Q3 FLOOD DATA
USERS GUIDE

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INTRODUCTION

This Document is intended to provide users of Q3 Flood Data produced by the Federal Emergency Management Agency (FEMA) with an overview of the data files. Additional information in greater depth may be found in the *Q3 Flood Data Specifications*.

This document is presented in five main parts. They are:

1. **Background** - This section provides a history of the National Flood Insurance Program, the automation of its mapping program, and the Q3 Flood Data product history.

2. **Overview of Q3 Flood Data** - This section provides a summary of the contents of the Q3 Flood Data set, the data capture methods used, horizontal control, data sources, data quality, and a comparison of the Q3 Flood Data product to other FEMA digital data products.

3. **Use Policy** - This section presents FEMA's use policy regarding the Q3 Flood Data. It provides separate policy statements for standards of care, Community Rating System, and flood determination uses, and it explains the "Good Faith Standard."

4. **How to Obtain Q3 Flood Data** - This section discusses distribution issues including available file formats, conversion to other GIS formats, map projections for the various formats, file naming conventions, ordering instructions, organization of the Q3 Flood Data, user support, the Q3 Flood Data counties, and FEMA's revision/update plans for the Q3 Flood Data.

5. **Appendices** - These include a sample metadata file, FEMA's DFIRM and Q3 product sheets, a list of the Q3 Flood Data counties, and a glossary of terms and acronyms.

Part 1 BACKGROUND

This section summarizes the history of the National Flood Insurance Program, the automation of its mapping program, and the Q3 Flood Data product.

History of the National Flood Insurance Program

In response to increasing losses from flood hazards nationwide, the Congress of the United States passed the National Flood Insurance Act of 1968 which established the National Flood Insurance Program (NFIP). 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. As a result of the 1972 Hurricane Agnes flooding along the East coast, the 1968 Act was expanded by the Flood Disaster Protection Act of 1973. The 1973 Act added the mandatory purchase requirement and increased the awareness of floodplain mapping needs throughout the country. 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 1% annual chance 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. Uses of the FIRM for insurance activities include enforcement of the mandatory purchase requirement of the 1973 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 million, have resulted in the publication of over 80,000 individual FIRM panels. Typically, 6 to 8 million FIRMs are distributed to users each year by FEMA. Over 2.5 million flood insurance policies have been written through the NFIP, providing coverage against flood loss for over $200 billion in property nationwide.

In addition to initial FISs, 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. Several thousand FIRMs need to be updated per year.

Automation of NFIP Mapping

Developments in the fields of automated cartography and Geographic Information Systems (GIS) technology led FEMA to study the potential of automating NFIP mapping and engineering. After a series of technology assessment and pilot projects, FEMA concluded that existing technology made the automation of NFIP mapping and engineering 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 History

Starting with Hurricane Hugo in 1989, FEMA has attempted to support disaster relief operations with digital FIRMs. Disaster loan closings by the Small Business Administration (SBA), Temporary Housing Programs, and Individual Assistance and Family Grant Programs all require a flood hazard assessment. With automated flood map reading to support these assessments, significant time can be saved and map reading quality improved, thus resulting in faster disaster relief for victims.

More recently, increased funding for post-disaster mitigation activities has led to the extensive use of GIS and digital FIRMs for planning activities. Applications include selection of sites for relocation, prioritizing eligibility for home buyout programs, and identifying repeatedly damaged properties in SFHAs.

To support disaster recovery operations, FEMA has developed specifications for a digital product named the Q3 Flood Data. This product has the advantage of being far less costly in time and resources to produce than FEMA's other digital FIRM product, the Digital Flood Insurance Rate Map (DFIRM).

The Q3 Flood Data product is designed to serve FEMA's Response and Recovery activities as well as flood insurance policy marketing initiatives. This product is designed to allow rapid access to and distribution of digital FIRM data, and is compatible with all existing digital FIRM data already available and underway.

Part 2 OVERVIEW OF Q3 FLOOD DATA

This section summarizes the contents of the Q3 Flood Data set, the data capture methods, the horizontal control, the data sources, and the data quality. Finally, it compares the Q3 Flood Data product to other FEMA digital data products.

Contents

The Q3 Flood Data are developed by scanning the existing hardcopy FIRM to create a raster product suitable for viewing or printing and vectorizing a thematic overlay of flood risks. Q3 Raster FIRM files contain all FIRM data in raster format, but only certain features are contained in the vector Q3 Flood Data files.

Vector Files

The features contained in the vector Q3 Flood Data files include the following:

- 1% and 0.2% annual chance floodplain areas, including Zone V areas, certain floodway areas, and zone designations;
- Coastal Barrier Resources Act (COBRA) areas;
- political areas, including community identification number;
- FIRM panel areas, including panel number and suffix;
- 7.5-minute quadrangle areas; and
- mappable Letters of Map Change (LOMCs).

The vector Q3 Flood Data are contained in one single countywide file, including all incorporated and unincorporated areas of a county. The feature items and attributes are defined in detail in the *Q3 Flood Data Specifications* (Reference 1).

The means for linking other associated NFIP data to these files can be derived from the attributes contained within the files. For instance, the currently effective FIRM panel from FEMA's *Community Status Book* (Reference 2) or the Flood Map Status Information System (FMSIS) can be compared to the FIRM panel information in the Q3 Flood Data files to determine if the Q3 Flood Data files reflect the most current mapping.

The vector Q3 Flood Data files do NOT include the following:

•base map data (streets, etc.);
•base flood elevation lines and elevations;
•cross sections and letter identifiers;
•elevation reference marks and their elevations; and
•floodways if not shown on the FIRM.

Raster files

The Q3 Raster FIRMs are black and white scanned images collected at 400 dots per inch from mylar negatives. The raster files are not georeferenced. Letters of Map Change are not scanned.

Metadata

Each Q3 Flood Data file is accompanied by a metadata file that meets the Federal Geographic Data Committee's guidelines for metadata as contained in the *Content Standards for Digital Geospatial Metadata* (Reference 3). The metadata files are ASCII text files that describe the contents of and sources used for each Q3 Flood Data file. The metadata files may be accessed by users to determine if the vector or raster files meet their needs. In addition, the metadata file provides information specific to the county, including the FIRMs and LOMCs that were digitized.

A sample Q3 Flood Data metadata file is found in Appendix A.

Data Capture Methods

Data capture methods for the vector Q3 Flood Data vary, but include one or more of the following:

•scanning and heads-up (or on-screen) digitizing of the effective FIRMs;
•board (or table) digitizing of the effective FIRMs; and/or
•derivation from already existing digital files such as FIRM-DLGs or DFIRM-DLGs.

All of the above methods have as their end result a file meeting the *Q3 Flood Data Specifications.*

Horizontal Control

The hardcopy FIRMs from which the Q3 Flood Data vector data are extracted contain no horizontal control. The horizontal controlling of these data is typically performed by fitting the vectors to a georeferenced raster or vector 7.5-minute quadrangle file. The horizontal control of Q3 Flood Data vector data is consistent with that required for mapping at the scale of 1:24,000.

Data Sources

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, as well as a thematic vector overlay of flood risks. Q3 Flood Data files contain all FIRM data in the raster file, but only certain features are vectorized.

Sources that reflect updates effected by Letters of Map Change (Letter of Map Revision or Letter of Map Amendment) 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 published scale of the FIRM.

The Q3 Flood Data files may have been derived from DFIRM-DLGs, from FIRM-DLGs, or from FIRMs digitized previously for emergency applications, or they may be newly created files. Q3 Flood Data derived from previously created files may not contain certain items or may contain items that have been captured differently from the current Q3 Flood Data specifications. Items that may not be included in selected Q3 Flood Data files include the following:

•floodways
•COBRA boundaries
•gutters (or zone breaks)
•0.2% annual chance floodplains
•FIRM panel neatlines for unprinted panels
•FIRM panel type attributes

In addition, the horizontal control of older data sets may have been consistent with that required for mapping at the scale of 1:100,000 instead of 1:24,000.

Data Quality

Edge-matching errors, overlaps and underlaps in coverage, and similar problems are not corrected during digitizing or scanning and vectorizing the Q3 Flood Data.

Although FEMA has established no independent quality control/quality assurance program for the Q3 Flood Data, the Q3 Flood Data files are distributed only after they have passed checking routines contained in FEMA's Q3QA Checking Software. The data are accompanied by documentation showing that the files have been evaluated and passed. FEMA has established a User Support mechanism through which any problems found with the data can be identified and channeled back to FEMA for resolution.

Attribute Accuracy

The attribute accuracy of the Q3 Flood Data vector files is tested by manual comparison of source FIRM with hardcopy plots and a symbolized display on an interactive computer graphic system. Selected attributes that cannot be visually verified are individually queried. In addition, FEMA's Q3QA Checking Software program is applied to the dataset to test the attributes against a master set of valid attributes and attribute combinations.

Topology

Polygon and line topology are present in Q3 Flood Data vector files. Certain node-area-line relationships are collected or generated to satisfy topological requirements, including the following:

•lines begin and end at nodes;
•lines 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.

Logical Consistency

Tests of logical consistency are performed by ARC/INFO software modules. Check plots are made to test for closure of all internal polygons.

Completeness

Data completeness for Q3 Flood Data files reflect the content and completeness of the source FIRM. Features may have been eliminated or generalized on the FIRM due to scale and legibility constraints.

The flood risk data presented in the FIRM are developed only for communities participating in the NFIP for use in insurance rating and for floodplain management. Flood hazard areas are determined using the following sources:

•statistical analysis of records of river flow, storm tides, and rainfall;
•information obtained through consultation with the communities;
•floodplain topographic surveys; and
•hydrologic and hydraulic analyses.

Both detailed and approximate hydrologic and hydraulic analyses are employed. Generally, detailed analyses are used to generate flood risk data 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 one square mile are studied.

Currentness

Flood Insurance Rate Maps continually undergo revisions and updates. Some of these revisions are effected by letter (Letter of Map Change). Q3 Flood Data may not reflect the most current information or information that is not mappable at the published scale of the FIRM. Users who need these updates should contact FEMA to obtain them in hardcopy format.

To determine if the Q3 Flood Data files contain the most current map information, users may compare the FIRM publication date contained in the source information section of the Q3 Flood Data metadata file to the date listed in FEMA's Community Status Book for that community. If the Community Status Book lists a more recent map date, users may contact FEMA's Map Service Center to obtain copies of the newer maps.

Comparison to Other FEMA Digital Data Products

FEMA distributes digital FIRM data in two basic product levels. These are the DFIRM (including the hardcopy DFIRM and the DFIRM-DLG) and the Q3 Flood Data. These two products differ in their contents, quality, and intended use.

Digital Flood Insurance Rate Map (DFIRM)

The 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 (see the *Standards for Digital Flood Insurance Rate Maps,* Reference 4). This product serves the purpose of map design and provides the database 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 countywide 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 digitizing DFIRMs are consistent with those required for mapping at a scale of 1:24,000, or larger.

With increasing frequency, highly detailed large scale digital mapping is becoming available. DFIRMs may utilize this 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.

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, insurance marketing, and mortgage portfolio review. It does not provide base flood elevation information; thus, it has limited application for engineering analysis, particularly for site design or rating of flood insurance policies for properties located within SFHAs.

Q3 Flood Data are developed by scanning the existing hardcopy FIRM to create a raster product suitable for viewing or printing and vectorizing a thematic overlay of flood risks. Vector Q3 Flood Data files contain only certain features from the existing hardcopy FIRM.

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 determining whether features are within or outside the SFHA.

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 judgment 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.

The following two tables (Figures 1 and 2) compare the contents of the DFIRM and Q3 Flood Data files. Additional information regarding these two data sets is contained in FEMA's product sheets, which may be found in Appendix B.

DFIRM and Q3 Flood Data Contents

	DFIRM	DFIRM-DLG	Vector Q3 Flood Data	Q3 Raster FIRM
1% Annual Chance Floodplain Boundary	√	√	√	√
0.2% Annual Chance Floodplain Boundary	√	√	√	√
Floodway	√	√	Some	Some
Gutters (Zone Breaks)	√	√	√	√
Political Boundaries	√	√	√	√
FIRM Neatline	√	√	√	√
Quad Neatline		√	√	
LOMCs	√	√	√	
COBRAs	√	√	Outer boundary only	√
BFEs	√	√		√
Cross Sections	√	√		Some
ERMs	√	√		√
Base Map (Streets, etc.)	√			√

Figure 1

DFIRM and Q3 Flood Data Characteristics

	DFIRM	DFIRM-DLG	Vector Q3 Flood Data	Q3 Raster FIRM
Tiling	FIRM panel	7.5' quad	County	FIRM panel
Number of Thematic Layers	---	4	1	1
Line Attributes?	---	Yes	No	No
Area Attributes?	---	Yes	Yes	No
Attributes	---	Variable	Fixed	---
Recommended Buffer	---	50'	250'	---
Horizontal Accuracy	FIRM scale	FIRM scale	1:24,000	Unknown
Engineering Use Recommended?	Yes	Yes	No	Yes
Community Review?	Yes	Yes	No	Yes

Figure 2

Part 3 USE POLICY

This section presents FEMA's use policy regarding the Q3 Flood Data. It provides separate policy statements for standards of care, Community Rating System, and flood determination uses and also explains the "Good Faith Standard."

Standards of Care

For the development of applications using the Q3 Flood Data, the user has the following responsibilities:

•to obtain and review the technical documentation of the Q3 Flood Data, with particular regard to the limitation of this product;

•to establish minimum mapping and accuracy standards required for the proposed application;

•to obtain digital base maps and ancillary data of appropriate scale, resolution, and accuracy to support the applications; and

•to determine whether Q3 Flood Data is based on the currently effective FIRM panel.

The quality, accuracy, and reasonableness of any applications developed using Q3 Flood Data are the sole responsibility of the end-user.

The Q3 Flood Data product is not suitable for engineering applications such as detailed site design and development plans, Letters of Map Change, or submittal of FIRM Map Revisions.

Community Rating System

For the purposes of the Community Rating System (CRS), Q3 Flood Data may be used in the following ways:

•for calculations of SFHA areas and similar applications that require geographic calculations and measures;

•for partial fulfillment of GIS provisions per the provisions of Section 440, "Flood Data Maintenance," as described in the *National Flood Insurance Program Community Rating System Coordinator's Manual* (Reference 5); and

•for development of "notification" lists of potentially flood-prone properties, per the provisions of Section 330; and

•for partial fulfillment of credits for the performance of flood determinations, when performed in conformance with guidelines for determination presented below.

Flood Determinations

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:

•The end user has obtained a source of address or property location data and combined it with Q3 Flood Data in a manner that conforms to the Standards of Care outlined above.

•The end user has made no determinations as to the flood prone status of a property that is within 250 feet of an SFHA boundary. This requirement is due to the accuracy, resolution, and variations of the Q3 Flood Data relative to the source FIRMs.

•The end user has verified that the Q3 Flood Data FIRM panel and suffix conform to the panel and suffix of the currently effective FIRM.

•The end user has confirmed the availability of flood insurance in the community for which the determination is to be offered.

•The end user has confirmed the zone and BFE with the source FIRM or DFIRM for properties located within 250 feet of the SFHA boundary or within the SFHA.

The "Good Faith Standard"

The mandatory flood insurance purchase requirements of the 1973 National Flood Insurance Act apply only when a structure is located in an SFHA in a community that is participating in the NFIP. Such a structure must be insurable under the rules of the NFIP. Even though a portion of the land parcel upon which the structure is planned or built may be within an SFHA, the mandatory purchase requirement is triggered only if the structure itself is within an SFHA.

The compliance of lenders with the mandatory flood insurance purchase requirements of the 1973 Act is based on the "good faith standard." Determining whether a structure is located in an area of special flood hazard requires the examination of the location of the structure in relationship to the areas of special flood hazard as shown on the applicable FIRM. The good faith standard recognizes

that despite FEMA's best efforts to make the FIRMs as useful as possible, the descriptions of SFHA areas, as depicted by some maps, may, in some instances, not be clear enough to permit lenders to decide with certainty and precision whether or not property that is the security for a loan or that is the subject of financial assistance is located in such an area. It is for this reason that FEMA has recommended a "good faith standard."

The good faith standard requires lenders to exercise "due diligence and good faith" in determining the location of a property that is the subject of a loan relative to areas of special flood hazards as shown on a FIRM. This guidance is further explained, with additional information on the 1973 Act, in the publication *Mandatory Purchase of Flood Insurance Guidelines* (Reference 6).
When determinations are being made by lenders, or firms or individuals retained by lenders to assist in these endeavors, collateral data in addition to the FIRM is frequently required. FIRMs do not include all roads within communities, nor do they depict address, property boundary, or structure location information. As a result, determinations frequently can be made only by using an ancillary source of data, such as a land parcel map, to determine the location of a property on the FIRM.

Digital address range data, land parcel, and structure information is available for many communities across the nation. Using these digital data and GIS technology, it is possible to make determinations relative to the 1973 Act and meet the good faith standard. However, the lenders must assure that due diligence and good faith are exercised in application of digital mapping systems to make determinations. Because of both the increased complexity and analytical capabilities of GIS, assuring compliance with the good faith standard may require additional effort relative to use of paper maps.

A prime concern is to assure that the accuracy of the digital base map and structure location data are appropriate for use with the chosen digital FIRM data set (DFIRM or Q3 Flood Data) to make determinations relative to the 1973 Act. The concern for accuracy of the ancillary data used with DFIRMs should increase in direct proportion to the relative closeness of the property under analysis to the SFHA boundary. Thus, lenders might not find it prudent to use digital data at the 1:100,000 scale as the primary source of information upon which to make a determination regarding a property located within 250 feet of an SFHA. Such caveats should be carefully considered when U.S. Bureau of the Census TIGER data are used as the source from which property determinations will be made.

In some instances, GIS technology will enable the use of large-scale land parcel, topographic, structure, and other information, with digital FIRM data to make determinations. GIS technology allows maps to be created at any user-specified scale. Enlargement of scales does allow for precise determinations to be made. However, precise measurements are not inherently accurate. Accuracy can only be assessed from an appraisal of the quality of source data.

SFHA boundary information conveyed by Q3 Flood Data files was developed to overlay USGS 7.5-

minute topographic maps at a scale of 1:24,000. Thus, Q3 Flood Data cannot be assumed to have an accuracy of better than 40 feet. Due to other limitations, FIA recommends that determinations using GIS technology and Q3 Flood Data generally be made only when structures are located 250 or more feet outside an SFHA boundary. In cases where the structure is within 250 feet of the SFHA or inside the SFHA, data such as the BFE determined from a FIS flood profile and the surveyed lowest adjacent grade and/or lowest floor elevation should be used to make a determination.

Prudence may require that a more conservative margin than 250 feet be used to determine the need for ancillary data to support a GIS determination. Terrain variations, the nature of flood hazards in the area, and the quality of all digital data being used to make the determination should be considered when establishing the need for collecting survey and flood profile data.

Part 4 HOW TO OBTAIN Q3 FLOOD DATA

This section discusses distribution issues including available file formats, conversion to other GIS formats, map projections for the various formats, file naming conventions, ordering instructions, organization of the Q3 Flood Data, user support, the Q3 Flood Data counties, and FEMA's revision/update plans for the Q3 Flood Data.

Available Formats

Q3 Flood Data products are provided in a public domain data transfer format (DLG and Tagged Image File Format or TIFF) as well as proprietary formats (ARC/INFO and MapInfo).

Although the Federal government supports several digital geospatial data models, the DLG standard of the U.S. Geological Survey (USGS) offers one of the more efficient and widely recognized data formats for the distribution of vector data. DLG-3 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 is in the process of developing specifications for data sets in the Spatial Data Transfer Standard (SDTS), and when this effort is complete, it is expected that SDTS will replace DLG as FEMA's distributed public domain vector format.

ARC/INFO and MapInfo files are used by FEMA as internal working files; however, due to the popularity and utility of these two formats, they are distributed as well.

Figure 3 provides a comparison of the three vector file formats in which the Q3 Flood Data are available.

The Q3 Raster FIRMs are distributed in TIFF format compressed using CCITT, a universally-accepted digital data structure.

File Format Comparison

	DLG	ARC/INFO	MapInfo
# Attributes	28	21	21
Projection/coordinate system	UTM/meters	Geographic/decimal degrees	Geographic/decimal degrees
Horizontal datum	NAD27	NAD27	NAD27
Maximum # Points/polygon	4000	4000	4000
Precision	Single	Double	Single
Format	Digital Line Graph	ARC/INFO export file	MapInfo Native Table Format

Figure 3

Conversion to Other GIS Formats

The Q3 Flood Data files are distributed by FEMA in three formats: DLG, ARC/INFO, and MapInfo. These formats may be accessed directly by the following GIS software packages:

•ARC/INFO
•ArcView
•ArcCAD
•MapInfo
•GENAMAP

Some GIS software packages, such as MicroStation, provide utilities to convert DLG files into their own proprietary format. The MicroStation MGE GIS Translator module provides a utility for converting DLG files to MicroStation format (design files). Other CADD and GIS software packages, such as AutoCAD, may require the Q3 Flood Data to be translated using a third party utility.

Projections

FEMA utilizes the UTM projection and coordinate systems for its DLG vector data (both Q3-DLGs and DFIRM-DLGs). The geographic projection and coordinate system are used for the production of Q3 Flood Data in ARC/INFO and MapInfo formats. The Q3 Raster FIRMs are not georeferenced.

File Naming

In order to provide for efficient file retrieval and indexing, a standardized naming convention for Q3 Flood Data was established. The following convention is DOS compatible and allows for the unique identification of any county area of digital FIRM data. All file names are in lower case letters. The vector file names are:

cssccc

where:

c = the character 'c'
ss =State FIPS code (numeric code)
ccc =County FIPS code (numeric code)

and:
an extension specific to the file format follows.

Q3 Raster FIRM image files are stored within directories for each community, named by the State FIPS code and Community Identification Number of the community (e.g., 061234). Each image file is named using its four digit map panel number followed by the map panel suffix and the extension .tif (e.g., 0004b.tif). Panel number 0000 is used for the map index panels.

One metadata file will accompany each county file. The metadata files will be named using the same naming convention as the other files, with the exception of the letter "m" at the end (e.g., c06048.dlm, c06048m, c06048.tfm).

Ordering Instructions

The Q3 Flood Data will be distributed through FEMA's Internet server and on CD-ROM as the files become available.

Internet users may download data, along with associated data standards and metadata files by accessing FEMA's Map Service Center through FEMA's World Wide Web site. FEMA's address is **http://www.fema.gov**. Approximate download times based on file sizes will be included at this site. FEMA's *Community Status Book* is also available to Internet users through FEMA's Web site.

CD-ROMs containing the Q3 Flood Data files may be ordered from FEMA's Map Service Center at the following address:

Map Service Center
6730 Santa Barbara Court
Baltimore, Maryland 21227-5832
Telephone: 1-800-358-9616

FEMA's *Community Status Book* and hardcopy map products are also available from FEMA's Map Service Center at the above address. Requests for maps and map products should include the full name of the community or county and the FIRM panel number(s) covered by the request.

The following table (Figure 4) presents the available formats of the Q3 Flood Data products and their sources.

Q3 Flood Data Product Formats

	Vector Q3 Flood Data	Q3 Raster FIRM	DFIRM-DLG	Paper FIRM	LOMC
Internet	√ (future)		√ (future)		
CD-ROM	√	√ (future)	√ (future)		
Hardcopy				√	√

Figure 4

Data Organization

Q3 Flood Data are grouped by logical geographic areas by state for distribution on CD-ROM. An indexing scheme has been developed for each state, and the indexing scheme will be available on the Internet. Each CD-ROM contains all three file formats of each dataset and associated metadata. Small states may be grouped together on one CD-ROM. Large states will be split onto several CD-ROMs. In addition, an edition numbering scheme will be developed in order to track the currency of the Q3 Flood Data CD-ROMs.

The data documentation, including this document and the *Q3 Flood Data Specifications* will als be available.

User Support

User support for the Q3 Flood Data products is available through FEMA's Map Service Center's toll-free number at 1-800-358-9616. Any questions about the data or problems found with the data can be directed to that number. Any problems that require FEMA's attention will be channeled back to FEMA for resolution.

Q3 Flood Data Counties

Approximately 880 counties were chosen for the initial phase of Q3 Flood Data production to provide maximum digital FIRM coverage in areas having high population density or growth, significant risk (from hurricanes or other flood events), or a history of repetitive losses. A listing of the counties targeted for Q3 Flood Data production is provided in Appendix C.

All Q3 Flood Data production is scheduled to be completed by July 1996. FEMA has planned to release the data in increments as the data are completed. Each release will include all FEMA supported formats of the same geographic area (i.e. DLG, ARC/INFO, and MapInfo files for the same counties). All metadata for these files will be posted on the Internet as the data are released.

Revisions/Updates

Revisions to Q3 Flood Data sets will not begin until after all initial data capture is completed. The maintenance phase of Q3 Flood Data production provides for a review of all Q3 counties on the six month anniversary of their initial data capture to determine their update needs.

One exception to this procedure is when an effective DFIRM is issued prior to the six month anniversary date. When DFIRMs become effective, Q3 Flood Data will be generated from the DFIRM files as part of the DFIRM issuance procedures.

APPENDIX A

SAMPLE METADATA FILE

SAMPLE METADATA FILE

METADATA FILE NAME: c12005m
Q3 ARC/INFO COVERAGE: C12005_Q3
METADATA DATE: 19951120

FGDC-Compliant Metadata for Q3 ARC/INFO Coverage

Identification Information
Citation
Originator: Federal Emergency Management Agency
Publication Date: 1995
Title: Q3 Flood Data, BAY COUNTY, FLORIDA
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 geographic projection and the decimal degree coordinate system. 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 Flood Disaster Protection Act, which "requires the purchase of flood insurance by property owners who are being assisted by Federal programs or by Federally supervised, regulated, or insured agencies or institutions in the acquisition or improvement of land facilities located or to be located in identified areas having special flood hazards" (Section 2 (b) (4) of the 1973 Flood Disaster Protection Act). In addition to the identification of Special Flood Hazard Areas (SFHAs), the risk zones shown on the FIRMs are the basis for the establishment of premium rates for flood insurance coverage offered through the NFIP.
Q3 Flood Data files convey certain key features from the existing hard copy FIRM. Edge-matching errors, overlaps and deficiencies in coverage, and similar problems are not corrected during digitizing or post-processing. The Q3 Flood Data files are intended to provide users with automated flood risk data that may be used to locate 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: -86.000
East Bounding Coordinate: -85.375
North Bounding Coordinate: 30.625

South Bounding Coordinate: 29.875
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: BAY COUNTY
Place Keyword: FLORIDA
Place Keyword: USA
Access Constraints: None
Use Constraints:
None. Acknowledgment of FEMA 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: 1-800-358-9616
Native Data Set Environment:
Original data development environment varies. Additional manipulation, topological structuring, and attribute encoding were undertaken using ARC/INFO software on a UNIX-based workstation.
Cross Reference
Cross Reference Citation
Originator: Federal Emergency Management Agency
Publication Date: 1995
Title: Q3 DLG, BAY COUNTY, FL
Publication Information
Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Cross Reference Citation
Originator: Federal Emergency Management Agency
Publication Date: 1995
Title: Q3 Raster FIRM, BAY COUNTY, FL
Publication Information
Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Cross Reference Citation

Originator: Federal Emergency Management Agency
Publication Date: 1995
Title: EFIRM, BAY COUNTY, FL
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 FEMA 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 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 the following: 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 reflects 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 hydrologic 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 one square mile are studied.

Q3 Flood Data may be derived from DFIRM-DLGs, from FIRM-DLGs, or from FIRMs digitized previously for emergency applications, or they may be newly created files. 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. In some cases, preliminary FIRM data have been included in the Q3 Flood Data files. These data have been provided to the community for review and comment, and may be subject to change before their final publication date.

In addition, in some cases, areas designated as Flood Prone Areas on maps prepared by USGS and FIA have been included in the Q3 Flood Data files. These areas were delineated based on available information on past floods and are described by a unique attribute code that distinguishes them from areas of 1% annual chance flooding derived from FIRMs.

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 distributor.

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.

Lineage
Source Information
Source Citation
Originator: Federal Emergency Management Agency
Publication Date: 19920602
Title: Flood Insurance Rate Map, BAY COUNTY (Unincorporated Areas), FL
Geospatial Data Presentation Form: map
Publication Information
Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Other Citation Details
Panel: 1200040000
Panel: 1200040010D
Panel: 1200040015D
Panel: 1200040016D
Panel: 1200040017D
Panel: 1200040018D
Panel: 1200040019D
Panel: 1200040050D
Panel: 1200040075D
Panel: 1200040100D
Panel: 1200040125D
Panel: 1200040131D
Panel: 1200040132D
Panel: 1200040135D
Panel: 1200040139D
Panel: 1200040145D
Panel: 1200040150D
Panel: 1200040165E
Panel: 1200040175D
Panel: 1200040180D
Panel: 1200040185D
Panel: 1200040190D
Panel: 1200040195D
Panel: 1200040205D
Panel: 1200040210D
Panel: 1200040215D
Panel: 1200040220D
Panel: 1200040230D
Panel: 1200040233D

Panel: 1200040234D
Panel: 1200040235D
Panel: 1200040240D
Panel: 1200040241D
Panel: 1200040242D
Panel: 1200040243D
Panel: 1200040244D
Panel: 1200040252D
Panel: 1200040255D
Panel: 1200040256D
Panel: 1200040260D
Panel: 1200040261D
Panel: 1200040275D
Panel: 1200040285D
Panel: 1200040305D
Panel: 1200040310D
Panel: 1200040320D
Panel: 1200040330D
Panel: 1200040335D
Panel: 1200040340E
Panel: 1200040345E
Panel: 1200040351D
Panel: 1200040352D
Panel: 1200040353D
Panel: 1200040354D
Panel: 1200040357D
Panel: 1200040358D
Panel: 1200040360D
Panel: 1200040362D
Panel: 1200040364D
Panel: 1200040365D
Panel: 1200040366D
Panel: 1200040368D
Panel: 1200040370D
Panel: 1200040390D
Panel: 1200040400D
Panel: 1200040405E
Panel: 1200040410E
Panel: 1200040430E
Panel: 1200040435D
Panel: 1200040440E
Panel: 1200040445E
Panel: 1200040455D
Panel: 1200040460D
Panel: 1200040465D
Panel: 1200040470D
Panel: 1200040485E

Panel: 1200040505E
Panel: 1200040510E
Source Scale Denominators: 6000, 12000, 24000
Type of Source Media: paper
Source Time Period of Content
Single Date/Time
Calendar Date: 19920602
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: 19860430
Title: Flood Insurance Rate Map, CITY OF CALLAWAY, FL
Geospatial Data Presentation Form: map
Publication Information
Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Other Citation Details
Panel: 1200050000
Panel: 1200050001C
Panel: 1200050002C
Source Scale Denominator: 6000
Type of Source Media: paper
Source Time Period of Content
Single Date/Time
Calendar Date: 19860430
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: 19801205
Title: Flood Insurance Rate Map, TOWN OF CEDAR GROVE, FL
Geospatial Data Presentation Form: map
Publication Information
Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Other Citation Details
Panel: 1200060001B
Source Scale Denominator: 12000
Type of Source Media: paper
Source Time Period of Content
Single Date/Time
Calendar Date: 19801205

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: 19860430
Title: Flood Insurance Rate Map, CITY OF LYNN HAVEN, FL
Geospatial Data Presentation Form: map
Publication Information
Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Other Citation Details
Panel: 1200090005D
Source Scale Denominator: 12000
Type of Source Media: paper
Source Time Period of Content
Single Date/Time
Calendar Date: 19860430
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: 19860103
Title: Flood Insurance Rate Map, CITY OF MEXICO BEACH, FL
Geospatial Data Presentation Form: map
Publication Information
Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Other Citation Details
Panel: 1200100001D
Source Scale Denominator: 6000
Type of Source Media: paper
Source Time Period of Content
Single Date/Time
Calendar Date: 19860103
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: 19860103
Title: Flood Insurance Rate Map, CITY OF PANAMA CITY BEACH, FL
Geospatial Data Presentation Form: map

Publication Information
Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Other Citation Details
Panel: 1200130000
Panel: 1200130005C
Panel: 1200130010C
Source Scale Denominator: 12000
Type of Source Media: paper
Source Time Period of Content
Single Date/Time
Calendar Date: 19860103
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: 19860103
Title: Flood Insurance Rate Map, CITY OF PANAMA CITY, FL
Geospatial Data Presentation Form: map
Publication Information
Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Other Citation Details
Panel: 1200120000
Panel: 1200120005D
Panel: 1200120010D
Source Scale Denominator: 12000
Type of Source Media: paper
Source Time Period of Content
Single Date/Time
Calendar Date: 19860103
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: 19860430
Title: Flood Insurance Rate Map, CITY OF PARKER, FL
Geospatial Data Presentation Form: map
Publication Information
Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Other Citation Details
Panel: 1200110001B

Source Scale Denominator: 6000
Type of Source Media: paper
Source Time Period of Content
Single Date/Time
Calendar Date: 19860430
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: 19810817
Title: Flood Insurance Rate Map, CITY OF SPRINGFIELD, FL
Geospatial Data Presentation Form: map
Publication Information
Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Other Citation Details
Panel: 1200140001B
Source Scale Denominator: 6000
Type of Source Media: paper
Source Time Period of Content
Single Date/Time
Calendar Date: 19810817
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: 19860306
Title: 102, CITY OF SPRINGFIELD, FL
Geospatial Data Presentation Form: map
Publication Information
Publication Place: Washington, DC
Publisher: Federal Emergency Management Agency
Other Citation Details:
Panel: 1200140001B
Case No.:
Type: 102
Identifier: WATSON BAYOU TRIBUTARY
Included in Q3?: Yes
Flooding Source: WATSON BAYOU TRIBUTARY
Determination: SUSPENDED
Type of Source Media: Paper
Source Time Period of content
Single Date/Time

Calendar Date: 19860306
Source Currentness Reference: Determination Date
Source Citation Abbreviation: LOMC1
Source Contribution: spatial and attribute information
Process Step
Process Description: Q3 Flood Data were produced by either scanning and vectorizing or manually digitizing a hardcopy version of the graphic materials. The scanning and vectorization process captured the digital data as raster data that were vectorized and attributed on an interactive editing station. The manual digitizing process 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 to nine control points per FIRM panel 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. An ARC/INFO coverage of the Q3 Flood Data was generated and was 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 source graphic and by symbolized display on an interactive computer 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 Change (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. Once final, the ARC/INFO coverage was projected into a geographic grid system, using decimal degree latitude and longitude coordinates and then converted into an ARC/INFO Export file and MapInfo native table files. In addition, the ARC/INFO coverage in UTM coordinates was converted into a Digital Line Graph file. All final files were checked for logical consistency and completeness.
Source Contribution: spatial and attribute information
Source Used Citation Abbreviation: FIRM1-FIRM10, LOMC1
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: 2011
SDTS Point and Vector Object Type: String
Point and Vector Object Count: 4791
SDTS Point and Vector Object Type: GT-polygon composed of chains
Point and Vector Object Count: 2012

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 Flood 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" contains 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: FEMA FIRM, digital data sources, or other information as appropriate.

Attribute

Attribute Label

Attribute Definition: Polygon attribute table comprising 21 data fields.

Attribute Definition Source: FEMA FIRM, digital data sources, or other information as appropriate.

Attribute

Attribute Label: AREA

Attribute Definition: Area of polygon/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 polygon/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 FIRM
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
Attribute Domain Values
Unrepresentable Domain: Code comprises a unique alpha-numeric sequence based on FIPS and FEMA Community and Panel identification numbers
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown
Attribute
Attribute Label: QUAD

Attribute Definition: USGS 7.5-minute quadrangle identifier
Attribute Definition Source: USGS 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
Attribute Domain Values
Enumerated Domain
Enumerated Domain Value: Multiple Codes--refer to "Q3 Flood Data Specifications"
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown
Attribute
Attribute Label: FLOODWAY
Attribute Definition: Channel, river, or watercourse reserved for flood discharge.
Attribute Definition Source: FEMA FIRM
Attribute Domain Values:
Enumerated Domain
Enumerated Domain Value: Multiple Codes--refer to "Q3 Flood Data Specifications"
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown
Attribute
Attribute Label: COBRA
Attribute Definition: Undeveloped Coastal Barrier Area
Attribute Definition Source: FEMA FIRM
Attribute Domain Values
Enumerated Domain
Enumerated Domain Value: Multiple Codes--refer to "Q3 Flood Data Specifications"
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 SFHA or within area not included
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"
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
Attribute Domain Values
Enumerated Domain
Enumerated Domain Value: Multiple Codes--refer to "Q3 Flood Data Specifications"
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

Attribute Domain Values
Unrepresentable Domain: Code comprises a unique alpha-numeric sequence based on FIPS and FEMA Community and Panel identification numbers
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown
Attribute
Attribute Label: PANEL
Attribute Definition: FIRM Panel number and suffix
Attribute Definition Source: FEMA FIRM
Attribute Domain Values
Unrepresentable Domain: Unique sequence based on FEMA FIRM
Attribute Value Accuracy Information
Attribute Measurement Frequency: Unknown
Attribute
Attribute Label: LAT
Attribute Definition: Origin latitude (degrees) of 7.5-minute 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-minute 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, Map Service Center
Contact Address

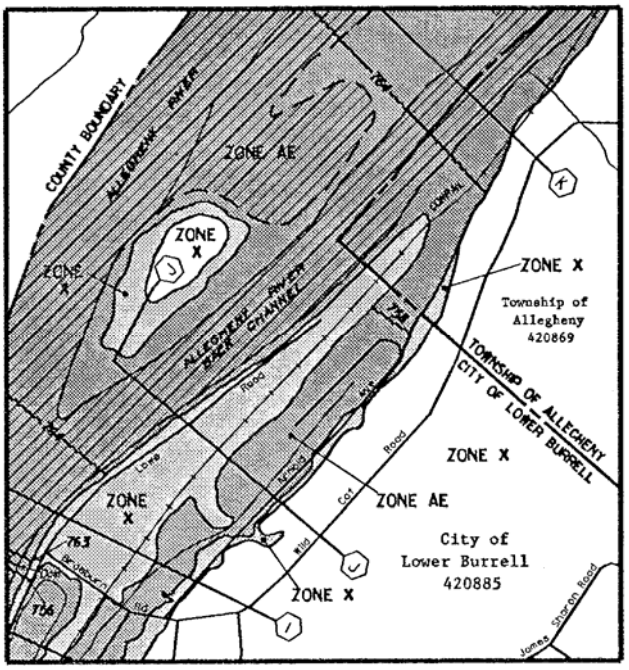
Address Type: mailing address
Address: 6730 Santa Barbara Court
City: Baltimore
State or Province: Maryland
Postal Code: 21227-5832
Contact Voice Telephone: 1-800-358-9616
Contact Instructions: Data requests should include the full name of the community or county and the Flood Insurance Rate Map panel 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 Flood Insurance Rate Maps that match this data set are available from FEMA at the Map Service Center, cited above.
Digital Form: ARC/INFO Export File Format
Digital Transfer Options
Online Option
Computer Contact Information
Network Address
Network Resource Name: http://www.fema.gov
Dialup Instructions:
Access Instructions
Online Computer and Operating System:
Offline Option
Offline Media: CD-ROM
Recording Format: ISO 9660

Metadata Reference Information
Metadata Date: 19951120
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: 1-800-358-9616
Metadata Standard Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata Standard Version: 19940608

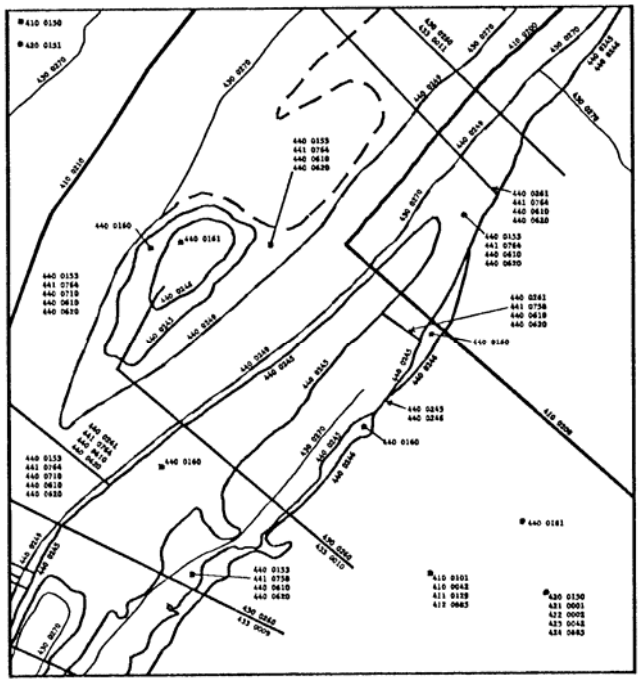
APPENDIX B

FEMA PRODUCT SHEETS

Digital Flood Insurance Rate Map-Digital Line Graph (DFIRM-DLG)



Hardcopy DFIRM



Graphic Image of a DFIRM-DLG

The Digital Flood Insurance Rate Map-Digital Line Graph (DFIRM-DLG) is a database created from the Digital Flood Insurance Rate Map (DFIRM). The DFIRM is comprised of all digital data required to create the hardcopy Flood Insurance Rate Map (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. DFIRMs are subject to community review and approval and are, therefore, the official basis for implementing the regulations and requirements of the National Flood Insurance Program within the community.

The DFIRM is generally produced in a countywide format, where all flood hazards for the county and the incorporated communities are shown on one set of maps. The DFIRM-DLG is created by extracting the flood risk thematic data from the DFIRM. The format of this product is the U.S. Geological Survey (USGS) 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 Geographic Information Systems (GIS) through a public domain data exchange format. Communities whose digital base mapping files were utilized as the base map for the DFIRM will find that they may easily use the DFIRM-DLG files for all determination and enforcement regulations. The DFIRM-DLGs are tiled to the USGS 1:24,000 scale topographic map series. Specifications for the digitizing of DFIRMs are consistent with those required for mapping at the scale of 1:24,000, or better.

Specifications

The DFIRM-DLG has the following specifications:

• The source material for the DFIRM-DLG includes the hardcopy paper FIRM, new engineering data, and digital base mapping.

• The digital flood hazard information is georeferenced to the true ground coordinates of the digital base map used to produce the DFIRM. The DFIRM base map may have been obtained from the community, if available. If a digital base is not available from the community, the best available base map source is used. The digital information is provided in the Universal Transverse Mercator projection.

• The digital data captured from the hardcopy paper FIRM consist of FEMA hydrography, flood hazard zones, base (1% annual chance) flood elevations, cross-section locations, and elevation reference marks.

• All lines and area features in DLG files are encoded with one or more seven-digit attribute codes that provide the user with detailed information about the features. A copy of the *Standards for Digital Flood Insurance Rate Maps*, FIA-21, October 1993, which details these attribute codes, may be obtained from the address below.

• The DFIRM-DLG does not contain any base map information.

• The DFIRM-DLGs are available on CD-ROMs compatible with ISO 9660 standards.

Attribute and Positional Accuracy

The DFIRM-DLG is intended to have a horizontal positional accuracy that is consistent with the National Map Accuracy Standards for mapping at a scale of 1:24,000. It should not be assumed that the DFIRM-DLG has a horizontal accuracy of better than 40 feet.

Uses of a DFIRM-DLG

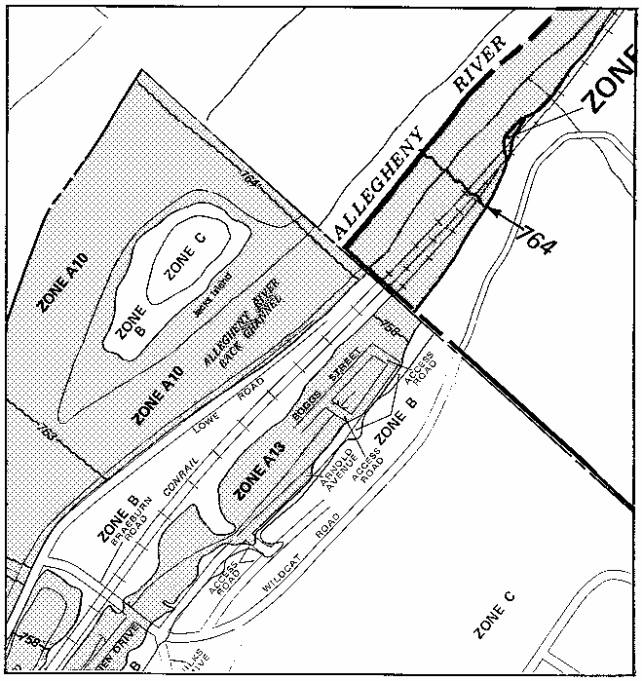
Many commercially available GIS software packages allow the direct conversion of DLG data into vector data usable within the GIS environment. Third party conversion software is also available that will convert DLG data to other proprietary GIS formats not supported with their own conversion software.

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 FIRMs 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 remain unchanged. The DFIRM-DLG, when coupled with digital base map files such as TIGER data or USGS-DLGs, or the local community digital base, can be used in a GIS to determine whether a structure is located within a Special Flood Hazard Area and would require the mandatory purchase of flood insurance. It should be noted that if a structure is determined to be within or near the Special Flood Hazard Area by using a GIS, and a different base map source was used to generate the hardcopy DFIRM, this determination should be confirmed by referencing the printed hardcopy DFIRM. The DFIRM-DLG may also be used for engineering and planning studies.

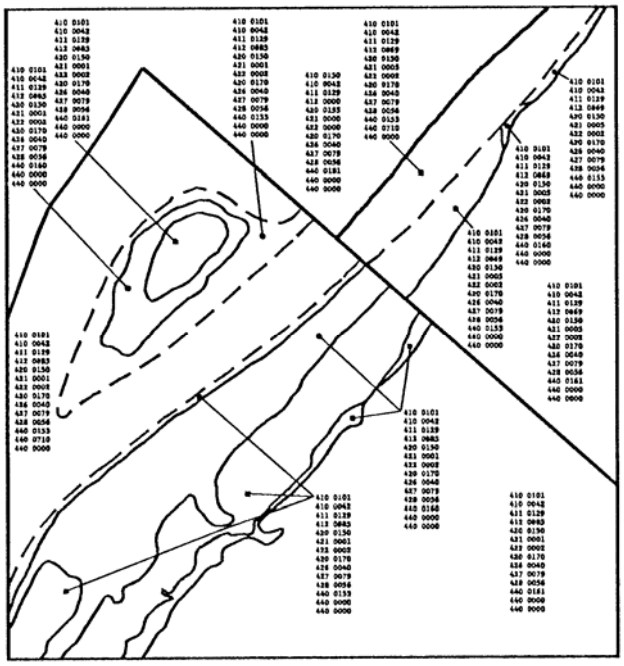
Information

To ask questions, submit comments, or inquire about the availability of data sets, contact:

FEMA
Map Service Center
6730 Santa Barbara Court
Baltimore, MD 21227-5832
1-800-358-9616



Scanned Raster Image of FIRM



Graphic Image of Q3 Flood Data

Q3 Flood Data (Q3)

The Q3 Flood Data product was developed to satisfy the need for a digital product that could be used to make in/out determinations and support the needs of a publish-on-demand system. This digital product is a suite of three products that includes raster Flood Insurance Rate Map (FIRM) files, vector FIRM files, and all accompanying metadata. These products are designed to allow rapid access to and distribution of digital FIRM data and to be compatible with all existing digital Flood Insurance Rate Map data already available and underway at FEMA.

The USGS Digital Line Graph Level 3 Optional format was adopted by FEMA as the appropriate data model for the distribution and storage of vector Q3 Flood Data. In addition, FEMA utilizes the vector Q3 Flood Data in ARC/INFO and MapInfo formats as internal working files; due to the popularity and utility of these two proprietary formats, they are distributed as well.

The Q3 Flood Data are developed by scanning the existing hardcopy FIRM to create a raster product suitable for viewing or printing, as well as vectorizing a thematic overlay of flood risks. Q3 Flood

Data contain all FIRM data in the raster file, but only certain features are vectorized. The vectorized features include the floodplain boundaries for 1% and 0.2% annual chance floods; political boundaries; FIRM panel neatlines; 7.5-minute quadrangle neatlines; mappable Letters of Map Change; and may include floodways. 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 vector Q3 Flood Data are extracted contain no horizontal control. 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 horizontal controlling of these data is typically performed by fitting the vectors to a georeferenced 7.5-minute quadrangle file. The raster files generated by scanning the hardcopy FIRMs are not georeferenced. 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 digital flood-risk data suitable for in/out queries.

The vector Q3 Flood Data will be available through FEMA's Internet server and on CD-ROM as the files become available. Internet users may download these data, along with associated data standards and metadata files, by accessing FEMA's Map Service Center through their World Wide Web site at **http://www.fema.gov**. It is anticipated that Q3 Flood Data will be supplied on CD-ROM at a nominal cost. A listing of counties for which Q3 Flood Data will be developed can be obtained from the Internet address or the address listed below.

Comments on the specifications in this fact sheet are invited from the user community.

Specifications

The Q3 Flood Data have the following specifications:

• All FIRM data will be captured in a raster file.

• The floodplain boundaries for the 1% and 0.2% annual chance floods, political boundaries, FIRM panel neatlines, USGS 7.5-minute quadrangle neatlines, and mappable Letters of Map Change will be vectorized.

• The vector Q3 Flood Data are contained in one single countywide file that includes all incorporated and unincorporated areas of a county.

• Horizontal control of the vectorized features will typically be performed by fitting the vectors to a georeferenced USGS 7.5-minute quadrangle file.

• The raster files generated by scanning the hardcopy FIRMs are not georeferenced.

• The specifications for the Q3 Flood Data are consistent with the specifications outlined in the *Standards for Digital Flood Insurance Rate Maps*, FIA-21, dated October 1993.

Attribute and Positional Accuracy

The vector Q3 Flood Data are intended to have a horizontal positional accuracy that is consistent with the National Map Accuracy Standards for mapping at a scale of 1:24,000. It should not be assumed that the vector Q3 Flood Data have a horizontal accuracy of better than 40 feet.

Uses of Q3 Flood Data

The Q3 Flood Data are designed to serve the needs of FEMA for both disaster response activities, as well as other National Flood Insurance Program flood insurance activities. The data are designed to answer basic in/out queries and questions about the location of the Special Flood Hazard Area, but do not provide Base Flood Elevations. The Q3 Flood Data may be used in various GIS applications with the caveat that sound judgement must be used in interpreting the Q3 Flood Data. 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.

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 FIRMs to a digital format does not inherently improve the engineering quality of the product. Many of the 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 remain unchanged. **It should be noted that if a structure is determined to be within or near the Special Flood Hazard Area by using a GIS, this determination must be confirmed by referencing the printed hardcopy FIRM.** Q3 Flood Data are not designed to be used for engineering studies.

Information

To ask questions, submit comments, or inquire about the availability of data sets, contact:

FEMA
Map Service Center
6730 Santa Barbara Court
Baltimore, MD 21227-5832
1-800-358-9616

APPENDIX C

LIST OF
Q3 FLOOD DATA COUNTIES

LIST OF Q3 FLOOD DATA COUNTIES

State	County	FIPS
AL	BALDWIN	01003
AL	BARBOUR	01005
AL	CALHOUN	01015
AL	COFFEE	01031
AL	CONECUH	01035
AL	COVINGTON	01039
AL	DALE	01045
AL	DALLAS	01047
AL	GENEVA	01061
AL	HENRY	01067
AL	HOUSTON	01069
AL	JEFFERSON	01073
AL	MADISON	01089
AL	MOBILE	01097
AL	MONTGOMERY	01101
AL	MORGAN	01103
AL	RANDOLPH	01111
AL	RUSSELL	01113
AL	TUSCALOOSA	01125
AK	FAIRBANKS-NORTH STAR	02090
AZ	COCHISE	04003
AZ	COCONINO	04005
AZ	GILA	04007
AZ	GREENLEE	04011
AZ	MARICOPA	04013
AZ	MOHAVE	04015
AZ	NAVAJO	04017
AZ	PIMA	04019
AZ	SANTA CRUZ	04023
AZ	YAVAPAI	04025
AR	BAXTER	05005
AR	BENTON	05007
AR	CRAIGHEAD	05031
AR	CRITTENDEN	05035

AR	CROSS	05037	
AR	DESHA	05041	
AR	GREENE	05055	
AR	JEFFERSON	05069	
AR	MISSISSIPPI	05093	
AR	MONROE	05095	
AR	PHILLIPS	05107	
AR	PULASKI	05119	
AR	SEBASTIAN	05131	
CA	ALAMEDA	06001	
CA	AMADOR	06005	
CA	CALAVERAS	06009	
CA	COLUSA	06011	
CA	CONTRA COSTA		06013
CA	DEL NORTE	06015	
CA	EL DORADO	06017	
CA	FRESNO	06019	
CA	GLENN	06021	
CA	HUMBOLDT	06023	
CA	IMPERIAL	06025	
CA	INYO	06027	
CA	KERN	06029	
CA	KINGS	06031	
CA	LAKE	06033	
CA	LASSEN	06035	
CA	LOS ANGELES	06037	
CA	MADERA	06039	
CA	MARIN	06041	
CA	MARIPOSA	06043	
CA	MENDOCINO	06045	
CA	MERCED	06047	
CA	MODOC	06049	
CA	MONO	06051	
CA	MONTEREY	06053	
CA	NAPA	06055	
CA	NEVADA	06057	
CA	ORANGE	06059	
CA	PLACER	06061	
CA	PLUMAS	06063	
CA	RIVERSIDE	06065	

CA	SACRAMENTO	06067	
CA	SAN BENITO	06069	
CA	SAN BERNARDINO		06071
CA	SAN JOAQUIN	06077	
CA	SAN LUIS OBISPO		06079
CA	SAN MATEO	06081	
CA	SANTA BARBARA		06083
CA	SANTA CLARA	06085	
CA	SANTA CRUZ	06087	
CA	SHASTA	06089	
CA	SIERRA	06091	
CA	SISKIYOU	06093	
CA	SOLANO	06095	
CA	SONOMA	06097	
CA	STANISLAUS	06099	
CA	SUTTER	06101	
CA	TEHAMA	06103	
CA	TRINITY	06105	
CA	TULARE	06107	
CA	TUOLUMNE	06109	
CA	VENTURA	06111	
CA	YOLO	06113	
CA	YUBA	06115	
CO	ADAMS	08001	
CO	ARAPAHOE	08005	
CO	BOULDER	08013	
CO	DENVER	08031	
CO	EL PASO	08041	
CO	JEFFERSON	08059	
CO	LARIMER	08069	
CO	MORGAN	08087	
CO	PUEBLO	08101	
CT	FAIRFIELD	09001	
CT	HARTFORD	09003	
CT	LITCHFIELD	09005	
CT	MIDDLESEX	09007	
CT	NEW HAVEN	09009	
CT	NEW LONDON	09011	
CT	TOLLAND	09013	
DE	KENT	10001	

DE	NEW CASTLE		10003	
DE	SUSSEX		10005	
FL	ALACHUA		12001	
FL	BAKER		12003	
FL	BAY	12005		
FL	BREVARD		12009	
FL	BROWARD		12011	
FL	CALHOUN		12013	
FL	CHARLOTTE		12015	
FL	CITRUS		12017	
FL	CLAY		12019	
FL	COLLIER		12021	
FL	DADE		12025	
FL	DESOTO		12027	
FL	DUVAL		12031	
FL	ESCAMBIA		12033	
FL	FLAGLER		12035	
FL	FRANKLIN		12037	
FL	GADSDEN		12039	
FL	GLADES		12043	
FL	GULF		12045	
FL	HARDEE		12049	
FL	HENDRY		12051	
FL	HERNANDO		12053	
FL	HIGHLANDS		12055	
FL	HILLSBOROUGH			12057
FL	HOLMES		12059	
FL	INDIAN RIVER		12061	
FL	JACKSON		12063	
FL	LAKE		12069	
FL	LEE	12071		
FL	LEON		12073	
FL	LEVY		12075	
FL	LIBERTY		12077	
FL	MANATEE		12081	
FL	MARION		12083	
FL	MARTIN		12085	
FL	MONROE		12087	
FL	NASSAU		12089	
FL	OKALOOSA		12091	

FL	ORANGE	12095
FL	OSCEOLA	12097
FL	PALM BEACH	12099
FL	PASCO	12101
FL	PINELLAS	12103
FL	POLK	12105
FL	PUTNAM	12107
FL	ST. JOHNS	12109
FL	ST. LUCIE	12111
FL	SANTA ROSA	12113
FL	SARASOTA	12115
FL	SEMINOLE	12117
FL	SUMTER	12119
FL	SUWANNEE	12121
FL	VOLUSIA	12127
FL	WAKULLA	12129
FL	WALTON	12131
FL	WASHINGTON	12133
GA	BAKER	13007
GA	BIBB	13021
GA	BRYAN	13029
GA	BUTTS	13035
GA	CALHOUN	13037
GA	CAMDEN	13039
GA	CARROLL	13045
GA	CHATHAM	13051
GA	CLAYTON	13063
GA	COBB	13067
GA	COWETA	13077
GA	CRAWFORD	13079
GA	CRISP	13081
GA	DECATUR	13087
GA	DEKALB	13089
GA	DOOLY	13093
GA	DOUGHERTY	13095
GA	FAYETTE	13113
GA	FLOYD	13115
GA	FULTON	13121
GA	GLYNN	13127
GA	HENRY	13151

GA	HOUSTON	13153
GA	JONES	13169
GA	LAMAR	13171
GA	LEE	13177
GA	LIBERTY	13179
GA	MCINTOSH	13191
GA	MACON	13193
GA	MERIWETHER	13199
GA	MILLER	13201
GA	MITCHELL	13205
GA	MONROE	13207
GA	MONTGOMERY	13209
GA	NEWTON	13217
GA	PEACH	13225
GA	PIKE	13231
GA	POLK	13233
GA	PULASKI	13235
GA	QUITMAN	13239
GA	RICHMOND	13245
GA	ROCKDALE	13247
GA	SEMINOLE	13253
GA	SPALDING	13255
GA	STEWART	13259
GA	SUMTER	13261
GA	TALBOT	13263
GA	TELFAIR	13271
GA	TERRELL	13273
GA	TOOMBS	13279
GA	TROUP	13285
GA	UPSON	13293
GA	WHEELER	13309
GA	WILCOX	13315
GA	WORTH	13321
HI	HAWAII	15001
HI	HONOLULU	15003
HI	KAUAI	15007
HI	MAUI	15009
ID	ADA	16001
ID	BLAINE	16013
IL	ADAMS	17001

IL	ALEXANDER		17003	
IL	CALHOUN		17013	
IL	COOK		17031	
IL	DEKALB		17037	
IL	DUPAGE		17043	
IL	GRUNDY		17063	
IL	HENRY		17073	
IL	JERSEY		17083	
IL	KANE		17089	
IL	KANKAKEE		17091	
IL	LAKE		17097	
IL	LIVINGSTON		17105	
IL	MCHENRY		17111	
IL	MADISON		17119	
IL	PEORIA		17143	
IL	PIKE	17149		
IL	ROCK ISLAND		17161	
IL	ST. CLAIR		17163	
IL	WILL	17197		
IL	WINNEBAGO		17201	
IN	ALLEN		18003	
IN	BARTHOLOMEW			18005
IN	BOONE		18011	
IN	CLARK		18019	
IN	DELAWARE		18035	
IN	ELKHART		18039	
IN	FRANKLIN		18047	
IN	HAMILTON		18057	
IN	JACKSON		18071	
IN	KOSCIUSKO		18085	
IN	LAKE		18089	
IN	LA PORTE		18091	
IN	MARION		18097	
IN	VANDERBURGH			18163
IN	VIGO		18167	
IA	BLACK HAWK		19013	
IA	JOHNSON		19103	
IA	LINN	19113		
IA	POLK		19153	
IA	POTTAWATTAMIE			19155

IA	SCOTT	19163
IA	STORY	19169
IA	WOODBURY	19193
KS	BARTON	20009
KS	BUTLER	20015
KS	DOUGLAS	20045
KS	JOHNSON	20091
KS	RENO	20155
KS	SALINE	20169
KS	SEDGWICK	20173
KS	SHAWNEE	20177
KY	BELL	21013
KY	BOYD	21019
KY	CAMPBELL	21037
KY	CASEY	21045
KY	DAVIESS	21059
KY	FAYETTE	21067
KY	FLOYD	21071
KY	FRANKLIN	21073
KY	GREENUP	21089
KY	HARDIN	21093
KY	HARLAN	21095
KY	JEFFERSON	21111
KY	JOHNSON	21115
KY	KENTON	21117
KY	MARTIN	21159
KY	OLDHAM	21185
KY	PERRY	21193
KY	PIKE	21195
LA	ACADIA	22001
LA	ALLEN	22003
LA	ASCENSION	22005
LA	ASSUMPTION	22007
LA	AVOYELLES	22009
LA	BOSSIER	22015
LA	CALCASIEU	22019
LA	CAMERON	22023
LA	CATAHOULA	22025
LA	CONCORDIA	22029
LA	EAST BATON ROUGE	22033

LA	FRANKLIN	22041	
LA	GRANT	22043	
LA	IBERIA	22045	
LA	IBERVILLE	22047	
LA	JEFFERSON	22051	
LA	LAFAYETTE	22055	
LA	LAFOURCHE	22057	
LA	LIVINGSTON	22063	
LA	MADISON	22065	
LA	NATCHITOCHES		22069
LA	ORLEANS	22071	
LA	OUACHITA	22073	
LA	PLAQUEMINES	22075	
LA	POINTE COUPEE	22077	
LA	RAPIDES	22079	
LA	ST. BERNARD	22087	
LA	ST. CHARLES	22089	
LA	ST. JAMES	22093	
LA	ST. JOHN THE BAPTIST		22095
LA	ST. LANDRY	22097	
LA	ST. MARTIN	22099	
LA	ST. MARY	22101	
LA	ST. TAMMANY	22103	
LA	TANGIPAHOA	22105	
LA	TERREBONNE	22109	
LA	VERMILION	22113	
ME	CUMBERLAND	23005	
ME	KENNEBEC	23011	
ME	OXFORD	23017	
ME	PENOBSCOT	23019	
ME	YORK		23031
MD	ALLEGANY	24001	
MD	ANNE ARUNDEL		24003
MD	BALTIMORE	24005	
MD	CALVERT	24009	
MD	CARROLL	24013	
MD	CECIL		24015
MD	DORCHESTER	24019	
MD	FREDERICK	24021	
MD	HARFORD	24025	

MD	PRINCE GEORGES		24033
MD	QUEEN ANNES	24035	
MD	ST. MARYS	24037	
MD	SOMERSET	24039	
MD	TALBOT	24041	
MD	WASHINGTON	24043	
MD	WORCESTER	24047	
MD	BALTIMORE CITY		24510
MA	BARNSTABLE	25001	
MA	BERKSHIRE	25003	
MA	BRISTOL	25005	
MA	DUKES	25007	
MA	ESSEX		25009
MA	HAMPDEN	25013	
MA	HAMPSHIRE	25015	
MA	MIDDLESEX	25017	
MA	NANTUCKET	25019	
MA	NORFOLK	25021	
MA	PLYMOUTH	25023	
MA	SUFFOLK	25025	
MA	WORCESTER	25027	
MI	BAY	26017	
MI	BERRIEN	26021	
MI	CALHOUN	26025	
MI	CLINTON	26037	
MI	DELTA	26041	
MI	INGHAM	26065	
MI	IOSCO		26069
MI	ISABELLA	26073	
MI	KENT		26081
MI	LIVINGSTON	26093	
MI	MACOMB	26099	
MI	MONROE	26115	
MI	MUSKEGON	26121	
MI	OAKLAND	26125	
MI	SAGINAW	26145	
MI	ST. CLAIR	26147	
MI	WAYNE	26163	
MN	CARVER	27019	
MN	CLAY		27027

MN	DAKOTA	27037	
MN	HENNEPIN	27053	
MN	MARSHALL	27089	
MN	MOWER	27099	
MN	OLMSTED	27109	
MN	POLK		27119
MN	ROSEAU	27135	
MN	WINONA	27169	
MS	CLAIBORNE	28021	
MS	DESOTO	28033	
MS	FORREST	28035	
MS	HANCOCK	28045	
MS	HARRISON	28047	
MS	HINDS		28049
MS	ITAWAMBA	28057	
MS	JACKSON	28059	
MS	LAUDERDALE	28075	
MS	LEE	28081	
MS	LEFLORE	28083	
MS	LOWNDES	28087	
MS	MADISON	28089	
MS	PEARL RIVER	28109	
MS	RANKIN	28121	
MS	WARREN	28149	
MS	WASHINGTON	28151	
MS	YAZOO	28163	
MO	BOONE	29019	
MO	BUCHANAN	29021	
MO	CAPE GIRARDEAU		29031
MO	CLAY		29047
MO	COLE	29051	
MO	FRANKLIN	29071	
MO	GREENE	29077	
MO	JACKSON	29095	
MO	JEFFERSON	29099	
MO	PLATTE	29165	
MO	ST. CHARLES	29183	
MO	ST. LOUIS	29189	
MO	ST. LOUIS CITY	29510	
MT	CASCADE	30013	

MT	CUSTER	30017	
NE	CASS		31025
NE	DODGE	31053	
NE	DOUGLAS	31055	
NE	HALL		31079
NE	LANCASTER	31109	
NE	PLATTE		31141
NE	SAUNDERS	31155	
NE	SARPY		31153
NV	CLARK	32003	
NV	WASHOE	32031	
NV	CARSON CITY	32510	
NH	CHESHIRE	33005	
NH	HILLSBOROUGH		33011
NH	ROCKINGHAM	33015	
NJ	ATLANTIC	34001	
NJ	BERGEN	34003	
NJ	BURLINGTON	34005	
NJ	CAMDEN	34007	
NJ	CAPE MAY	34009	
NJ	CUMBERLAND	34011	
NJ	ESSEX		34013
NJ	GLOUCESTER	34015	
NJ	HUDSON	34017	
NJ	HUNTERDON	34019	
NJ	MERCER	34021	
NJ	MIDDLESEX	34023	
NJ	MONMOUTH	34025	
NJ	MORRIS	34027	
NJ	OCEAN	34029	
NJ	PASSAIC	34031	
NJ	SALEM	34033	
NJ	SOMERSET	34035	
NJ	SUSSEX	34037	
NJ	UNION		34039
NJ	WARREN	34041	
NM	CURRY	35009	
NM	DONA ANA	35013	
NM	OTERO	35035	
NY	ALBANY	36001	

NY	ALLEGANY	36003	
NY	BROOME	36007	
NY	CATTARAUGUS		36009
NY	CAYUGA	36011	
NY	CHAUTAUQUA		36013
NY	CHEMUNG	36015	
NY	CHENANGO	36017	
NY	COLUMBIA	36021	
NY	CORTLAND	36023	
NY	DELAWARE	36025	
NY	DUTCHESS	36027	
NY	ERIE	36029	
NY	GENESEE	36037	
NY	HERKIMER	36043	
NY	JEFFERSON	36045	
NY	LIVINGSTON	36051	
NY	MADISON	36053	
NY	MONROE	36055	
NY	NASSAU	36059	
NY	NEW YORK	36061	
NY	NIAGARA	36063	
NY	ONEIDA	36065	
NY	ONONDAGA	36067	
NY	ONTARIO	36069	
NY	ORANGE	36071	
NY	OSWEGO	36075	
NY	RENSSELAER	36083	
NY	ROCKLAND	36087	
NY	SARATOGA	36091	
NY	STEUBEN	36101	
NY	SUFFOLK	36103	
NY	SULLIVAN	36105	
NY	TIOGA		36107
NY	TOMPKINS	36109	
NY	ULSTER	36111	
NY	WESTCHESTER	36119	
NC	BEAUFORT	37013	
NC	BRUNSWICK	37019	
NC	BUNCOMBE	37021	
NC	CABARRUS	37025	

NC	CAMDEN	37029	
NC	CARTERET	37031	
NC	CRAVEN	37049	
NC	CURRITUCK	37053	
NC	DARE		37055
NC	DAVIDSON	37057	
NC	DURHAM	37063	
NC	EDGECOMBE	37065	
NC	FORSYTH	37067	
NC	GUILFORD	37081	
NC	HYDE		37095
NC	LENOIR	37107	
NC	MECKLENBURG		37119
NC	NEW HANOVER		37129
NC	ONSLOW	37133	
NC	PAMLICO	37137	
NC	PASQUOTANK	37139	
NC	PENDER	37141	
NC	PITT	37147	
NC	ROBESON	37155	
NC	WAKE	37183	
NC	WATAUGA	37189	
NC	WAYNE	37191	
ND	BARNES	38003	
ND	BENSON	38005	
ND	BOTTINEAU	38009	
ND	CASS		38017
ND	CAVALIER	38019	
ND	GRAND FORKS	38035	
ND	GRIGGS	38039	
ND	NELSON	38063	
ND	RAMSEY	38071	
ND	ROLETTE	38079	
ND	STEELE	38091	
ND	TOWNER	38095	
ND	WALSH	38099	
ND	WARD	38101	
OH	ATHENS	39009	
OH	BELMONT	39013	
OH	BUTLER	39017	

OH	CLERMONT	39025	
OH	CRAWFORD	39033	
OH	CUYAHOGA	39035	
OH	ERIE	39043	
OH	FAIRFIELD	39045	
OH	FRANKLIN	39049	
OH	GREENE	39057	
OH	HAMILTON	39061	
OH	HANCOCK	39063	
OH	LAKE		39085
OH	LICKING	39089	
OH	LUCAS		39095
OH	MEDINA	39103	
OH	MEIGS		39105
OH	MONTGOMERY		39113
OH	OTTAWA	39123	
OH	STARK		39151
OH	SUMMIT	39153	
OH	TRUMBULL	39155	
OH	WASHINGTON	39167	
OK	CANADIAN	40017	
OK	CLEVELAND	40027	
OK	COMANCHE	40031	
OK	CREEK		40037
OK	GARFIELD	40047	
OK	GRADY	40051	
OK	KAY	40071	
OK	OKLAHOMA	40109	
OK	OSAGE	40113	
OK	OTTAWA	40115	
OK	PAYNE	40119	
OK	TULSA		40143
OR	BENTON	41003	
OR	CLACKAMAS	41005	
OR	CLATSOP	41007	
OR	COLUMBIA		41009
OR	COOS	41011	
OR	DESCHUTES	41017	
OR	DOUGLAS	41019	
OR	GILLIAM		41021

OR	HOOD RIVER		41027
OR	JACKSON	41029	
OR	JEFFERSON		41031
OR	JOSEPHINE	41033	
OR	LANE		41039
OR	LINCOLN	41041	
OR	LINN		41043
OR	MARION	41047	
OR	MORROW		41049
OR	MULTNOMAH		41051
OR	POLK		41053
OR	SHERMAN		41055
OR	TILLAMOOK	41057	
OR	UMATILLA		41059
OR	UNION		41061
OR	WALLOWA		41063
OR	WASCO		41065
OR	WASHINGTON	41067	
OR	WHEELER		41069
OR	YAMHILL	41071	
PA	ADAMS	42001	
PA	ALLEGHENY	42003	
PA	ARMSTRONG	42005	
PA	BEAVER	42007	
PA	BEDFORD	42009	
PA	BERKS		42011
PA	BLAIR		42013
PA	BRADFORD	42015	
PA	BUCKS	42017	
PA	BUTLER	42019	
PA	CAMBRIA	42021	
PA	CARBON	42025	
PA	CHESTER	42029	
PA	CLARION	42031	
PA	CLEARFIELD	42033	
PA	CLINTON	42035	
PA	COLUMBIA	42037	
PA	CRAWFORD	42039	
PA	CUMBERLAND	42041	

PA	DAUPHIN	42043	
PA	DELAWARE	42045	
PA	ERIE	42049	
PA	FAYETTE	42051	
PA	FRANKLIN	42055	
PA	INDIANA	42063	
PA	LACKAWANNA		42069
PA	LANCASTER	42071	
PA	LAWRENCE	42073	
PA	LEBANON	42075	
PA	LEHIGH	42077	
PA	LUZERNE	42079	
PA	LYCOMING	42081	
PA	MIFFLIN	42087	
PA	MONTGOMERY		42091
PA	NORTHAMPTON		42095
PA	NORTHUMBERLAND		42097
PA	PERRY		42099
PA	PHILADELPHIA	42101	
PA	SCHUYLKILL	42107	
PA	SNYDER	42109	
PA	SOMERSET	42111	
PA	UNION		42119
PA	WARREN	42123	
PA	WASHINGTON	42125	
PA	WESTMORELAND		42129
PA	WYOMING	42131	
PA	YORK		42133
RI	BRISTOL	44001	
RI	KENT		44003
RI	NEWPORT	44005	
RI	PROVIDENCE	44007	
RI	WASHINGTON	44009	
SC	BEAUFORT	45013	
SC	BERKELEY	45015	
SC	CHARLESTON	45019	
SC	COLLETON	45029	
SC	GEORGETOWN		45043
SC	GREENVILLE	45045	
SC	HORRY	45051	

SC	LEXINGTON	45063	
SC	RICHLAND	45079	
SC	SALUDA	45081	
SC	SUMTER	45085	
SD	AURORA	46003	
SD	BEADLE	46005	
SD	BROOKINGS	46011	
SD	BROWN	46013	
SD	BRULE		46015
SD	BUTTE		46019
SD	CHARLES MIX	46023	
SD	CLARK	46025	
SD	CODINGTON	46029	
SD	DAVISON	46035	
SD	EDMUNDS	46045	
SD	FAULK	46049	
SD	GREGORY	46053	
SD	HAMLIN	46057	
SD	HAND		46059
SD	HANSON	46061	
SD	HUGHES	46065	
SD	JERAULD	46073	
SD	KINGSBURY	46077	
SD	LAWRENCE	46081	
SD	LYMAN	46085	
SD	MCPHERSON	46089	
SD	MARSHALL	46091	
SD	MEADE	46093	
SD	PENNINGTON	46103	
SD	ROBERTS	46109	
SD	SANBORN	46111	
SD	SPINK	46115	
SD	STANLEY	46117	
SD	TRIPP	46123	
TN	CHEATHAM	47021	
TN	DAVIDSON	47037	
TN	HAMILTON	47065	
TN	MADISON	47113	
TN	RUTHERFORD	47149	
TN	SHELBY	47157	

TN	SUMNER	47165	
TN	WILLIAMSON	47187	
TX	ANGELINA	48005	
TX	ARANSAS	48007	
TX	ARCHER	48009	
TX	AUSTIN	48015	
TX	BASTROP	48021	
TX	BELL		48027
TX	BEXAR	48029	
TX	BOWIE		48037
TX	BRAZORIA	48039	
TX	BRAZOS	48041	
TX	BROOKS	48047	
TX	BURLESON	48051	
TX	CALHOUN	48057	
TX	CAMERON	48061	
TX	CHAMBERS	48071	
TX	COLLIN	48085	
TX	COMAL	48091	
TX	DALLAS	48113	
TX	DENTON	48121	
TX	EL PASO	48141	
TX	FAYETTE	48149	
TX	FORT BEND	48157	
TX	GALVESTON	48167	
TX	GRAYSON	48181	
TX	GRIMES	48185	
TX	GUADALUPE	48187	
TX	HARDIN	48199	
TX	HIDALGO	48215	
TX	HOUSTON	48225	
TX	JACKSON	48239	
TX	JASPER		48241
TX	JEFFERSON	48245	
TX	JOHNSON	48251	
TX	KLEBERG	48273	
TX	LEE	48287	
TX	LIBERTY	48291	
TX	LUBBOCK	48303	
TX	MCLENNAN		48309

TX	MADISON	48313	
TX	MATAGORDA	48321	
TX	MONTGOMERY		48339
TX	NACOGDOCHES		48347
TX	NUECES	48355	
TX	ORANGE	48361	
TX	POLK	48373	
TX	POTTER	48375	
TX	SAN AUGUSTINE		48405
TX	SAN JACINTO	48407	
TX	SAN PATRICIO	48409	
TX	SHELBY	48419	
TX	TARRANT	48439	
TX	TRAVIS		48453
TX	TRINITY	48455	
TX	VICTORIA	48469	
TX	WALKER	48471	
TX	WALLER	48473	
TX	WASHINGTON	48477	
TX	WEBB		48479
TX	WHARTON	48481	
TX	WICHITA	48485	
TX	WILLACY	48489	
UT	SALT LAKE	49035	
UT	UTAH		49049
VT	RUTLAND	50021	
VT	WASHINGTON	50023	
VT	WINDHAM	50025	
VT	WINDSOR	50027	
VA	ACCOMACK	51001	
VA	ALBEMARLE	51003	
VA	AUGUSTA	51015	
VA	BATH	51017	
VA	BEDFORD	51019	
VA	BOTETOURT	51023	
VA	BRUNSWICK	51025	
VA	BUCHANAN	51027	
VA	CAMPBELL	51031	
VA	CULPEPER	51047	
VA	GILES	51071	

VA	GREENE	51079	
VA	HALIFAX	51083	
VA	LANCASTER	51103	
VA	MADISON	51113	
VA	NORTHAMPTON		51131
VA	ORANGE	51137	
VA	PITTSYLVANIA	51143	
VA	PRINCE WILLIAM		51153
VA	RAPPAHANNOCK		51157
VA	RICHMOND	51159	
VA	ROANOKE	51161	
VA	ROCKBRIDGE	51163	
VA	ROCKINGHAM	51165	
VA	WARREN	51187	
VA	WESTMORELAND		51193
VA	WISE	51195	
VA	YORK		51199
VA	ALEXANDRIA CITY		51510
VA	BEDFORD CITY	51515	
VA	BUENA VISTA CITY		51530
VA	CHARLOTTESVILLE CITY		51540
VA	DANVILLE CITY	51590	
VA	FAIRFAX CITY	51600	
VA	HAMPTON CITY		51650
VA	HARRISONBURG		51660
VA	LEXINGTON CITY		51678
VA	LYNCHBURG CITY		51680
VA	MANASSAS		51683
VA	MANASSAS PARK		51685
VA	NEWPORT NEWS CITY	51700	
VA	NORFOLK CITY	51710	
VA	NORTON CITY	51720	
VA	POQUOSON CITY		51735
VA	PORTSMOUTH CITY		51740
VA	ROANOKE CITY	51770	
VA	SALEM CITY	51775	
VA	SOUTH BOSTON CITY	51780	
VA	STAUNTON CITY		51790
VA	VIRGINIA BEACH CITY		51810
VA	WAYNESBORO CITY	51820	

WA	CHELAN	53007	
WA	CLALLAM	53009	
WA	CLARK	53011	
WA	COWLITZ	53015	
WA	GRAYS HARBOR		53027
WA	ISLAND	53029	
WA	JEFFERSON	53031	
WA	KING	53033	
WA	KITSAP		53035
WA	KITTITAS	53037	
WA	LEWIS		53041
WA	MASON	53045	
WA	PACIFIC		53049
WA	PIERCE		53053
WA	SKAGIT	53057	
WA	SNOHOMISH	53061	
WA	THURSTON	53067	
WA	WAHKIAKUM		53069
WA	WHATCOM	53073	
WA	YAKIMA	53077	
WV	BARBOUR	54001	
WV	BROOKE	54009	
WV	CABELL	54011	
WV	GRANT	54023	
WV	GREENBRIER	54025	
WV	HARDY	54031	
WV	HARRISON	54033	
WV	KANAWHA	54039	
WV	LEWIS		54041
WV	LOGAN	54045	
WV	MCDOWELL	54047	
WV	MARSHALL	54051	
WV	MINGO	54059	
WV	OHIO		54069
WV	RALEIGH	54081	
WV	SUMMERS	54089	
WV	TUCKER	54093	
WV	UPSHUR	54097	
WV	WAYNE	54099	
WV	WETZEL	54103	

WV	WOOD	54107	
WV	WYOMING	54109	
WI	BROWN	55009	
WI	CHIPPEWA	55017	
WI	FOND DU LAC	55039	
WI	JEFFERSON	55055	
WI	LA CROSSE	55063	
WI	MARATHON	55073	
WI	MILWAUKEE	55079	
WI	OUTAGAMIE	55087	
WI	OZAUKEE	55089	
WI	RACINE	55101	
WI	WASHBURN	55129	
WI	WAUKESHA	55133	
WI	WINNEBAGO	55139	
WY	ALBANY	56001	
WY	NATRONA	56025	
WY	SWEETWATER	56037	
PR	COMMONWEALTH		72000
VI	ALL ISLANDS	78000	

APPENDIX D

GLOSSARY OF TERMS AND ACRONYMS

GLOSSARY OF TERMS

Accuracy - In mapping, the reduction of positional and attribute errors based on information sources and data input instruments. Data precision must reflect, not exceed its accuracy.

ARC Macro Language (AML) - A fourth generation programming language with facilities to use named variables, perform logical branching and loops, perform arithmetic and trigonometric operations, make calls and pass variables to other programs, and perform selected Geographic Information Systems operations. It also provides facilities to design and create custom menus. AML is also used to refer to a program written using the ARC macro language.

ASCII American Standard Code for Information Exchange - A popular standard for the exchange of alphanumeric data.

ARC/INFO - A 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 (Environmental Systems Research Institute, Redlands, CA).

Attribute - Descriptive characteristic or quality of a feature. Attributes may be represented by locational or non-locational descriptive information about a feature.

Base Flood Elevation (BFE) - The elevation associated with the flood having a one-percent annual chance of being equalled or exceeded in any given year. It is shown on the Flood Insurance Rate Map.

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

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

CCITT Group 4 Compression - An internationally accepted digital file compression scheme for black-and-white (1-bit) TIFF image data. TIFF data may also be stored as uncompressed files.

Compact Disk Read Only Memory (CD-ROM) - A digital medium for the storage of data in a standardized format (ISO 9660).

Coastal Barrier Resources Act (COBRA) - An act of Congress, signed into law in 1982 and amended in 1990 and later, that identifies units of land consisting of undeveloped coastal barriers

and other areas located on the coast of the U.S. Flood insurance is not available for structures built after the coastal barrier was identified.

Community Identification (CID) - A unique six-digit number assigned to each community by FEMA and used for identity in computer databases; it is shown on the FIS, FIRM, and in the Q3 Flood Data files. The first two digits of the number are always the State FIPS code.

Community Rating System (CRS) - A program created by FEMA to provide new incentive for activities that reduce flood losses and support the sale of flood insurance. Any community participating in the NFIP may apply for CRS classification by demonstrating that it is implementing floodplain management and public information activities that exceed the minimum requirements of the NFIP. Once qualified, the community benefits by obtaining flood insurance premium rate credits for its residents. The credits vary by the level of activities undertaken by the community.

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

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

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

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 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. These data serve the purpose of map design and provide the database 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 countywide 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-DLGs are tiled to the 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. A DLG may contain lists of point coordinates describing boundaries, drainage lines, and other linear or area 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 will fit the quadrangle as an overlay. 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. Level 3 data files are fully topologically structured and are designed to be integrated into GISs.

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

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

Elevation Reference Mark (ERM) - A point of vertical ground elevation reference shown on the FIRM for comparison to the BFE. ERMs are referenced to the National Geodetic Vertical Datum (NGVD) or the North American Vertical Datum (NAVD) or an alternative local datum if applicable.

Federal Emergency Management Agency (FEMA) - The agency reporting directly to the President and responsible for identifying and mitigating natural and man-made hazards.

Federal Geographic Data Committee (FGDC) - An interagency committee, established by the Office of Management and Budget, that promotes the coordinated development, use, sharing, and dissemination of geospatial data on a national basis. The FGDC is composed of representatives from 14 Cabinet level and independent Federal agencies.

Federal Information Processing Standards (FIPS) - The official source within the Federal government for information processing standards, which are developed and published by the Institute for Computer Sciences and Technology at the National Institute of Standards and Technology (NIST).

Federal Insurance Administration (FIA) - An administration within FEMA that provides flood and crime insurance.

Flood Insurance Rate Map (FIRM) - A map on which the 100- and 500-year floodplains, BFEs, and risk premium zones are delineated to enable insurance agents to issue accurate flood insurance policies to homeowners in communities participating in the NFIP.

Flood Insurance Study (FIS) - An examination, evaluation, and determination of the flood hazards, and if appropriate, the corresponding water-surface elevations.

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 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 what 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.

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.

Geographic Coordinates - Coordinate system in which horizontal and vertical distances on a planimetric map are represented in units of latitude and longitude rather than feet or meters.

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.

Gutter (or Zone Break) - A line shown on the FIRM as a white line within the screened SFHA. This line separates different risk premium zones.

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

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 database. In GIS, a layer or a theme represents a specific kind of data.

Letter of Map Amendment (LOMA) - An official determination that a specific structure or property is not within the 1% annual chance floodplain; a LOMA amends the effective FIRM.

Letter of Map Revision (LOMR) - A letter that revises BFEs, flood hazard zones, floodplain boundaries, or floodways that are shown on an effective FIRM or FBFM.

Letter of Map Change (LOMC) - A term used to refer to all letters that revise FIRMs, both LOMAs and LOMRs.

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

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

MapInfo - A desktop mapping system that combines map graphics and a relational database for cartographic display and spatial analysis (MapInfo Corporation, Troy, NY).

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.

Metadata - Literally, metadata are "data about data," or descriptive information about the contents of a digital geospatial data file. Metadata standards have been developed by the FGDC to govern the content and order of the information so that it may be readily queried by users to determine if the data meet their needs.

MicroStation - A software package that provides a menu and key-in operator interface with commands for generating and editing graphics and data (Bentley Systems, Inc., Exton, PA)..

National Flood Insurance Program (NFIP) - The Federal regulatory program under which flood-prone areas are identified and flood insurance is made available to residents of participating communities.

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 that 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 a single, distinct X,Y coordinate pair. In a raster structure, point data are 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.

Projection - The mathematical transformation of three-dimensional space into a two-dimensional (flat) surface. Projection formulae are dependent on a variety of spherical models (spheroids) that distort the spatial characteristics of a location.

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

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

Q3 Flood Data - A digital FIRM product developed and distributed by FEMA. Q3 Flood Data are developed by scanning and vectorizing the existing hardcopy FIRM to create a raster product suitable for viewing or printing, as well as a thematic vector overlay of flood risks. Q3 Flood Data capture all FIRM data in the raster file, but vectorize only certain features.

Raster Data - The representation of spatial data as regular grid cells or tessellations. Cells may be subdivided or aggregated depending on the variety and density of features to be modeled.

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.

Spatial Data Transfer Standards (SDTS) - A FIPS standard (FIPS 173) developed as a mechanism for the transfer of digital spatial data between different computer systems. It specifies exchange constructs, addressing formats, structure, and content for spatially referenced vector and raster data.

Special Flood Hazard Area (SFHA) - Any area inundated by the base (1% annual chance) flood; these areas are identified on the FIRM as Zones A, AE, AH, AO, AR, A1-30, A99, V, VE, and V1-30.

Thematic Layer - A data layer containing selected information relating to a specific theme, such as soils, vegetation, land use, etc.

TIFF - Tagged Image File Format, a standard exchange format for raster or image files. Tags or identifiers are used to structure the raster data such that blocks of data may be interpreted based on tags that identify them. TIFF images may be black and white, gray scale, or color, and may be compressed using a variety of compression types.

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

Topology - A branch of non-euclidean geometry that analyzes the spatial relationships and connectivity of graphs and their components. In GIS, topology is a key element used in a number of data models, such as ARC/INFO.

U.S. Geological Survey (USGS) - The Federal agency responsible for nationwide civilian mapping projects and standards development.

UTM Grid - The Universal Transverse Mercator grid, a system of plane coordinates based upon 60 north-south trending zones, each 6 degrees of longitude wide, that circle the globe.

Vector Data - Coordinate-based data used to represent linear geographic features. Each linear feature is represented as an ordered list of vertices.

GLOSSARY OF ACRONYMS

AML ARC Macro Language

ASCII American Standard Code of Information Interchange

BFEBase Flood Elevation

CCITTConseil Consultif Internationale de Telegraphique et Telephonique (International Consultive Committee for Telegraphy and Telephony)

CD ROM Compact Disk Read-Only Memory

CIDCommunity Identification

COBRACoastal Barrier Resources Act

CRSCommunity Rating System

DFIRMDigital Flood Insurance Rate Map

DFIRM-DLGDigital Flood Insurance Rate Map - Digital Line Graph

DLG Digital Line Graph

DOSDisk Operating System

ERMElevation Reference Mark

FEMAFederal Emergency Management Agency

FGDCFederal Geographic Data Committee

FIAFederal Insurance Administration

FIPSFederal Information Processing Standards

FIRMFlood Insurance Rate Map

FIRM-DLGFlood Insurance Rate Map - Digital Line Graph

GIS Geographic Information System

LOMALetter of Map Amendment

LOMCLetter of Map Correction

LOMRLetter of Map Revision

NFIPNational Flood Insurance Program

Q3Quality Level 3

QA/QC Quality Assurance/Quality Control

SBASmall Business Administration

SDTSSpatial Data Transfer Standards

SFHASpecial Flood Hazard Area

TIFFTagged Image File Format

TIGERTopologically Integrated Geographic Encoding and Referencing

USGSUnited States Geological Survey

UTM Universal Transverse Mercator

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