graphic used and the Q3 Raster FIRM due to the grey values assigned a particular area. Data completeness for Q3 Raster FIRM files reflect content of the source graphic. The scanned data and may have been used to assist in the vectorization and attribution of Q3 Flood Data.

Source Used Citation Abbreviation: FIRM1 - FIRM23

Process Date: 1995

Spatial Data Organization Information

Direct Spatial Reference Method: Raster

Raster Object Information

Raster Object Type: Pixel

Row Count:

Column Count:

Distribution Information

Distributor

Contact Information

Contact Organization Primary: Federal Emergency Management Agency,
Flood Map Distribution Center

Contact Address

Address Type: mailing address

Address: 6930 (A-F) San Tomas Road

City: Baltimore

State or Province: Maryland

Postal Code: 21227-6227

Contact Voice Telephone: 1-800-358-9616

Contact Instructions: Data requests should include the full name of the community or county and the Flood Insurance Rate Map panel number(s) or the 7.5-minute quadrangle sheet area(s) covered by the request.

Distribution Liability: 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. FEMA will warrant the delivery of this product in a computer-readable format, and will offer appropriate adjustment of credit when the product is determined unreadable by correctly adjusted computer input peripherals, or when the physical medium is delivered in damaged condition. Requests for adjustment of credit must be made within 90 days from the date of this shipment from the ordering site.

Standard Order Process

Non-digital Form: Printed Digital Flood Insurance Rate

Maps that match this data set are available from FEMA at the Flood Map Distribution Center, cited above.

Digital Form: TIFF

Digital Transfer Options

Online Option

Computer Contact Information

Network Address

Network Resource Name:

Dialup Instructions:

Access Instructions:

Online Computer and Operating System:

Offline Option

Offline Media:

Recording Capacity

Recording Density:

Recording Format:

Metadata Reference Information

Metadata Date: 199506

Metadata Contact

Contact Organization Primary: Federal Emergency Management Agency,
Mitigation Directorate

Contact Address

Address Type: mailing address

Address: 500 C Street, S.W.

City: Washington

State or Province: District of Columbia

Postal Code: 20472

Contact Voice Telephone:

Metadata Standard Name: FGDC Content Standards for Digital Geospatial
Metadata

Metadata Standard Version: 19940608

This page intentionally left blank.

Q3 FLOOD DATA COVERAGE METADATA TEMPLATE

Following is a metadata "template" for the Q3 Flood Data Coverage product prepared for FEMA. This template is derived from the Federal Geographic Data Committee's draft metadata recommendations, "Content Standards for Digital Geospatial Metadata" (6-8-94).

FGDC-Compliant Metadata for Q3 Flood Data Coverage

Identification Information

Citation

Originator: Federal Emergency Management Agency

Publication Date: 1995

Title: Q3 Flood Data, Sussex County, DE

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Description

Abstract: The Q3 Flood Data are derived from the Flood Insurance Rate Maps (FIRMs) published by the Federal Emergency Management Agency (FEMA). The file is georeferenced to the earth's surface using geographic projection and decimal degree coordinate system. The specifications for the horizontal control of Q3 Flood Data files are consistent with those required for mapping at a scale of 1:24000.

Purpose: 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 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 1973 Flood Disaster Protection Act). In addition to the identification of Special Flood Hazard Areas, the risk zones shown on the FIRMs are the basis for the establishment of premium rates for flood coverage offered through the NFIP.

Q3 Flood Data files are intended to convey certain key features from the existing hard copy FIRM to provide users with automated flood risk data.

Edge-matching errors, overlaps and deficiencies in coverage, and similar problems are not corrected during digitizing or post-processing.

These data may be used to locate Special Flood Hazard Areas (SFHAs).

More detailed information may be obtained from the paper FIRM.

Time Period of content

Single Date/Time

Calendar Date: 1995

Currentness Reference: Publication date

Status

Progress: Complete

Maintenance and Update Frequency: Irregular

Spatial Domain

Bounding Coordinates

West Bounding Coordinate: -75.375
East Bounding Coordinate: -75.250
North Bounding Coordinate: 39.000
South Bounding Coordinate: 38.875

Keywords

Theme

Theme Keyword Thesaurus: None
Theme Keyword: FEMA Flood Hazard Zones
Theme Keyword: Q3 Flood Data
Theme Keyword: Q3 Coverage
Theme Keyword: Special Flood Hazard Areas
Theme Keyword: Digital Flood Insurance Rate Maps

Place

Place Keyword Thesaurus: None
Place Keyword: Sussex County
Place Keyword: Delaware
Place Keyword: USA

Access Constraints: None

Use Constraints: None. Acknowledgement of the Federal Emergency Management Agency would be appreciated in products derived from these data.

Point of Contact

Contact Organization Primary

Contact Organization: Federal Emergency Management Agency,

Mitigation Directorate

Contact Address

Address Type: mailing address
Address: 500 C Street, S.W.
City: Washington
State or Province: District of Columbia
Postal Code: 20472

Contact Voice Telephone:

Native Data Set Environment: Original data development environment varies. Additional manipulation, topological structuring, and attribute encoding were undertaken using ARC/INFO (version 7.0.3) software on SUN SparcStation in a UNIX environment.

Cross Reference

Cross Reference Citation

Originator: Federal Emergency Management Agency
Publication Date: 1995
Title: Q3 Flood Data Coverage, Sussex County, DE
Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency

Cross Reference

Cross Reference Citation

Originator: Federal Emergency Management Agency
Publication Date: 1995
Title: DFIRM-DLG, Sussex County, DE
Publication Information
Publication Place: Washington, DC

Data Quality Information

Attribute Accuracy

Attribute Accuracy Report: The Q3 Flood Data are countywide vector files derived from the FEMA Flood Insurance Rate Maps (FIRMs). The attribute definitions may be found in the Q3 Flood Data Specifications. Attribute accuracy was tested by manual comparison of source graphic with hardcopy plots and a symbolized display on an interactive computer graphic system.

Selected attributes that could not be visually verified were individually queried. In addition, an ARC/INFO Arc Macro Language (AML) software program was applied to the dataset to test the attributes against a master set of valid attributes for the specific data category, and a complete set of valid attribute combinations. (See also Entity Attribute Information).

Logical Consistency Report: Polygon and chain-node topology are present. Certain node-area-line relationships are collected or generated to satisfy topological requirements. Some of these requirements include: lines must begin and end at nodes, lines must connect to each other at nodes, lines do not extend through nodes, left and right areas are defined for each line segment and are consistent throughout the files, and the lines representing the limits of the file neatlines are free of gaps. Tests of logical consistency were performed by ARC/INFO software modules. Check plots were made to test for leaks in all internal polygons.

Completeness Report: Data completeness for Q3 Flood Data files reflect the content of the source graphic. Features may have been eliminated or generalized on the source graphic, due to scale and legibility constraints. 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 analysis of records of river flow, storm tides, and rainfall; information obtained through consultation with the communities: floodplain topographic surveys; and hydrological and hydraulic analysis. Both detailed and approximate analyses are employed. Generally, detailed analyses are used to generate flood risk data only for developed or developing areas of communities. For undeveloped areas where little or no development is expected to occur, FEMA uses approximate analyses to generate flood risk data. Typically, only drainage areas that are greater than 1 square mile are studied.

The Q3 Flood Data coverages may be derived from DFIRM-DLGs, from FIRM-DLGs, from Q3-DLGs, or as stand-alone coverages. In Q3 Flood Data derived from older data sets, certain items may not have been captured or may have been captured differently from the current Q3 Flood Data specifications.

Flood Insurance Rate Maps continually undergo revisions and updates. Some of these revisions are effected by letter (Letter of Map Revision (LOMR), Letter of Map Amendment (LOMA)). Q3 Flood Data may not reflect the most current information or information that is not mappable at the publication scale of the FIRM. To obtain the latest information, contact the address listed under contact address.

Positional Accuracy

Horizontal Positional Accuracy

Horizontal Positional Accuracy Report: Specifications for the digitizing of FIRMs to create the Q3 Flood Data are consistent with those

requirements for mapping at a scale of 1:24000. Horizontal control of Q3 Flood Data was established using USGS quadrangle maps at 1:24000 or other standard scales. Users should assess the horizontal positional accuracy of the Q3 Flood Data with regard to the selected base map sources and the requirements of their application. With increased frequency, large-scale spatial data sets are becoming widely available for computer-based geographic information systems. Q3 Flood Data may be used in combination with other digital spatial data, however, users should be aware that scalar enlargements do not enhance the relative accuracy of the Q3 Flood Data (i.e. 1:24000).

Lineage

Source Information

Source Citation

Originator: Federal Emergency Management Agency
Publication Date: 19830202
Title: Flood Insurance Rate Map, Town of Bethany Beach, DE
Geospatial Data Presentation Form: map
Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Other Citation Details: Panels: 1050830001D
Source Scale Denominator:

Type of Source Media: paper
Source Time Period of Content

Single Date/Time

Calendar Date: 19830202

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM1

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency
Publication Date: 19810116
Title: Flood Insurance Rate Map, Town of Bethel, DE
Geospatial Data Presentation Form: map
Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Other Citation Details: Panels: 1000550001A
Source Scale Denominator:

Type of Source Media: paper
Source Time Period of Content

Single Date/Time

Calendar Date: 19810116

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM2

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency
Publication Date: 19810116
Title: Flood Insurance Rate Map, Town of Blades, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000310001B

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19810116

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM3

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19810116

Title: Flood Insurance Rate Map, Town of Dagsboro, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000330001B

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19810116

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM4

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19830404

Title: Flood Insurance Rate Map, Town of Dewey Beach, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000560001B

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19830404

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM5

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19850417
Title: Flood Insurance Rate Map, Town of Fenwick Island, DE
Geospatial Data Presentation Form: map
Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1050840001D
Source Scale Denominator:

Type of Source Media: paper
Source Time Period of Content
Single Date/Time

Calendar Date: 19850417

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM6

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19810916

Title: Flood Insurance Rate Map, Town of Frankford, DE
Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000370001B
Source Scale Denominator:

Type of Source Media: paper
Source Time Period of Content
Single Date/Time

Calendar Date: 19810916

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM7

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19780224

Title: Flood Insurance Rate Map, Town of Greenwood, DE
Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 100039 B
Source Scale Denominator:

Type of Source Media: paper
Source Time Period of Content
Single Date/Time

Calendar Date: 19780224

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM8

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency
Publication Date: 19830202
Title: Flood Insurance Rate Map, Town of Henelopen Acres, DE
Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000530001C

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19830202

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM9

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency
Publication Date: 19810116
Title: Flood Insurance Rate Map, Town of Laurel, DE
Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000400001B

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19810116

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM10

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency
Publication Date: 19920803
Title: Flood Insurance Rate Map, City of Lewes, DE
Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000410000, 1000410001E, 1000410002E, 1000410003D

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19920803

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM11
Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency
Publication Date: 19780714
Title: Flood Insurance Rate Map, City of Milford, DE (Kent & Sussex Counties)

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000420001C

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19780714

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM12

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency
Publication Date: 19780901
Title: Flood Insurance Rate Map, Town of Millsboro, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000430005B

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19780901

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM13

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency
Publication Date: 19810925
Title: Flood Insurance Rate Map, Town of Millville, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000440001B

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19810925

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM14

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19780801

Title: Flood Insurance Rate Map, Town of Milton, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000450005B

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19780801

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM15

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19800903

Title: Flood Insurance Rate Map, Town of Ocean View, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000460001B

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19800903

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM16

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19920803

Title: Flood Insurance Rate Map, City of Rehoboth Beach, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1050860001C

Source Scale Denominator:

Type of Source Media: paper
Source Time Period of Content
Single Date/Time

Calendar Date: 19920803

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM17

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19790201

Title: Flood Insurance Rate Map, City of Seaford, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000480005B

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19790201

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM18

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19910716

Title: Flood Insurance Rate Map, Town of Selbyville, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000380001A

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19910716

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM19

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19920402

Title: Flood Insurance Rate Map, Town of Slaughter Beach, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000500001D

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19920402

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM20

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19850403

Title: Flood Insurance Rate Map, Town of South Bethany, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000510001D

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19850403

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM21

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19770107

Title: Flood Insurance Rate Map, Town of Bridgeville, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 100032 B

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19770107

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM22

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19920402

Title: Flood Insurance Rate Map, Sussex County, DE (Unincorporated Areas)

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000290000, 1000290025C, 1000290030D,
1000290035D, 1000290040C, 1000290045D, 1000290075C, 1000290085C,
1000290100C, 1000290105D, 1000290110D, 1000290115D, 1000290120D,
1000290175C, 1000290200C, 1000290205C, 1000290210D, 1000290215C,
1000290220D, 1000290250C, 1000290275C, 1000290280C, 1000290285D,
1000290290C, 1000290295E

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19920402

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM23

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19931209

Title: LOMA, Town of South Bethany, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000510001D

Case No.: 94-03-012A

Type: 218-70

Identifier: 3 North Third Street

Included in Q3?: No

Flooding Source: Atlantic Ocean

Determination: Property In, Structure

Removed

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19931209

Source Currentness Reference: Determination date

Source Citation Abbreviation: LOMC1

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19941014

Title: LOMR-F, Town of Fenwick Island, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1050840001D

Case No.: 94-03-318A

Type: 218-65

Identifier: Lot 250, subdiv 3, plat book 2,

p45

Included in Q3?: No

Flooding Source: Little Assawoman Bay

Determination: Property In, Structure

Removed

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19941014

Source Currentness Reference: Determination date

Source Citation Abbreviation: LOMC2

Source Contribution: spatial and attribute information

Process Step

Process Description: Q3 Flood Data format were produced by either scanning or manually digitizing a hardcopy version of the graphic materials. The scanning process captured the digital data and the resulting raster data were vectorized and attributed on an interactive editing station. Manual digitizing used a digitizing table to capture the digital data; attribution was performed either as the data were digitized or on an interactive edit station after the digitizing was completed. The determination of the production methodology was based on various criteria, including availability of production systems. Four control points corresponding to the four corners of the map were used for registration during manual digitizing. A projective transformation was performed on the coordinates used in the data collection and editing systems to register the digital data to the Universal Transverse Mercator (UTM) grid coordinates. The ARC/INFO coverage of the Q3 Flood Data was generated, and it was also used to create the Q3-DLG file. The Q3 Flood Data were checked for position and attribute accuracy by comparing plots of the digital data to the graphic source and by symbolized display on an interactive computer graphic system. Selected attributes that could not be visually verified were individually queried. In addition, an ARC/INFO Arc Macro Language (AML) software program was applied to the dataset to test the attributes against a master set of valid attributes for the specific data category, and a complete set of valid attribute combinations. Source graphics were revised to reflect updates effected by Letters of Map Correction (Letter of Map Revision (LOMR), Letter of Map Amendment (LOMA)). These revisions were included in the Q3 Flood Data if they were mappable at the publication scale of the source graphic.

Source Used Citation Abbreviation: FIRM1 - FIRM23

Process Date: 1995

Spatial Data Organization Information

Direct Spatial Reference Method: Vector

Point and Vector Object Information

SDTS Terms Description

SDTS Point and Vector Object Type: Point

Point and Vector Object Count: 142

SDTS Point and Vector Object Type: String

Point and Vector Object Count: 482

SDTS Point and Vector Object Type: GT-polygon composed of chains

Point and Vector Object Count: 143

Spatial Reference Information

Horizontal Coordinate System Definition

Geographic

Latitude Resolution: .000009

Longitude Resolution: .000009

Geographic Coordinate Units: Decimal degrees

Geodetic Model

Horizontal Datum Name: North American Datum of 1927

Ellipsoid Name: Clarke 1866

Semi-major Axis: 6378206.4

Denominator of Flattening Ratio: 294.98

Entity/Attribute Information

Overview Description

Entity and Attribute Overview: In addition to locational and topological information, Q3 coverage data elements are explicitly encoded using attribute items. Each attribute item identifies characteristics about the Flood Hazard Area, COBRA, Floodway, Political Jurisdiction, Quadrangle, or FIRM panel. All polygon data elements may be encoded with one or more feature characteristics.

Entity and Attribute Detail Citation: The FEMA Q3 Flood Data Specifications

contain a detailed description of each attribute code and a reference to other relevant information.

Detailed Description

Number of Attributes in Entity: 21

Entity Type

Entity Type label: <coverage name>.PAT

Entity Type Definition: Polygon attribute table comprising 21 items.

Entity Type Definition Source: Printed FIRM Maps, Digital Data Sources, or other information as appropriate.

Attribute

Attribute Label: -

Attribute Definition: Polygon attribute table comprising 21 data fields.

Attribute Definition Source: Printed FIRM Maps, Digital Data Sources, or other information as appropriate.

Attribute

Attribute Label: AREA

Attribute Definition: Area of poly/region in square coverage units.

Attribute Definition Source: Computed

Attribute Domain Values:

Enumerated Domain:

Enumerated Domain Value: Positive real numbers

Attribute Value Accuracy Information:

Attribute Measurement Frequency: Unknown

Attribute

Attribute Label: PERIMETER

Attribute Definition: Perimeter of poly/region in coverage units

Attribute Definition Source: Computed

Attribute Domain Values:

Enumerated Domain:

Enumerated Domain Value: Positive real numbers
Attribute Value Accuracy Information:
Attribute Measurement Frequency: Unknown

Attribute
Attribute Label: <coverage name>#
Attribute Definition: Internal feature number
Attribute Definition Source: Computed
Attribute Domain Values:
Enumerated Domain:
Enumerated Domain Value: Sequential unique positive integer
Attribute Value Accuracy Information:
Attribute Measurement Frequency: Unknown

Attribute
Attribute Label: <coverage name>-ID
Attribute Definition: User-assigned feature number
Attribute Definition Source: User-defined
Attribute Domain Values:
Enumerated Domain:
Enumerated Domain Value: Integer
Attribute Value Accuracy Information:
Attribute Measurement Frequency: Unknown

Attribute
Attribute Label: FIPS
Attribute Definition: Standard 5-digit State and County FIPS codes
Attribute Definition Source: Federal Information Processing Standard (FIPS), National Institute of Standards & Technology (NIST)
Attribute Domain Values
Codeset Domain: Federal Information Processing Standard (FIPS)
Codeset Source: National Institute of Standards & Technology (NIST)
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown

Attribute
Attribute Label: COMMUNITY
Attribute Definition: Identifies a county, city, or other community responsible for floodplain management. Numeric value assigned by FEMA.
Attribute Definition Source: FEMA Flood Insurance Rate Maps
Attribute Domain Values
Range Domain
Range Domain Minimum: 0
Range Domain Maximum: 9999
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown

Attribute
Attribute Label: FIRM_PANEL
Attribute Definition: Eleven-digit alpha-numeric code identifies portion of community covered or not covered by a FIRM panel.
Attribute Definition Source: FEMA FIRM Panels
Attribute Domain Values
Unrepresentable Domain: Code comprises a unique alpha-numeric sequence based on FIPS and FEMA Community and Panel IDs.
Attribute Value Accuracy Information

Attribute Measurement Frequency: Unknown

Attribute

Attribute Label: QUAD

Attribute Definition: USGS quadrangle identifier

Attribute Definition Source: USGS topographic quadrangle index

Attribute Domain Values

Unrepresentable Domain: Unique sequence based on latitude and longitude

Attribute Value Accuracy Information

Attribute Measurement Frequency: Unknown

Attribute

Attribute Label: ZONE

Attribute Definition: Flood hazard zone designation

Attribute Definition Source: FEMA FIRM Maps

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value: Multiple Codes-refer to Q3 Flood Data Specifications document

Attribute Value Accuracy Information

Attribute Measurement Frequency: Unknown

Attribute

Attribute Label: FLOODWAY

Attribute Definition: Channel, river or watercourse reserved for discharge.

Attribute Definition Source: FEMA FIRM Maps

Attribute Domain Values:

Enumerated Domain:

Enumerated Domain Value: Multiple Codes-refer to Q3 Flood Data Specifications document

Attribute Value Accuracy Information:

Attribute Measurement Frequency: Unknown

Attribute

Attribute Label: COBRA

Attribute Definition: Undeveloped Coastal Barrier Resources Act area-no flood insurance available.

Attribute Definition Source: FEMA FIRM Maps

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value: Multiple Codes-refer to Q3 Flood Data Specifications document

Attribute Value Accuracy Information

Attribute Measurement Frequency: Unknown

Attribute

Attribute Label: SFHA

Attribute Definition: In/Out of flood zone designation

Attribute Definition Source: Determined from data topology

Attribute Domain Values:

Enumerated Domain

Enumerated Domain Value: "In"

Enumerated Domain Value Definition: Area located within Special Flood Hazard Area (SFHA)

Enumerated Domain Value: "Out"

Enumerated Domain Value Definition: Area located outside of Special

Flood Hazard Area (SFHA)

Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown

Attribute
Attribute Label: SYMBOL
Attribute Definition: Polygon shade symbols for graphic output
Attribute Definition Source: Based on polygon codes
Attribute Domain Values:
Enumerated Domain
Enumerated Domain Value: Multiple Codes-refer to Q3 Flood Data Specifications document

Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown

Attribute
Attribute Label: PANEL_TYP
Attribute Definition: Type of FIRM panel represented
Attribute Definition Source: FEMA FIRM maps
Attribute Domain Values:
Enumerated Domain:
Enumerated Domain Value: Multiple Codes-refer to Q3 Flood Data Specifications document

Attribute Value Accuracy Information:
Attribute Measurement Frequency: Unknown

Attribute
Attribute Label: ST-FIPS
Attribute Definition: State FIPS code
Attribute Definition Source: Federal Information Processing Standard (FIPS)-NIST
Attribute Domain Values
Codeset Domain: Federal Information Processing Standard (FIPS)
Codeset Source: National Institute of Standards & Technology (NIST)
Attribute Value Accuracy Information:
Attribute Measurement Frequency: Unknown

Attribute
Attribute Label: CO-FIPS
Attribute Definition: County FIPS code
Attribute Definition Source: Federal Information Processing Standard (FIPS)-NIST
Attribute Domain Values
Codeset Domain: Federal Information Processing Standard (FIPS)
Codeset Source: National Institute of Standards & Technology (NIST)
Attribute Value Accuracy Information:
Attribute Measurement Frequency: Unknown

Attribute
Attribute Label: STATE
Attribute Definition: State FIPS code
Attribute Definition Source: Federal Information Processing Standard (FIPS)-NIST
Attribute Domain Values
Codeset Domain: Federal Information Processing Standard (FIPS)
Codeset Source: National Institute of Standards & Technology (NIST)
Attribute Value Accuracy Information:

Attribute Measurement Frequency: Unknown
Attribute
Attribute Label: PCOMM
Attribute Definition: FIRM Community/County Identifier
Attribute Definition Source: FEMA FIRM maps
Attribute Domain Values:
Unrepresentable Domain: Unique sequence based on FIPS & FEMA Panel IDs
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown

Attribute
Attribute Label: PANEL
Attribute Definition: FIRM Panel number and suffix (key to RFIRM files)
Attribute Definition Source: FEMA FIRM maps
Attribute Domain Values:
Unrepresentable Domain: Unique sequence based on FIPS & FEMA Panel

IDs

Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown

Attribute
Attribute Label: LAT
Attribute Definition: Origin latitude (degrees) of 7.5-min quadrangle
Attribute Definition Source: USGS Quadrangle Index
Attribute Domain Values
Range Domain:
Range Domain Minimum: +0000
Range Domain Maximum: +0090
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown

Attribute
Attribute Label: LONG
Attribute Definition: Origin longitude (degrees) of 7.5-min quadrangle
Attribute Definition Source: USGS Quadrangle Index
Attribute Domain Values
Range Domain:
Range Domain Minimum: -0180
Range Domain Maximum: +0180
Attribute Value Accuracy Information:
Attribute Measurement Frequency: Unknown

Attribute
Attribute Label: QUAD_UNIT
Attribute Definition: Index number to 7.5 minute quadrangle
Attribute Definition Source: USGS Quadrangle Index
Attribute Domain Values:
Unrepresentable Domain: Unique numeric sequence
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown

Distribution Information

Distributor
Contact Information
Contact Organization Primary: Federal Emergency Management Agency,
Flood Map Distribution Center

Contact Address

Address Type: mailing address
Address: 6930 (A-F) San Tomas Road
City: Baltimore
State or Province: Maryland
Postal Code: 21227-6227
Contact Voice Telephone: 1-800-358-9616

Contact Instructions: Data requests should include the full name of the community or county and the Flood Insurance Rate Map panel number(s) or the 7.5-minute quadrangle sheet area(s) covered by the request.

Distribution Liability: 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. FEMA will warrant the delivery of this product in a computer-readable format, and will offer appropriate adjustment of credit when the product is determined unreadable by correctly adjusted computer input peripherals, or when the physical medium is delivered in damaged condition. Requests for adjustment of credit must be made within 90 days from the date of this shipment from the ordering site.

Standard Order Process

Non-digital Form: Printed Digital Flood Insurance Rate Maps that match this data set are available from FEMA at the Flood Map Distribution Center, cited above.

Digital Form: DLG

Format Version Number: 3

Format Specification: Optional

Digital Transfer Options

Online Option

Computer Contact Information

Network Address

Network Resource Name:

Dialup Instructions:

Access Instructions:

Online Computer and Operating System:

Offline Option

Offline Media:

Recording Capacity

Recording Density:

Recording Format:

Metadata Reference Information

Metadata Date: 199506

Metadata Contact

Contact Organization Primary: Federal Emergency Management Agency, Mitigation Directorate

Contact Address

Address Type: mailing address
Address: 500 C Street, S.W.
City: Washington
State or Province: District of Columbia
Postal Code: 20472
Contact Voice Telephone:

Metadata Standard Name: FGDC Content Standards for Digital Geospatial
Metadata
Metadata Standard Version: 19940608

Q3-DLG METADATA TEMPLATE

Following is a metadata "template" for the Q3-DLG product prepared and distributed by FEMA. This template is derived from the Federal Geographic Data Committee's draft metadata recommendations, "Content Standards for Digital Geospatial Metadata" (6-8-94).

FGDC-Compliant Metadata for Q3 DLG-3 FILE

Identification Information

Citation

Originator: Federal Emergency Management Agency

Publication Date: 1995

Title: Q3 Flood Data, Sussex County, DE

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Description

Abstract: The Q3 Flood Data are derived from the Flood Insurance Rate Maps (FIRMs) published by the Federal Emergency Management Agency (FEMA). The file is georeferenced to the earth's surface using the Universal Transverse Mercator (UTM) projection and zonal coordinate system (units in meters). The specifications for the horizontal control of Q3 Flood Data files are consistent with those required for mapping at a scale of 1:24000.

Purpose: 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 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 1973 Flood Disaster Protection Act). In addition to the identification of Special Flood Hazard Areas, the risk zones shown on the FIRMs are the basis for the establishment of premium rates for flood coverage offered through the NFIP.

Q3 Flood Data files are intended to convey certain key features from the existing hard copy FIRM to provide users with automated flood risk data.

Edge-matching errors, overlaps and deficiencies in coverage, and similar problems are not corrected during digitizing or post-processing.

These data may be used to locate Special Flood Hazard Areas (SFHAs).

More detailed information may be obtained from the paper FIRM.

Time Period of content

Single Date/Time

Calendar Date: 1995

Currentness Reference: Publication date
Status

Progress: Complete

Maintenance and Update Frequency: Irregular

Spatial Domain

Bounding Coordinates

West Bounding Coordinate: -75.375

East Bounding Coordinate: -75.250

North Bounding Coordinate: 39.000

South Bounding Coordinate: 38.875

Keywords

Theme

Theme Keyword Thesaurus: None

Theme Keyword: FEMA Flood Hazard Zones

Theme Keyword: Q3 Flood Data

Theme Keyword: Q3 DLG

Theme Keyword: Special Flood Hazard Areas

Theme Keyword: Digital Flood Insurance Rate Maps

Place

Place Keyword Thesaurus: None

Place Keyword: Sussex County

Place Keyword: Delaware

Place Keyword: USA

Access Constraints: None

Use Constraints: None. Acknowledgement of the Federal Emergency Management Agency would be appreciated in products derived from these data.

Point of Contact

Contact Organization Primary

Contact Organization: Federal Emergency Management Agency,

Mitigation Directorate

Contact Address

Address Type: mailing address

Address: 500 C Street, S.W.

City: Washington

State or Province: District of Columbia

Postal Code: 20472

Contact Voice Telephone:

Native Data Set Environment: Original data development environment varies. Additional manipulation, topological structuring, attribute encoding, and output in Digital Line Graph (DLG) format were undertaken using ARC/INFO (version 7.0.3) software on SUN SparcStation in a UNIX environment.

Cross Reference

Cross Reference Citation

Originator: Federal Emergency Management Agency

Publication Date: 1995

Title: DFIRM-DLG, Sussex County, DE

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Data Quality Information

Attribute Accuracy

Attribute Accuracy Report: The Q3 Flood Data are countywide vector files derived from the FEMA Flood Insurance Rate Maps (FIRMs). The attribute definitions may be found in the Q3 Flood Data Specifications. Attribute accuracy was tested by manual comparison of source graphic with hardcopy plots and a symbolized display on an interactive computer graphic system. Selected attributes that could not be visually verified were individually queried. In addition, an ARC/INFO Arc Macro Language (AML) software program was applied to the dataset to test the attributes against a master set of valid attributes for the specific data category, and a complete set of valid attribute combinations. (See also Entity Attribute Information).

Logical Consistency Report: Polygon and chain-node topology are present. Certain node-area-line relationships are collected or generated to satisfy topological requirements. Some of these requirements include: lines must begin and end at nodes, lines must connect to each other at nodes, lines do not extend through nodes, left and right areas are defined for each line segment and are consistent throughout the files, and the lines representing the limits of the file neatlines are free of gaps. Tests of logical consistency were performed by ARC/INFO software modules. Check plots were made to test for leaks in all internal polygons.

Completeness Report: Data completeness for Q3 Flood Data files reflect the content of the source graphic. Features may have been eliminated or generalized on the source graphic, due to scale and legibility constraints. 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 analysis of records of river flow, storm tides, and rainfall; information obtained through consultation with the communities: floodplain topographic surveys; and hydrological and hydraulic analysis. Both detailed and approximate analyses are employed. Generally, detailed analyses are used to generate flood risk data only for developed or developing areas of communities. For undeveloped areas where little or no development is expected to occur, FEMA uses approximate analyses to generate flood risk data. Typically, only drainage areas that are greater than 1 square mile are studied.

The Q3 Flood Data coverages may be derived from DFIRM-DLGs, from FIRM-DLGs, from Q3-DLGs, or as stand-alone coverages. In Q3 Flood Data derived from older data sets, certain items may not have been captured or may have been captured differently from the current Q3 Flood Data specifications.

Flood Insurance Rate Maps continually undergo revisions and updates. Some of these revisions are effected by letter (Letter of Map Revision (LOMR), Letter of Map Amendment (LOMA)). Q3 Flood Data may not reflect the most current information or information that is not mappable at the publication scale of the FIRM. To obtain the latest information, contact the address listed under contact address.

Positional Accuracy

Horizontal Positional Accuracy

Horizontal Positional Accuracy Report: Specifications for the digitizing of FIRMs to create the Q3 Flood Data are consistent with those requirements for mapping at a scale of 1:24000. Horizontal control of Q3 Flood Data was established using USGS quadrangle maps at 1:24000 or other standard scales. Users should assess the horizontal positional accuracy of the Q3 Flood Data with regard to the selected base map

sources and the requirements of their application. With increased frequency, large-scale spatial data sets are becoming widely available for computer-based geographic information systems. Q3 Flood Data may be used in combination with other digital spatial data, however, users should be aware that scalar enlargements do not enhance the relative accuracy of the Q3 Flood Data (i.e. 1:24000).

Lineage

Source Information

Source Citation

Originator: Federal Emergency Management Agency
Publication Date: 19830202
Title: Flood Insurance Rate Map, Town of Bethany Beach, DE
Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Other Citation Details: Panels: 1050830001D
Source Scale Denominator:
Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19830202

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM1

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency
Publication Date: 19810116
Title: Flood Insurance Rate Map, Town of Bethel, DE
Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Other Citation Details: Panels: 1000550001A
Source Scale Denominator:
Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19810116

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM2

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency
Publication Date: 19810116
Title: Flood Insurance Rate Map, Town of Blades, DE
Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000310001B

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19810116

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM3

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19810116

Title: Flood Insurance Rate Map, Town of Dagsboro, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000330001B

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19810116

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM4

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19830404

Title: Flood Insurance Rate Map, Town of Dewey Beach, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000560001B

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19830404

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM5

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19850417

Title: Flood Insurance Rate Map, Town of Fenwick Island, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1050840001D

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19850417

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM6

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19810916

Title: Flood Insurance Rate Map, Town of Frankford, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000370001B

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19810916

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM7

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19780224

Title: Flood Insurance Rate Map, Town of Greenwood, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 100039 B

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19780224

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM8

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19830202

Title: Flood Insurance Rate Map, Town of Henelopen Acres, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000530001C

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19830202

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM9

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19810116

Title: Flood Insurance Rate Map, Town of Laurel, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000400001B

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19810116

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM10

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19920803

Title: Flood Insurance Rate Map, City of Lewes, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000410000, 1000410001E, 1000410002E, 1000410003D

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19920803

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM11

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency
Publication Date: 19780714
Title: Flood Insurance Rate Map, City of Milford, DE (Kent & Sussex Counties)

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000420001C

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19780714

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM12

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19780901

Title: Flood Insurance Rate Map, Town of Millsboro, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000430005B

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19780901

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM13

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19810925

Title: Flood Insurance Rate Map, Town of Millville, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000440001B

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19810925

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM14

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency
Publication Date: 19780801
Title: Flood Insurance Rate Map, Town of Milton, DE
Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Other Citation Details: Panels: 1000450005B
Source Scale Denominator:

Type of Source Media: paper
Source Time Period of Content

Single Date/Time

Calendar Date: 19780801

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM15

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency
Publication Date: 19800903
Title: Flood Insurance Rate Map, Town of Ocean View, DE
Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Other Citation Details: Panels: 1000460001B
Source Scale Denominator:

Type of Source Media: paper
Source Time Period of Content

Single Date/Time

Calendar Date: 19800903

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM16

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency
Publication Date: 19920803
Title: Flood Insurance Rate Map, City of Rehoboth Beach, DE
Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Other Citation Details: Panels: 1050860001C
Source Scale Denominator:

Type of Source Media: paper
Source Time Period of Content

Single Date/Time

Calendar Date: 19920803

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM17

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19790201

Title: Flood Insurance Rate Map, City of Seaford, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000480005B

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19790201

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM18

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19910716

Title: Flood Insurance Rate Map, Town of Selbyville, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000380001A

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19910716

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM19

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19920402

Title: Flood Insurance Rate Map, Town of Slaughter Beach, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000500001D

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19920402

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM20

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19850403

Title: Flood Insurance Rate Map, Town of South Bethany, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000510001D

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19850403

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM21

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19770107

Title: Flood Insurance Rate Map, Town of Bridgeville, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 100032 B

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19770107

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM22

Source Contribution: spatial and attribute information
Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19920402

Title: Flood Insurance Rate Map, Sussex County, DE (Unincorporated Areas)

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000290000, 1000290025C, 1000290030D, 1000290035D, 1000290040C, 1000290045D, 1000290075C, 1000290085C,

1000290100C, 1000290105D, 1000290110D, 1000290115D, 1000290120D,
1000290175C, 1000290200C, 1000290205C, 1000290210D, 1000290215C,
1000290220D, 1000290250C, 1000290275C, 1000290280C, 1000290285D,
1000290290C, 1000290295E

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19920402

Source Currentness Reference: Effective date

Source Citation Abbreviation: FIRM23

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19931209

Title: LOMA, Town of South Bethany, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1000510001D

Case No.: 94-03-012A

Type: 218-70

Identifier: 3 North Third Street

Included in Q3?: No

Flooding Source: Atlantic Ocean

Determination: Property In, Structure

Removed

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19931209

Source Currentness Reference: Determination date

Source Citation Abbreviation: LOMC1

Source Contribution: spatial and attribute information

Source Information

Source Citation

Originator: Federal Emergency Management Agency

Publication Date: 19941014

Title: LOMR-F, Town of Fenwick Island, DE

Geospatial Data Presentation Form: map

Publication Information

Publication Place: Washington, DC

Publisher: Federal Emergency Management Agency

Other Citation Details: Panels: 1050840001D

Case No.: 94-03-318A

Type: 218-65

Identifier: Lot 250, subdiv 3, plat book 2,

p45

Included in Q3?: No

Flooding Source: Little Assawoman Bay

Determination: Property In, Structure
Removed

Source Scale Denominator:

Type of Source Media: paper

Source Time Period of Content

Single Date/Time

Calendar Date: 19941014

Source Currentness Reference: Determination date

Source Citation Abbreviation: LOMC2

Source Contribution: spatial and attribute information

Process Step

Process Description: Q3 Flood Data format were produced by either scanning or manually digitizing a hardcopy version of the graphic materials. The scanning process captured the digital data and the resulting raster data were vectorized and attributed on an interactive editing station. Manual digitizing used a digitizing table to capture the digital data; attribution was performed either as the data were digitized or on an interactive edit station after the digitizing was completed. The determination of the production methodology was based on various criteria, including availability of production systems. Four control points corresponding to the four corners of the map were used for registration during manual digitizing. A projective transformation was performed on the coordinates used in the data collection and editing systems to register the digital data to the Universal Transverse Mercator (UTM) grid coordinates. The ARC/INFO coverage of the Q3 Flood Data was generated, and it was also used to create the Q3-DLG file. The Q3 Flood Data were checked for position and attribute accuracy by comparing plots of the digital data to the graphic source and by symbolized display on an interactive computer graphic system. Selected attributes that could not be visually verified were individually queried. In addition, an ARC/INFO Arc Macro Language (AML) software program was applied to the dataset to test the attributes against a master set of valid attributes for the specific data category, and a complete set of valid attribute combinations. Source graphics were revised to reflect updates effected by Letters of Map Correction (Letter of Map Revision (LOMR), Letter of Map Amendment (LOMA)). These revisions were included in the Q3 Flood Data if they were mappable at the publication scale of the source graphic.

Source Used Citation Abbreviation: FIRM1 - FIRM23

Process Date: 1995

Spatial Data Organization Information

Direct Spatial Reference Method: Vector

Point and Vector Object Information

SDTS Terms Description

SDTS Point and Vector Object Type: Point

Point and Vector Object Count: 142

SDTS Point and Vector Object Type: String

Point and Vector Object Count: 482

SDTS Point and Vector Object Type: GT-polygon composed of chains

Point and Vector Object Count: 143

Spatial Reference Information

Horizontal Coordinate System Definition

Planar

Grid Coordinate System
Grid Coordinate System Name: Universal Transverse Mercator
Universal Transverse Mercator
UTM Zone Number: 18
Planar Coordinate Information
Planar Coordinate Encoding Method: Coordinate Pair
Coordinate Representation
Abscissa Resolution: 0.61
Ordinate Resolution: 0.61
Planar Distance Units: meters
Geodetic Model
Horizontal Datum Name: North American Datum of 1927
Ellipsoid Name: Clarke 1866
Semi-major Axis: 6378206.4
Denominator of Flattening Ratio: 294.98

Entity/Attribute Information

Overview Description

Entity and Attribute Overview: In addition to locational and topological information, Q3 Flood Data elements are explicitly encoded using 14 MAJOR/MINOR code pairs which identify characteristics about the attribute items. Each attribute item identifies characteristics about the Flood Hazard Area, COBRA, Floodway, Political Jurisdiction, Quadrangle, or FIRM panel. All polygon data elements are encoded with fourteen feature characteristics.

Entity and Attribute Detail Citation: The FEMA Q3 Flood Data Specifications

contain a detailed description of each attribute code and a reference to other relevant information.

Detailed Description

Number of Attributes in Entity: 28

Entity Type

Entity Type label: Flood Hazard Zones

Entity Type Definition: Flood Hazard Zones are defined in Q3 Flood Data files by 28 items that describe their Flood Hazard Area, COBRA, Floodway, Political Jurisdiction, Quadrangle, or FIRM panel.

Entity Type Definition Source: Printed FIRM Maps, Digital Data Sources, or other information as appropriate.

Attribute

Attribute Label: Flood Hazard Zone

Attribute Definition: Data record comprising 28 data fields.

Attribute Definition Source: Printed FIRM Maps, Digital Data Sources, or other information as appropriate.

Attribute

Attribute Label: MAJOR1

Attribute Definition: 3-digit political area attribute code

Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data Specifications

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value: 410

Attribute Value Accuracy Information

Attribute Measurement Frequency: Unknown

Attribute
Attribute Label: MINOR1
Attribute Definition: 4-digit Political Area attribute code
Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data Specifications
Attribute Domain Values
Enumerated Domain
Enumerated Domain Value: Multiple codes-refer to Q3 Flood Data Specifications document
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown

Attribute
Attribute Label: MAJOR2
Attribute Definition: 3-digit Political Area parameter attribute code:
State FIPS
Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data Specifications
Attribute Domain Values
Enumerated Domain
Enumerated Domain Value: 410
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown

Attribute
Attribute Label: MINOR2
Attribute Definition: State FIPS code
Attribute Definition Source: Federal Information Processing Standard
(FIPS)-NIST
Attribute Domain Values
Codeset Domain: Federal Information Processing Standard (FIPS)
Codeset Source: National Institute of Standards & Technology (NIST)
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown

Attribute
Attribute Label: MAJOR3
Attribute Definition: 3-digit Political Area parameter attribute code:
County or Equivalent FIPS
Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data Specifications
Attribute Domain Values
Enumerated Domain
Enumerated Domain Value: 411
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown

Attribute
Attribute Label: MINOR3
Attribute Definition: County or equivalent FIPS code
Attribute Definition Source: Federal Information Processing Standard
(FIPS)-NIST
Attribute Domain Values
Codeset Domain: Federal Information Processing Standard (FIPS)
Codeset Source: National Institute of Standards & Technology (NIST)
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown

Attribute
Attribute Label: MAJOR4

Attribute Definition: 3-digit Political Area parameter attribute code:
 Community Number
 Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data Specifications
 Attribute Domain Values
 Enumerated Domain
 Enumerated Domain Value: 412
 Attribute Value Accuracy Information
 Attribute Measurement Frequency: Unknown
 Attribute
 Attribute Label: MINOR4
 Attribute Definition: 4-digit Political Area parameter attribute code:
 Community Number
 Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data Specifications
 Attribute Domain Values
 Unrepresentable Domain
 Attribute Value Accuracy Information
 Attribute Measurement Frequency: Unknown
 Attribute
 Attribute Label: MAJOR5
 Attribute Definition: 3-digit Map Panel Area attribute code
 Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data Specifications Attribute Domain Values
 Enumerated Domain
 Enumerated Domain Value: 420
 Attribute Value Accuracy Information
 Attribute Measurement Frequency: Unknown
 Attribute
 Attribute Label: MINOR5
 Attribute Definition: 4-digit Map Panel Area attribute code
 Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data Specifications Attribute Domain Values
 Enumerated Domain
 Enumerated Domain Value: Multiple codes-refer to Q3 Flood Data Specifications document
 Attribute Value Accuracy Information
 Attribute Measurement Frequency: Unknown
 Attribute
 Attribute Label: MAJOR6
 Attribute Definition: 3-digit Map Panel Area attribute parameter code:
 FIRM Panel Number
 Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data Specifications Attribute Domain Values
 Enumerated Domain
 Enumerated Domain Value: 421
 Attribute Value Accuracy Information
 Attribute Measurement Frequency: Unknown
 Attribute
 Attribute Label: MINOR6
 Attribute Definition: 4-digit Map Panel Area attribute parameter code:
 FIRM Panel Number
 Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data Specifications Attribute Domain Values

Unrepresentable Domain: Unique alpha-numeric sequence derived from
FIRMS

Attribute Value Accuracy Information

Attribute Measurement Frequency: Unknown

Attribute

Attribute Label: MAJOR7

Attribute Definition: 3-digit Map Panel Area attribute parameter code:
FIRM Panel Alpha Character (numeric equivalent)

Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data

Specifications Attribute Domain Values

Enumerated Domain

Enumerated Domain Value: 422

Attribute Value Accuracy Information

Attribute Measurement Frequency: Unknown

Attribute

Attribute Label: MINOR7

Attribute Definition: 4-digit Map Panel Area attribute parameter code:
FIRM Panel Alpha Character numeric equivalent

Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data

Specifications Attribute Domain Values

Range Domain

Range Domain Minimum: 0001 [equivalent to "A"]

Range Domain Minimum: 0026 [equivalent to "Z"]

Attribute Value Accuracy Information

Attribute Measurement Frequency: Unknown

Attribute

Attribute Label: MAJOR8

Attribute Definition: 3-digit USGS 7.5-minute Quadrangle Area attribute

Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data

Specifications Attribute Domain Values

Enumerated Domain

Enumerated Domain Value: 420

Attribute Value Accuracy Information

Attribute Measurement Frequency: Unknown

Attribute

Attribute Label: MINOR8

Attribute Definition: 4-digit USGS 7.5-minute Quadrangle Area attribute

Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data

Specifications Attribute Domain Values

Enumerated Domain

Enumerated Domain Value: 0170

Attribute Value Accuracy Information

Attribute Measurement Frequency: Unknown

Attribute

Attribute Label: MAJOR9

Attribute Definition: 3-digit USGS 7.5-minute Quadrangle Area parameter
attribute code: Latitude

Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data

Specifications Attribute Domain Values

Enumerated Domain

Enumerated Domain Value: 426

Attribute Value Accuracy Information

Attribute Measurement Frequency: Unknown

Attribute

Attribute Label: MINOR9

Attribute Definition: 4-digit USGS 7.5-minute Quadrangle Area parameter
attribute code: Latitude (degrees)

Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data

Specifications Attribute Domain Values

Range Domain

Range Domain Minimum: +0000

Range Domain Minimum: +0090

Attribute Value Accuracy Information

Attribute Measurement Frequency: Unknown

Attribute

Attribute Label: MAJOR10

Attribute Definition: 3-digit USGS 7.5-minute Quadrangle Area parameter
attribute code: Longitude

Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data

Specifications Attribute Domain Values

Enumerated Domain

Enumerated Domain Value: 427

Attribute Value Accuracy Information

Attribute Measurement Frequency: Unknown

Attribute

Attribute Label: MINOR10

Attribute Definition: 4-digit USGS 7.5-minute Quadrangle Area parameter
attribute code: Longitude (degrees)

Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data

Specifications Attribute Domain Values

Range Domain

Range Domain Minimum: -0180

Range Domain Minimum: +0180

Attribute Value Accuracy Information

Attribute Measurement Frequency: Unknown

Attribute

Attribute Label: MAJOR11

Attribute Definition: 3-digit USGS 7.5-minute Quadrangle Area parameter
attribute code: Identifier

Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data

Specifications Attribute Domain Values

Enumerated Domain

Enumerated Domain Value: 428

Attribute Value Accuracy Information

Attribute Measurement Frequency: Unknown

Attribute

Attribute Label: MINOR11

Attribute Definition: 4-digit USGS 7.5-minute Quadrangle Area
parameter attribute code: Identifier

Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data

Specifications Attribute Domain Values

Range Domain

Range Domain Minimum: 0011 ["A1" numeric equivalent]

Range Domain Minimum: 0088 ["H8" numeric equivalent]

Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown
Attribute
Attribute Label: MAJOR12
Attribute Definition: 3-digit Flood Hazard Zone Area attribute code
Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data
Specifications Attribute Domain Values
Enumerated Domain
Enumerated Domain Value: 440
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown
Attribute
Attribute Label: MINOR12
Attribute Definition: 4-digit Flood Hazard Zone Area attribute code
Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data
Specifications Attribute Domain Values
Enumerated Domain Value: Multiple codes-refer to Q3 Flood Data
Specifications document
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown
Attribute
Attribute Label: MAJOR13
Attribute Definition: 3-digit Flood Hazard Zone Area attribute code:
Floodway
Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data
Specifications Attribute Domain Values
Enumerated Domain
Enumerated Domain Value: 440
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown
Attribute
Attribute Label: MINOR13
Attribute Definition: 4-digit Flood Hazard Zone Area attribute code:
Floodway
Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data
Specifications Attribute Domain Values
Enumerated Domain
Enumerated Domain Value: Multiple codes-refer to Q3 Flood Data
Specifications document
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown
Attribute
Attribute Label: MAJOR14
Attribute Definition: 3-digit Coastal Barrier Area attribute
Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data
Specifications Attribute Domain Values
Enumerated Domain
Enumerated Domain Value: 440
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown
Attribute
Attribute Label: MINOR14

Attribute Definition: 4-digit Coastal Barrier Area attribute
Attribute Definition Source: FEMA FIRM maps, Q3 Flood Data
Specifications Attribute Domain Values
Enumerated Domain
Enumerated Domain Value: Multiple codes-refer to Q3 Flood Data
Specifications document
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown

Distribution Information

Distributor

Contact Information

Contact Organization Primary: Federal Emergency Management Agency,
Flood Map Distribution Center

Contact Address

Address Type: mailing address
Address: 6930 (A-F) San Tomas Road
City: Baltimore
State or Province: Maryland
Postal Code: 21227-6227
Contact Voice Telephone: 1-800-358-9616

Contact Instructions: Data requests should include the full name of the
community or county and the Flood Insurance Rate Map panel number(s)
or the 7.5-minute quadrangle sheet area(s) covered by the request.

Distribution Liability: 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. FEMA will warrant the
delivery of this product in a computer-readable format, and will
offer appropriate adjustment of credit when the product is
determined unreadable by correctly adjusted computer input peripherals,
or when the physical medium is delivered in damaged condition. Requests
for adjustment of credit must be made within 90 days from the date of
this shipment from the ordering site.

Standard Order Process

Non-digital Form: Printed Digital Flood Insurance Rate
Maps that match this data set are available from FEMA at the
Flood Map Distribution Center, cited above.

Digital Form: DLG

Format Version Number: 3

Format Specification: Optional

Digital Transfer Options

Online Option

Computer Contact Information

Network Address

Network Resource Name:

Dialup Instructions:

Access Instructions:

Online Computer and Operating System:

Offline Option

Offline Media:

Recording Capacity

Recording Density:
Recording Format:

Metadata Reference Information

Metadata Date: 199506

Metadata Contact

Contact Organization Primary: Federal Emergency Management Agency,
Mitigation Directorate

Contact Address

Address Type: mailing address

Address: 500 C Street, S.W.

City: Washington

State or Province: District of Columbia

Postal Code: 20472

Contact Voice Telephone:

Metadata Standard Name: FGDC Content Standards for Digital Geospatial
Metadata

Metadata Standard Version: 19940608

This page intentionally left blank.

APPENDIX A

UTM ZONES

Codes for UTM Coordinate Zones

<u>West Longitude degrees</u>	<u>Zone</u>
180-174	1
174-168	2
168-162	3
162-156	4
156-150	5
150-144	6
144-138	7
138-132	8
132-126	9
126-120	10
120-114	11
114-108	12
108-102	13
102- 96	14
96- 90	15
90- 84	16
84- 78	17
78- 72	18
72- 66	19
66- 60	20

APPENDIX B

GLOSSARY

GLOSSARY OF TERMS: THE DIGITAL FLOOD INSURANCE RATE MAPS

Accuracy - In mapping, conforming with real measurement. Degree of correctness attained in a measurement.

Alphanumeric - Consisting of both letters and numbers, and possibly symbols such as punctuation marks.

ASCII American Standard Code for Information Exchange - A popular standard for

ARC/INFO - An Environmental Systems Research Institute (ESRI) software package that provides a menu and key-in operator interface with commands for generating, editing, and analyzing graphics and data. It is vector geo-relational software.

Area - A level of spatial measurement referring to a two-dimensional defined space.

Area Not Included (ANI) - A political entity, such as an incorporated community, that is excluded from a given Flood Insurance Study (FIS). Major roads and drainage may be shown if the feature continues through the ANI back into the mapped community, but generally the ANI is unmapped.

Artwork - The various layers prepared by cartographic staff which are the components of the FIRM and/or Flood Boundary and Floodway Map (FBFM).

Attribute - Descriptive characteristic or quality of a feature. An attribute value is a measurement assigned to an attribute for a feature instance.

Batch Processing - System by which the computer processes, without operator intervention, all input for an application at one time to produce the desired output, even though input data might have been collected periodically.

Base Map - Map of the community that depicts cultural features (roads, railroad, bridges, dams, and culverts, etc.), drainage features and the corporate limits.

Bit - Abbreviation for binary digit; number that can take only values of 0 or 1.

Block - A group of bytes treated as one unit of information, sometimes called a physical record.

Buffer Zone - An area of specified distance (radius) around a map item or items.

Byte - A group of bits that can be stored and retrieved as a unit.

CAD/CAM - Computer aided design/computer aided manufacturing. Differs from a Geographic Information System in that the system can only create displays. It cannot analyze or process the base data.

Cell - A defined geometric shape that stores data or defines an area that is labeled. The most common mapping cell is a square. Also the basic element of spatial information in raster data structures.

Central Processing Unit - The portion of the computer that controls the hardware (screen, printer, disks, etc.) and completes tasks assigned by a program.

Centroid - A point interior to a polygon whose coordinates are the averages of the corresponding coordinates for all points included in the polygon.

Computer-Aided Drafting and Design (CADD) - Software with the capability of assisting the operator to perform standard engineering and architecture design functions.

Control Point - Any station in a horizontal or vertical control network that is identified in a data set of photograph and used for correlating the data shown in the data set or photograph.

Coordinate Geometry (COGO) - Use of bearings and distances, azimuths and coordinate locations to enter and describe graphic data. Usually used for civil engineering and survey applications.

Coordinate Pair - Set of cartesian coordinates describing the location of a point, line or area (polygon) feature in relation to the common coordinate system of the .

Coordinate System - A particular kind of reference frame or system, such as plane rectangular coordinates or spherical coordinates, which use linear or angular quantities to designate the position of points within that particular reference frame or system, i.e. State Plane, UTM.

_ - A collection of information related by a common fact or purpose.

Management System (DBMS) - A systematic approach to maintaining, accessing, and manipulating files. A DBMS may consist of a single program or a collection of task-specific programs.

Data Capture - Series of operations required to encode data in a computer-readable form (digitizing).

Data Layer - Refers to data having similar characteristics being contained in the same plane or overlay (e.g., roads, rivers). Usually information contained in a data layer is related and is designed to be used with

other layers.

Data Set or Data File - A named collection of logically related data records arranged in a prescribed manner. The physical set of data of one data type being referred to or being used in the context of a data processing operation.

Digital data - Data displayed, recorded, or stored in binary notation.

Digital Elevation Model (DEM) - A file with terrain elevations recorded for the intersection of a fine-grained grid and organized by quadrangle as the digital equivalent of the elevation data on a topographic base map.

Digital Flood Insurance Rate Map - (DFIRM) - The Digital Flood Insurance Rate Map (DFIRM) is comprised of all digital data required to create the hardcopy FIRM. This includes base map information, graphics, text, shading, and other geographic and graphic data required to create the final hardcopy FIRM product to FEMA standards and specifications. This product will normally be held by the TEC in the format of the TEC GIS or CAD system. These data serve the purposes of map design and provide the from which the Digital Line Graph thematic product of the flood risks can be extracted to create the DFIRM-DLG. These products are generally produced in a county-wide format. DFIRMs are subjected to community review and approval and are, therefore, the official basis for implementing the regulations and requirements of the NFIP within the community.

Digital Flood Insurance Rate Map -DLG (DFIRM - DLG) - This product is created by extracting the flood risk thematic data from the DFIRM. The format of this product is the U.S. Geological Survey Digital Line Graph Level 3 Optional format, as described in the FEMA specifications for digital FIRMs. The DFIRM-DLG does not include base map information, nor does it include graphic data required to create a hardcopy FIRM. This product is intended to be the primary means of transferring flood risk data depicted by FIRMs to GISs through a public domain data exchange format. The DFIRM-DLG's are tiled the to U.S. Geological Survey 1:24,000 scale topographic map series.

Digital Line Graph (DLG) - A computer file format for mapping data that provides a topological structure to describe points, lines and polygons. The U.S. Geological Survey Digital Line Graph Level 3 Optional format has been adopted by FEMA for the purposes of the National Flood Insurance Program mapping and engineer requirements. A DLG may contain lists of point coordinates describing boundaries, drainage lines, transportation routes and other linear features, which are organized by USGS quadrangle areas. These data are the digital equivalent of the linear hydrographic and cultural data on a topographic base map. The flood risk thematic layers developed by FEMA layers will fit the quadrangle as an overlay.

Digital Raster Graphic - The Digital Raster Graphic (DRG) is a raster image of a scanned USGS topographic map including the collar information, georeferenced to the earth's surface.

Digitizing - A process of converting an analog image or map into a digital format usable by a computer.

Digital Line Graph Level 3 (DLG3) - Level 3 data files are fully topologically structured and are designed to be integrated into GISs.

Digital Terrain Model (DTM) - A land surface represented in digital form by an elevation grid or lists of three-dimensional coordinates.

Drawing exchange file (DXF) - A commonly used format for the exchange of

graphic data.

Edge Matching - The comparison and graphic adjustment of features to obtain agreement along the edges of adjoining map sheets.

Export - Process of transferring digital data or software from one system to another system.

FIRM-DLG - The FIRM-DLG is a product developed by digitizing and/or scanning the existing hardcopy FIRM to create a thematic overlay of flood risks.

These products differ from the DFIRM as they are not tied to a base map, not used to produce a new version of the hardcopy FIRM, and are not subjected to community review. FIRM-DLGs are intended to faithfully duplicate the existing hardcopy FIRM and provide users with automated flood risk data that is comparable to that they would derive from the hardcopy FIRM. To this end, edge-matching errors, overlaps and underlaps in coverage, and similar problems are not corrected during digitizing or scanning as they are during the DFIRM-DLG production.

Flood Risk Directory (FRID) - Tabular product that identifies flood risks by street address ranges within a community.

Frame - Refers to the size of a FIRM or FBFM panel as follows: "A" (28"x21"); "B" (28"x24"); "C" (28"x28"); "D" (28"x32"); "E" (28"x40").

Geographic Information System (GIS) - System of computer hardware, software, and procedures designed to support the capture, management, manipulation, analysis, modeling, and display of spatially referenced data for solving complex planning and management problems.

Geocoding - Associating either geographic coordinates or grid cell identifiers to data, points, lines, and shapes.

Georeference System - An X,Y or X,Y,Z coordinate system that locates points on the surface of the earth as a reference to points on a map.

Geo-relational - Geometry of the spatial data. Housed separately from its attributes.

GRASS - Geographic Resources Analysis and Support System, GIS software developed by U.S. Army Corps of Engineers, used by several federal agencies.

Grid - 1) A network of uniformly spaced horizontal and perpendicular lines that enclose an area with an associated value assigned. 2) A defined aggregate spatial object.

Horizontal Control - Network of stations of known geographic or grid positions referred to a common horizontal datum, which control the horizontal positions of mapped features with respect to parallels and meridians, or northing and easting grid lines shown on the map.

Import - Process of bringing data or software into a dissimilar system.

Initialize - To set program variables to their starting values, commonly zero, at the beginning of a program.

Island - A closed two-dimensional figure. In a GIS, an island is a unit of land cover lying completely within another land-cover unit.

Kilobyte - A unit of memory representing 1,024 bytes and often designated with the symbol K, as 4Kb or 4 kilobytes. The symbol K is also used to refer to 1,024 words of any specified size.

Layer - Refers to the various "overlays" of data, each of which normally deals with one thematic topic. These overlays are registered to each other by the common coordinate system of the . In GIS, a layer or a theme represent a specific kind of data.

Line - A level of spatial measurement referring to a one-dimensional defined object having a length, direction, and connecting at least two points.

Macro - A series of instructions combined to be executed with a single command.

Menu- A list of options on a screen display or pallet allowing an operator to select the next operations by indicating one or more choices with a pointing device.

Merge - To combine items from two or more similarly ordered sets into one set that is arranged in the same order. In a GIS, to splice separate but adjacent mapped areas into a single data set.

Microstation - An Intergraph software package that provides a menu and key-in operator interface with commands for generating and editing graphics and data.

Modem (MODulator DEModulator) - A translating device that links a terminal to a telecommunication network. An acoustic coupler is a modem that permits a terminal to communicate through the handset of a standard telephone instrument.

Network Analysis - Analytical technique concerned with the relationships between locations on a network such as the calculation of optimal routes through road networks, capacities of network systems, best location for facilities along networks, etc.

Node - A point at which two or more lines meet; called an edge or vertex in graph theory.

Operating System - The master control program that governs the operation of a computer system, running job entry, input/output services, data management, and supervision or housekeeping.

Planimetric Map - Map representing only horizontal positions from features represented; distinguished from a topographic map by the omission of relief in measurable form. A planimetrically accurate map shows accurate horizontal distances between features.

Pixel - Short for "picture element". The smallest discrete element which

makes up an image.

Point - A level of spatial measurement referring to an object that has no dimension.

Point Data - In a vector structure, data consisting of single, distinct X,Y coordinate. In a raster structure, point data is represented by single cells.

Polygon - A two-dimensional figure with three or more sides intersecting at a like number of points. In Geographic Information Systems, an area.

Pre-digital preparation - Includes latitude/longitude horizontal control points on mylars, tied with USGS quads.

Quad (also USGS Quad) - A U.S. Geological Survey (USGS) topographic map; Quad stands for "Quadrangle."

Quality Level 3 Digital Flood Insurance Rate Map (Q3) - The Q3 is developed by scanning and vectorizing the existing hardcopy FIRM to create a raster product suitable for viewing or printing, and a thematic vector overlay of flood risks. Q3s are intended to capture all FIRM data in the raster file, but vectorize only certain features from the existing hardcopy FIRM. These features include the 100-year and 500-year floodplain boundaries, Coastal Barrier Resources Act boundaries, political boundaries, FIRM panel neatlines, and 7.5-minute quadrangle neatlines. Edge-matching errors, overlaps and underlaps in coverage, and similar problems are not corrected during digitizing or scanning and vectorizing. The hardcopy FIRMs from which the Q3 vector data are extracted contain no horizontal control. The specifications for the horizontal control of Q3 vector data are consistent with those required for mapping at the scale of 1:24,000. The horizontal controlling of these data is typically performed by fitting the vectors to a georeferenced raster 7.5-minute quadrangle file. The raster files generated by scanning the hardcopy FIRMs are not georeferenced.

Quality Assurance/Quality Control, (QA/QC) - Intermediate and final review of the FIS and FIRM performed to ensure compliance with FEMA standards.

Raster - The pattern of horizontal, parallel scan lines comprising the image on a CRT screen, on which each scan line consists of segments varying in intensity.

Raster Data - Raster data thus refers to data in the form of parallel scan line segments, grid cells, or pixels.

Read Only Memory (ROM) - A microcircuit containing programs or data that cannot be erased. When new data or programs can replace old ones, the microcircuit is called an EROM, for erasable read only memory, or PROM, for programmable read only memory.

Record - A groups of items in a file treated as a unit. For example, all data

items for a census tract can be grouped as a record and assigned to a single segment of a magnetic tape, or other media file for convenient storage and retrieval.

Scale - A representative fraction of a paper map distance to ground distance.

Example: 1:12,000 is the representative fraction in which one unit of measure on the map is equal to 12,000 of the same units of measure on the ground. FEMA map scales are expressed in a ratio of 1" of map distance equal to a given number of feet on the ground.

Scanner - Any device that systematically decomposes a sensed image or scene into pixels and then records some attribute of each pixel.

Scanning - Process of using an electronic input device to convert analog information such as maps, photographs, overlays, etc., into a digital format usable by a computer.

Standard Interchange Format (SIF) - A commonly used format for the exchange of alphanumeric data.

State Plane Coordinates - A system of X,Y coordinated defined by the USGS for each state. Locations are based on the distance from an origin within each state.

TIFF - Tagged Image File Format - A general purpose multi-platform raster format. TIFF files are not dependent on the presence of any particular hardware or software. Blocks of data within the file are interpreted based on tags that identify them. There are four classes of TIFF files. Class B files are simple single Bit black and white images. Class G files multiple Bit are gray scale images. Class P files are multiple Bit color images where the color values are defined using an indexed color palette. Class R files are full color images where the R, G, and B values are explicitly defined for each pixel within the file. TIFF files can be compressed in several ways including Group 4 and PackBit.

TIGER --Topologically Integrated Geographic Encoding and Referencing File- The nationwide digital of planimetric base map features developed by the U.S. Bureau of the Census for the 1990 Census.

Topology - A branch of geometric mathematics that is concerned with order, continuity, and relative position, rather than actual linear dimensions.

Transformation - Conversion of coordinates between alternative referencing systems.

Triangulated Irregular Network (TIN) - A set of non-overlapping triangles developed from irregularly spaced points. Used to represent the facets of a surface.

UTM Grid - The Universal Transverse Mercator grid, a system of plane coordinates based upon 60 north-south trending zones, each 16 degrees of longitude wide, that circle the globe.

Vector - A directed line segment, with magnitude commonly represented by the coordinates for the pair of end points.

Vector Data - Vector data refers to data in the form of an array with one dimension.

This page intentionally left blank.

GLOSSARY OF ACRONYMS

AML	ARC Macro Language
ANI	Area Not Included
ASCII	American Standard Code of Information Interchange
CAD	Computer Assisted Design (or drafting, or drawing)
CADD	Computer-Aided Drafting and Design
CAM	Computer Assisted Manufacturing
CD ROM	Compact Disk Read-Only Memory
COGO	Coordinate Geometry
CPU	Central Processing Unit
DBMS	Management System
DLG	Digital Line Graph
DMRS	Data Management and Retrieval System
DRG	Digital Raster Graphic
DTM	Digital Terrain Model
DXF	Data Exchange File
FRID	Flood Risk Directory
GIS	Geographic Information System
MODEM	Modular Demodulator
QA/QC	Quality Assurance/Quality Control
Q3	Quality Level 3 digital Flood Insurance Rate Map
RAM	Random Access Memory
RDMS	Relational Management System
ROM	Read Only Memory
SIF	Standard Interchange Format

TIFF Tagged Image File Format

TIGER Topologically Integrated Geographic Encoding and

Refere

UTM Universal Transverse Mercator

WORM Write Once Read Many (CD ROM drive)