

Data Resource Information (Metadata) Procedures

This attachment provides definitions and procedures (why, what, where, when, who, how) for metadata management in the Bureau of Land Management (BLM).

- A. Definition of Data - Data are defined as representations of real world facts, objects, or concepts. This could be rows and columns in a database, map, aerial photography, satellite imagery, video, sound, etcetera. Typical metadata elements for data include definitions, field sizes, accuracy statements or measures, and data steward names.
- B. Definition of Application – An application can be something as simple as a spreadsheet or word processing macro or it can be very complex with thousands of lines of coding with unique user interfaces. The key component is that the application manipulates data in some way. Commercial-off-the-shelf (COTS) software is usually not documented with the BLM metadata although special purpose COTS may have metadata. However, special coding used to take advantage of a COTS package may be an application. Typical metadata for applications includes file sizes, file locations (what server or drive), software used, version number.
- C. Definition of Metadata – Metadata is information about data and/or geospatial services, such as content, source, vintage, spatial scale, accuracy, projection, responsible party, contact phone number, method of collection, and other descriptions. Metadata is critical to document, preserve, and protect the BLM’s data assets. Reliable metadata, structured in a standardized manner, is essential to ensuring that data are used appropriately, and any resulting analysis is credible. Metadata also can be used to facilitate the search and access of data sets or services within a clearinghouse or data library (definition based on the Office of Management and Budget’s (OMB’s) Circular A-16 definition of spatial metadata).
- D. Why – the BLM’s data resources are high-value business assets, and must be documented and maintained like other critical business assets. Metadata also is required for the BLM data holdings to satisfy the requirements of Circular A-16 (Coordination of Geographic Information and Related Spatial Data Activities), OMB’s Circular A-130 (Management of Federal Information Resources), Executive Order 12906 (Coordinating Geographic Data Acquisition and Access), and Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (The Data Quality Act). Most important, the collection and maintenance of metadata makes good business sense. Good metadata allows internal and external customers to improve business and technical understanding of data and data-related processes by helping them to:
 - a. find and access the data;
 - b. understand data that are found;
 - c. understand the reliability of data;
 - d. understand the intended use of the data;

- e. Know how and when the data were collected and by whom;
 - f. Know how and when data are maintained;
 - g. Understand any ways in which the data are manipulated, and
 - h. see any warnings or disclaimers that may apply to the data.
- E. What – Metadata is required for all data, databases that contain data, and applications that manipulate data in the BLM.
- F. Where – Metadata is collected and maintained at or near the source of the data creation/collection/acquisition. Metadata is stored in a repository that can be easily accessed by appropriate internal and external customers (but may be more centrally located than the data itself). Metadata for national data sets and applications is captured and stored in the Corporate Metadata Repository (CMR). National systems are those funded or monitored by the National Information Technology Investment Board (reference Washington Office (WO) Instruction Memorandum (IM) 2003-007, dated January 28, 2003). Data sets and applications that are not national are to be stored in one of two places: (1) Federal Geographic Data Committee (FGDC)-style metadata if no other repository option exists; or (2) State/Center Repository. In either case, the metadata is to be accessible to those who need access, whether the BLM employees or members of the public (in accordance with information access rules and regulations). Geospatial metadata is to be provided to the national geospatial metadata clearinghouse. See section J for instructions on submitting metadata records to this clearinghouse.
- G. When – Metadata is collected or maintained at the time the data are collected/acquired or at the time of edits or changes to the data. If metadata creation is put off until a later time, significant risks are incurred that the metadata will not be accurate or those knowledgeable about the data will no longer be available to help. A metadata record should be created in parallel with actions to acquire, modify, or quality-check data. Some metadata, such as that describing data standards, is completed prior to data acquisition.
- H. Who – *Data stewards* are ultimately responsible for proper documentation of data under their area of responsibility. Data stewards are experts in the subject matter, and, along with the subject matter experts who originate data, are responsible for content, quality, and timeliness of metadata. Data stewards are also responsible for leading development of any data standards and/or business rules that may affect the metadata. *Data administrators* are responsible to assist data stewards in this activity, to conduct any required data modeling, to monitor the process and provide guidance, to maintain the repository where metadata resides, and to coordinate between data stewards and other affected parties. Data administrators are also responsible for overall metadata quality assurance. *Geographic Information Systems (GIS) specialists, database developers, application developers, and other subject matter experts* are responsible to assist data stewards to document technical and/or analytical processes. See the directive on Data Management Roles and Responsibilities for additional information on the roles of data stewards, data administrators, and others in the data management function.

I. How

1. National data sets and applications – Use of the CMR is mandatory. The data management staff at the System Coordination Office (SCO) (WO-570D), can assist those needing to provide metadata to the CMR. Documentation on what is contained in the CMR can be found on the CMR website. http://web.blm.gov/CMR/CMR_Contents.pdf

2. Non-national data sets and applications – If your organization (i.e., Washington Office/State/Center/Field Office) has a Metadata Repository or Data Dictionary, then use it to complete metadata documentation. Contact your local Data Administrator for assistance. If your organization does not have a Metadata Repository or Data Dictionary, then use the format and tools (see section K) available for completing Geospatial Metadata (i.e., FGDC-style). If the data being documented does not have a spatial component, then those parts of the FGDC format that relate to spatial aspects can be skipped.

3. All Geospatial data sets and applications – The FGDC Content Standard for Geospatial Metadata applies to the BLM. This standard has been interpreted for the BLM use and some further direction provided at:

http://web.blm.gov/data_mgt/standards/tools-formats/FGDC_Template.doc

In addition, all Geospatial metadata must be submitted to the National Geospatial Metadata Clearinghouse (see section J).

J. Submitting Geospatial Metadata to the National Geospatial Metadata Clearinghouse

All data (both spatial and non-spatial) used in support of land use planning efforts must have FGDC-compliant metadata prepared and that metadata must be provided to the BLM Spatial Data Clearinghouse (<http://www.or.blm.gov/metaweb>). The procedures for participating in the clearinghouse are summarized below. Reference WO IM2001-202 dated August 3, 2001.

In this initial development of the spatial data clearinghouse, the Oregon (OR) State Office will be the clearinghouse manager. Any questions about the clearinghouse may be directed to the OR/Washington (OR/WA) State Data Administrator, Stan Frazier at (503) 808-6009, or Stan_Frazier@or.blm.gov.

Note: These procedures assume the FGDC-style metadata has already been developed.

Where do I send my metadata? States/Centers may have their own processes in place that need to be followed prior to submission to the clearinghouse. Please check with your data administrator or GIS coordinator if in doubt. An email address has been established for States/Center/Washington Office to submit metadata records. This address is: Metadata_Mail@or.blm.gov. You can also use this email address to notify the clearinghouse manager of the File Transfer Protocol location of metadata files if you have a large number of files to send or the files are unusually large.

What format does my metadata need to be in? Each metadata record should be submitted in two formats: Hypertext Markup Language (HTML) and FGDC-encoded TEXT. The HTML version is used for quality control - making sure what goes into the clearinghouse is the same as you thought was going in. The TEXT is the primary format used for importing the record into the national clearinghouse database. If your metadata tool is not able to provide these formats (or has another format that you would like to use), please contact the clearinghouse manager.

How often should I submit metadata records? The Clearinghouse is updated daily so metadata records may be submitted at any time.

Does it matter what software/tool I use to collect metadata? No, the tool used to collect metadata does not matter as long as it can export files in a usable form (see above).

Does it matter what content is contained within a metadata record? Yes, besides the FGDC Metadata Content Standard (www.fgdc.gov), the BLM has established some basic guidelines for completing a metadata record which are available at: http://web.blm.gov/data_mgt/standards/tools-formats/FGDC_Template.doc.

Are there some specific metadata fields that I need to pay special attention to? Yes, the clearinghouse will work more efficiently if the following fields are entered correctly:

1. Metadata Title - The metadata title is the key field in the clearinghouse database. Duplicate names are not allowed. The chance for duplication is reduced and the public understanding of the metadata is increased if a standard naming convention is used to name metadata records. A metadata record should be structured from the key topic that the metadata describes, two or three descriptive terms, and the State/region that the data set cover. Use only abbreviations that are universally known. Some examples would be as follows:

Original Name	New Name
Arizona (AZ) BLM Grazing Allotments	Grazing Allotments AZ
COVERAGE ACCPBRA – Area of Critical Environmental Concern (ACEC) polygons as designated in the Bishop Resource Management Plan	Critical Environmental Concern Bishop California (CA)
COVERAGE HFIMSRA - Fire History (Point data)	Fire History Points CA
Fire History (Polygon Data) Range	Fire History Polygons CA Grazing Allotments CA
Soil Survey Geographic (SSURGO) database for Douglas Plateau Area; Parts of Garfield and Mesa Counties, Colorado	Soil Survey Douglas Plateau Colorado (CO)

Original Name	New Name
Map - ICBEMP Area with Subbasins	Ownership Subbasins Columbia Basin
CRBSUM Prescription to Simulation Assignments (SDEIS)	Successional Model Prescriptions Columbia Basin
Statewide Wilderness Study Areas (WSA) coverage for NM	Wilderness Study Boundaries New Mexico (NM)
Boundaries, BLM District (Polygon and Lines)	Boundaries BLM District OR
Contours, 500-foot Intervals (Line)	Contours 500-foot OR
Grazing Allotments and Pastures (Polygon)	Grazing Allotments OR
Leasable Mineral Potential	Mineral Leasing Potential Lakeview OR
BLM Roads (Line)	Roads BLM OR
Rock Pits	Rock Pits Lakeview OR
1900 Vegetation (Polygon)	Vegetation 1900 OR
General Vegetation within the Lakeview Resource Area AMS/SBR Analysis Area	Vegetation Lakeview OR
Base Data Administrative Boundary for the Grand Staircase-Escalante National Monument Boundary BAMBP	Boundary Grand Staircase Utah

2. Contact Names - All BLM contact names should conform to the names as they appear in the Lotus Notes email database. Those names are unique throughout the Bureau and provides consistency with that database. For non-BLM names, use as complete a name as possible to reduce possible duplicate names.

3. Keywords - Keywords are the primary search fields in the clearinghouse. Be sure to follow the guidance given the metadata template referenced above (FGDC_Template.doc).

4. Citation Names - Be as specific as you can on citation names. This will reduce the likelihood of duplicate names. Duplicate names introduce data integrity problems and need to be avoided.

Can I create my own data elements (user-defined fields)? Yes, if you have the capability, through your metadata collection tool. These types of non-standard fields should only be used for metadata management purposes any such fields will not show up in the clearinghouse.

Who is the Clearinghouse Manager? Initially, the OR State Office will manage the clearinghouse as a pilot effort. Any questions about the clearinghouse should be directed to the OR/WA State Data Administrator, Stan Frazier at (503) 808-6009 or Stan_Frazier@or.blm.gov.

K. Geospatial Metadata Tools

Several *free* tools, listed below, exist to assist users in collecting FGDC compliant metadata. Reviews that evaluate the pros and cons of each one can be found on the FGDC website: <http://www.fgdc.gov/metadata/toollist/metatool.html>

The tools noted here are considered geospatial tools. However, the tools can also be used for non-spatial data. If the data being documented does not have a spatial component then those parts of the FGDC format that relate to spatial aspects can be skipped.

The following instructions reference Geospatial products developed by ESRI (ArcCatalogm, ArcGIS) and the Unix operating system (called AIX) developed by International Business Machines.

If you are documenting an ESRI data set, ArcCatalog (ArcGIS Ver. 8.x) include a metadata editor. If you are not yet using the newer version of ESRI products, then the following is available to you:

TKME / XTME – This tool will allow metadata editing or the creation of a metadata record from scratch. It formats the major metadata headings and allows entry in a form like interface. The tool runs stand-alone either on Unix or Windows and there are no requirements of having ESRI software or spatial data present to generate a metadata record. The AIX source can be found at:

<http://geology.usgs.gov/tools/metadata/aix.shtml>

The Windows version can be found at:

http://geology.usgs.gov/tools/metadata/all_win.exe

FGDCMETA.AML – This tool is written in Arc Macro Language (AML) which must be executed from ARC/INFO. It captures many of the “coverage specific” elements such as projection information, the geographic extent, and Entity and Attribute information (item listing only). It can be downloaded from:

<http://www.isgs.uiuc.edu/nsdihome/webdocs/fgdcmeta.html>

Note: Some knowledge of AML is helpful as you may want to customize the default entry fields.

ARCVIEW METADATA COLLECTOR V2.0 EXTENSION – This form based tool works from ArcView and collects some of the basic spatial reference information of a coverage or shape file that the user is currently working on. It resembles a “wizard” interface, walking the user sequentially through the various sections of the metadata while providing samples for reference. Templates for each section can be created and saved for re-use in subsequent metadata records. **Note:** Metadata created from other systems can be displayed from this tool but may not be able to be edited. It can be downloaded from: <http://www.csc.noaa.gov/metadata/text/download.html>

At least one (COTS) software is available for metadata management and is in use in some BLM offices. This is the Spatial Metadata Management System (SMMS) from Intergraph. This tool can access data sets and retrieve certain pieces of information (much like some of the other tools) and stores the information in a Microsoft-Access database.

If you have questions or concerns about the available tools, contact your State Data Administrator or the BLM National Geospatial Metadata Clearinghouse (Metadata_Mail@or.blm.gov).