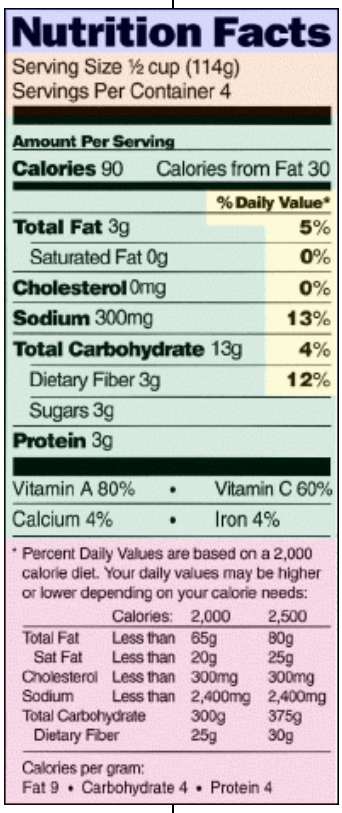
GEOSPATIAL METADATA

JULY 2011

Federal Geographic Data Committee is charged in OMB Circular A-16 to implement the six basic building blocks of the NSDI: metadata, clearinghouse, standards, framework, geospatial data, and partnerships. Metadata, as a critical component of the NSDI, allows for the documentation, discovery, assessment, integration, distribution, and archival of geospatial resources.

Metadata is defined by the New Merriam-Webster Dictionary as "data that provides information about other data". Geographic metadata is used to document the attributes of geographic data, e.g. database files and data develop within a Geographic Information System (GIS), in the same way that the nutrition label to the right documents the attributes of a food product.



Nutrition Facts

Serving Size ½ cup (114g)
Servings Per Container 4

Amount Per Serving

Calories 90 Calories from Fat 30

	% Daily Value*
Total Fat 3g	5%
Saturated Fat 0g	0%
Cholesterol 0mg	0%
Sodium 300mg	13%
Total Carbohydrate 13g	4%
Dietary Fiber 3g	12%
Sugars 3g	
Protein 3g	

Vitamin A 80% • Vitamin C 60%
Calcium 4% • Iron 4%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

Geographic metadata seeks to answer questions such as: Who developed the data? When was the data collected? How were the data processed? How are the data attributes defined? In what formats are the data available? How does one obtain the data? The information in the metadata provides context for the data and supports the effective application of the data.

METADATA STANDARDS

The FGDC currently supports multiple metadata standards. The Content Standard for Digital Geospatial Metadata (CSDGM) is the long time FGDC endorsed geographic metadata standard. However, the U.S. is in the process of adopting and implementing the International Standards Organization (ISO) geographic metadata standard (19115). ISO metadata implementation has been gradual as users explore the application of the standard and make recommendations for changes. Once the latest version of the international standard (ISO 19115-1) is stable, the North American Profile (NAP) of ISO 19115 will be updated and the FGDC and other organizations will offer updated tools, training materials and guidance documents to support ISO metadata implementation.

What's different between the CSDGM and ISO geographic metadata standards? Not that much. ISO 19115, like the CSDGM, is based on a standard achieved through consensus. The ISO standard, however, is based on the consensus of the international community while CSDGM consensus was limited to U.S. Federal agencies. As a result, the ISO metadata standard better supports data sharing across national and cultural boundaries. Within the ISO standard, code lists (fixed domains) are used more often to control vocabulary, thereby improving search capability. Some metadata components, such as Maintenance Information, are enhanced and the new standard supports the documentation of data portals, web mapping applications and other web services.

What's new with content of the standard? Optional elements are employed to a greater degree within the ISO standard making it more flexible than the CSDGM. This flexibility enables organizations to better customize the standard to meet their own needs. FGDC recommends that each organization/agency develop a standardized template to support the implementation of their customized metadata

'profile' and to serve as a guide for agency metadata creation.

Unlike the CSDGM, the ISO metadata standard integrates parts of other geographic data standards. Some components of information such as the entity attribute descriptions, referred to as 'Feature Catalog', are actually defined by a different standard and are therefore only referenced from the metadata record. ISO 19115-1 improves upon the integration of Feature Catalog information and the subsequent NAP effort intends to further explore options for coupling the information.

The formats of the standards also differ. While the CSDGM was written as a text document, ISO metadata was created using the Unified Modeling Language (UML), a standardized general purpose modeling language often used in software engineering. Through its companion Technical Specification (ISO 19139), the ISO metadata standard is represented in a consistent Extensible Markup Language (XML) format for use worldwide. As such, the ISO data model is more easily, and consistently, reproduced within software applications that support metadata creation and content validation.

What are the core components of a metadata record?

Metadata Record Information - information about the metadata record including the language in which the record is written, a unique file identifier for the metadata record, the metadata standard used to organize the record, a point of contact for the metadata record, and the date that the metadata record written.

Identification Information – citation-level information about the data including the title, abstract, purpose for creation, status, keywords (theme and place), and extent (temporal, vertical and horizontal).

Constraints Information – information about legal and security limitations to data access and use.

Data Quality Information – information about the processes and sources used to develop the data and positional and/or accuracy assessments performed.

Maintenance Information – information about the scope and frequency of data updates.

Spatial Representation – information about the mechanism used to represent spatial data (grid, point, vector).

Reference System Information – information about the reference systems used to represent geographic position and time.

Content Information – information about the data set entities and attributes.

Symbology Information – information about the symbols used to represent spatial features.

Distribution Information – information about the data distributors and methods for obtaining the data.

Metadata Extension Information – information about custom, user-based, changes to the elements, domains or conditionality of the standard.

Application Schema Information – information about the schema or data models used to structure the data.

FGDC member agencies are actively exploring ISO metadata implementation. To learn more about these efforts and to access the FGDC guidance document, *Preparing for International Metadata*, visit the FGDC Metadata Program website at: http://www.fgdc.gov/metadata.

Additional Information
Available on-line at www.fgdc.gov/metadata or contact us at fgdc@fgdc.gov or visit the FGDC website at www.fgdc.gov.