USDA Service Center Agencies
Geospatial Data Management Team
Data Management Plan For

Elevation-National Elevation Data - 10 Meter

August 2008
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I. Purpose and Scope (business case)

A. Purpose

The U.S. Geological Survey has developed a National Elevation Dataset (NED). The NED is a seamless mosaic of best-available elevation data. The 7.5-minute topographical maps are the primary initial source data. In addition to the availability of complete 7.5-minute data, efficient processing methods were developed to filter production artifacts in the existing data, convert to the NAD83 datum, edge-match, and fill slivers of missing data at quadrangle seams. One of the effects of the NED processing steps is a much-improved base of elevation data for calculating slope and hydrologic derivatives.

The specifications for the NED 1/3 arc second (10 meter resolution) data are: Geographic coordinate system Horizontal datum of NAD83, except for AK which is NAD27 Vertical datum of NAVD88, except for AK which is NAVD29 Z units of meters. NED is a living dataset that is updated bimonthly to incorporate the "best available" DEM data.

The dataset is provided in essentially the following four resolutions:

- $1/9^{th}$ arc-second or ~3 meter
- 1/3 arc-second or ~10 meter or better database that is 10 meters, 5 meters, and 1/9 arc-second.
- 1 arc-second or ~ 30 meter data that is updated over large areas by integrating higher resolution source data (where available) , re-sampled to 1 arc-second.
- 2 arc-second or ~60 meter for Alaska

The NED home, factsheet DataDictionary and metadata links provide a great deal of information about NED.

B. Scope

The scope is the coterminous United States, Hawaii and Puerto Rico. A 2 arc-second database is being developed for Alaska. However, NCGC has only requested the contiguous US.

II. Acquisition

A. Data Source

1. Producer Information

a. Name

USGS

b. Location of Headquarters

U.S. Geological Survey
EROS Data Center
47914 252nd Street
Sioux Falls, SD 57198-0001

c. Internet Address

http://ned.usgs.gov/

2. Publisher Information

a. Name

USGS

b. Location of Headquarters

U.S. Geological Survey
EROS Data Center
47914 252nd Street
Sioux Falls, SD 57198-0001

c. Internet Address

http://ned.usgs.gov

3. Acquisition Information

a. Delivery Media

USB Hard Drive

b. Download URL

http://seamless.usgs.gov/ Seamless Data Distribution System Viewer

or

http://edcsns17.cr.usgs.gov/EarthExplorer/

NED USG Hard Drive:

Contract support:
Charles A. Nelson
Senior Scientist, Topographic Research
Science Applications International Corporation (SAIC)
Contractor to the USGS/EROS

Sioux Falls, SD 57198-0001
Phone: (605) 594-2747
Fax: (605) 594-2592
nelsonc@usgs.gov

USGS Business contacts:
Dean B Gesch,
Sue Greenlee, sgreenlee@usgs.gov

c. Projected Data Availability Schedule

Currently available

B. Standards Information

1. Geospatial Data Standard

a. Standard Name and Steward Information

The National Elevation Dataset (NED) is built upon the most current applicable standards for geospatial data and metadata. In particular, NED's foundation is an assembly of Digital Elevation Models that conform to the USGS's National Mapping Program standards.

b. Standard Version

None

c. Standard URL

http://gisdata.usgs.gov/Ned/standards.asp

2. Metadata Standard

a. Standard Name and Steward Information

Metadata are compliant with:
Federal Geographic Data Committee (FGDC)
Content Standard for Digital Geographic Metadata FGDC
STD-001-1998 Version 2 revised June 1998

NED is documented using the Federal Geographic Data Committee (FGDC) content standard for geospatial metadata, and will be kept in conformance with a future ISO metadata standard. NED is a searchable collection through the National Spatial Data Infrastructure (NSDI) and its network of distributed clearinghouse nodes. NED will be offered using the Spatial Data Transfer Standard and in particular, the raster profile, an FGDC endorsed (FGDC-STD-002.5) profile of the ANSI and FGDC endorsed SDTS (ANSI NCITS 320:1998 , FGDC-STD-002, FIPS 173-1). NED is provided in formats that are fully compliant with Executive Order 12906 , OMB Circular A130 , and OMB Circular A-119 .

b. Description of Metadata Captured

The Federal Geographic Data Committee's content standard for digital geospatial metadata (http://www.fgdc.gov/metadata/contstan.html) is used to document NED data. Metadata about the individual source datasets used to assemble NED is presented in a spatially-referenced form. The polygonal footprint of each portion

used from a source dataset is retained during NED assembly to provide the spatial context. The attributes of each source dataset, such as original, production method, and date entered into NED, are linked to this polygonal footprint. All of these source polygons together form a seamless National coverage. Through this spatially-referenced metadata, the information is made available to the user regarding the source data used for any area of NED. For example, a NED user might use the spatially-referenced metadata to identify the portions of a study area that were produced by obsolete production methods.

For a template (spatial coverage information added when data is extracted) see the National Elevation Dataset FGDC compliant metadata

c. Metadata Accuracy and Completeness Assessment

The metadata is very complete.

C. Acquired Data Structure

1. Geospatial Data Format

a. Format

ArcSDE Layers provided in Oracle Transportable TableSpace

b. Data Extent

The data extent is the coterminous United States, Alaska, Hawaii, Puerto Rico and the Pacific Basin territories.

c. Horizontal and Vertical Resolution

The horizontal resolution (from the DataDictionary) is one of several of the following resolutions:

- 1 1 arc-second (Alaska)
- 2 2-arc seconds (1:100k series)
- 3 3-arc seconds (1:250k series)
- 5 5 meters (non-standard data)
- 10 10 meters (7.5-minute series)
- 30 30 meters (7.5-minute series)
- 13 1/3 arc-second (non-standard data)
- 19 1/9 arc-second (non-standard data)

d. Absolute Horizontal and Vertical Accuracy

The vertical accuracy is basically +/- 7 to 15 meters. It all depends on the original source DEM.

e. Nominal Scale

1:24,000 and 1:63,360-scale DEM data for Alaska.

f. Horizontal and Vertical Datum

The horizontal datum for all areas, except Alaska, is NAD83. Alaska is NAD27. The vertical datum for all areas, except Alaska, is NAVD88. Alaska is NAVD29.

g. Projection

Geographic

h. Coordinate Units

Decimal Degrees. The z units are in decimeters

i. Average Data Set Size

The full dataset, including lower 48, HI, AK, and Puerto Rico is over 636 GB and getting bigger with each bimonthly update of new data.

j. Symbology

None

2. Attribute Data Format

a. Format Name

N/A - Raster data.

b. Database Size

N/A

3. Data Model

a. Geospatial Data Structure

Data is delivered as Oracle tables in ArcSDE internal ESRI proprietary format as floating point values in LZ77 compression.

TIFF is a non-proprietary format. It is a 32 bit floating point grid format. http://partners.adobe.com/asn/developer/graphics/graphics.html

b. Attribute Data Structure

N/A - Raster data.

c. Database Table Definition

N/A - Raster data.

d. Data Relationship Definition

N/A - Raster data.

e. Data Dictionary

A data dictionary is at: NED Data Dictionary

D. Policies

1. Restrictions

a. Use Constraints

Once the data is downloaded or purchased it is public domain. The USGS requests that the following statement be used when copying or reprinting data: "Data available from U.S. Geological Survey, EROS Data Center, Sioux Falls, SD"

b. Access Constraints

None

c. Certification Issues

None

2. Maintenance

a. Temporal Information

There is no temporal information because this is elevation data.

b. Average Update Cycle

The NED 1 arc second and 1/3 arc second is updated every two months. The 1/9 arc second resolution is updated several times a year on an irregular schedule. The USGS will refresh NRCS hosted NED data twice yearly as appropriate

A visual index is at Data Source Index Map showing the areas that have been updated and when. Information on the updates and shape files of updates can be found at ftp://edcftp.cr.usgs.gov/pub/data/ned/.

E. Acquisition Cost

1. Cooperative Agreement

a. Description of Agreement

There is a draft memorandum of understanding (April 2007) agreement with the USGS. The NED database is sent to NCGC quarterly. There is no coup agreement. To date:
"Please find the attached draft MOU between NRCS and USGS. Our intent is to support the cooperative development and distribution of elevation data for the US. Advantages to NRCS is timely update of elevation data for both applications and support of NAIP. Advantage to USGS is NRCS would mirror the data for USGS and distribute to additional customers. MOU attached has been commented on by USGS and they are in general agreement with contents."

The 10m NED was originally purchased from USGS for approximately $US 1,750 in August, 2003. The NCGC was updating its holdings by using the ftp option from the USGS Seamless Server.

b. Status of Agreement

A coup agreement is desired.

2. Cost to Acquire Data

The 10m NED was originally purchased from USGS for approximately $US 1,750 in August, 2003. An update of the NED 10m data would cost between $1,000-3,000.

As of the date of this document, the USGS is providing the entire database to NGCG on a USB disk free of charge.

III. Integration

A. Value Added Process

1. Benefit to the Service Center

The database is shipped from USGS and loaded on a NCGC DBMS server as which facilitates storage, access and backup as a DBMS database.

2. Process Model

a. Flow Diagram

b. Process Description

1. Data Load Process Overview

a. The data is delivered as Oracle Transportable Tablespaces.
b. NCGC maintains two separate oracle databases supporting NED data: *ned* and *ned*. They both run on t2000a. One database is used as a production database and the other is used as a load/QC database.
c. New data is loaded into the non-production database, so that the production database is not impacted by the load routines and so the data can be checked before serving it out to end users.
d. Once the QC process is completed, the DBA will shut down the SDE instance and point it to the database where the new data has been loaded. At this point, the second database becomes the production database and the production database becomes the repository for loading the next set of data. Each time new data is delivered, the two databases change roles (QC / Production).
e. The following instructions will assume that the "ned" database is the current production database, and "ned" is the QC/Load. In a production environment, the two database will switch back and forth, but the procedures are the same for either version of the database.
f. These instructions assume that both the *ned* and *ned* databases already exist. When they are built, they need to be built with a character set of: US7ASCII

2. Data Loading Steps

a. The DBA will login to the Oracle Database Server as "oracle".
b. Set ORACLE_SID to *ned*.
c. Run a SQL Script to get a list of all database data files that will be replaced:
   Spool filelist.txt
   Select file_name from dba_data_files where tablespace_name
   in ('NED_RASTERB_DATA', 'NED_VECTOR_DATA')

d. Run sde_drop_repository.sql script provided by USGS. This will drop the SDE repository.
e. Drop tablespaces "NED_RASTERB_DATA" and "NED_VECTOR_DATA".
f. Copy all DBF files on the USGS hard drive to the directories on t2000a that correspond with the same files names in the listing from step c.
g. Copy all *dmp files, *ksh files and *par files to /ora01/oracle/admin/ned/export.
h. Edit the *par files so that they file locations match the locations where the DBF files were copied to on t2000a.

i. Edit imp_ned_raster.ksh and imp_ned_vector.ksh to insure that the NLS_LANG environment variables are set to AMERICAN_AMERICA.US7ASCII
j. Run the Import scripts. Example
k. NLS_LANG=AMERICAN_AMERICA.US7ASCII;export NLS_LANG
l. echo $NLS_LANG
imp transport_tablespace=y file=NED_VECTOR_DATA.dmp
datafiles='/ora16/oracle/oradata/ned/ned_vector_data.dbf'
tablespaces=ned_vector_data log=imp_ned_vector.lo
m. Run through the same procedures for the Raster Tablespace.
n. Import the SDE repository:
imp userid=system/**** file=sde.dmp log=impsde.log fromuser=sde touser=sde
o. Run the sde_clean_repository.sql script. Important: the script from USGS had an issue if SDE Layers were in lower case. Use the updated script that already exists in the scripts directory which uses the "UPPER" function to avoid lower case issues.

3. Starting SDE

a. Login to server as SDE.
b. Set ORACLE_SID to *ned*.
c. cd $SDEHOME/etc
d. Edit the dbinit.sde file and set the SID to *ned*.
e. Start the SDE Instance for port 5152.
Sdemon –o start –i 5152
f. Connect to the new SDE instance on 5152 and check data.
g. Verify that the SDEREADONLY user id has access to the new layers.

4. Backup new ned database.

a. Delete old backups in /qfs3/dbbackups/t2000a/ned
b. Run /ora01/oracle/admin/ned/scripts/ftp_database.sh to copy all database files to asm
c. Start ned database.
d. Update oratab to set ned as automatic update.
e. Update oratab to set ned to not start automatically.

5. Production Switch

a. Shutdown both SDE instances (5151 and 5152) using the SDEMON command.
b. Shutdown *ned* database.
c. Set dbinit.sde to use ORACLE_SID of *ned*
d. Sdemon –o start –I 5151
e. Verify access through ArcCatalog

6. Gateway Preparation and Loading Overview

a. Write or revise the Product Description file (link from "Status Maps" page).
b. Set the SDE connection parameters to the location of the new NED in the 1SDENCGC table in zoneMBRdb.mdb
c. Generate shape files for each product with the DataServicesDriver using the "One Degree Loop on Rectangle using current Product" option.
d. Run MakeCatalogs for each product to generate the catalog shape files for each product.
e. Create the Status Maps with ArcMap (link from "Status Maps" page) for each product.
f. Run MakePreviews for each product to generate the preview images for step two of the gateway ordering process.
g. Make a news file showing deleted, added and modified maps.
h. Notify gateway Fort Collins team to load the catalogs, status maps and news and update with changes to qd24kelm, qd24keln and any other tables in zoneMBRdb.mdb.

7. NRCS wishes to only serve 10 meter (1/3) NED which is true 10 meter or less.
    a. No index map exists for this data so one must be created. The index map is created by selecting from the SDE layer ned_conus_metadata (typically named NED.conus_ned_13_metadata) and joining by location the qd24kel map.
    b. In ArcMap, add qd24kel and ned_conus_13_metadata.
    c. To get NED 10 or better, use ArcMap select by attributes from the ned_conus_13_metadata where resolution = 5, 10, 13 or 19. i.e. (Not 30 or 400): "RESOLUTION" = 5 OR "RESOLUTION" = 10 OR "RESOLUTION" = 13 OR "RESOLUTION" = 19 or use this selection, “RESOLUTION IN (5,10,13,19).
    d. Spatially select those qd24kel quads which intersect with the select quads above: In ArcMap Selection ➔ Select By Location ➔ check qd24kel, choose “Have their centroid in” ➔ select ned_conus_13_metadata for ‘The features in this layer”, check “Use selected features) click Apply. Click close.
    e. Save the selected features in the qd24kel to a map named qd24keln by right click qd24kel/Data/Export Data. Enter qd24keln. Then add it to the legend.
    f. VERY CAREFULLY review qd24keln. It must have the correct quads or all remaining steps will be incorrect. Save the result of the select from the metadata map and plot it in red. Plot qd24keln in a light color. Scroll around the maps and look for any red peeking through. Those areas should have been in the qd24keln map.
    g. Put qd24keln on ims2 in fpSource to use for making a catalog and status map showing updates. Put the qd24keln.dbf into zoneMBRdb.mdb for use by the NED10M product data service which will deliver only NED 10 or better. Rename QUADID to CATID. Delete all the fields except CatID, BOTTOM, TOP, LEFT, RIGHT, FIPS_C. Run an attribute index on qd24keln for QUADID.
    h. Edit the table 1SDENCGC SDE connections in zoneMBRdb.mdb for the ned row to point to the new NED database
    i. You can greatly improve the performance of DataServicesDriver on the NED10M product by temporarily using an index that has only those quads that have been updated since the last update of the previous database. This will also allow MakePreviews to only generate new .jpgs for those maps that have changed. This presumes the .tif maps produced by the DataServicesDriver from the last database update are in a permanent storage area.
        1. Select those quads from ned_conus_13_metadata that have a “QuadDate” field value greater than the largest value in “QuadDate” from the previous database.
        2. Run a select by location on qd24keln and save to a shape file map named new10m.
        3. Load the new10m.dbf into ZoneMBRdb.mdb and change the fieldname “QuadID” to “CatID”.
        4. Edit the MBRTable field in the Product table for the NED10M row and change it from qd24keln to new10m. Edit 1SDENCGC for the ned row to point to the new ned data.
        5. Run the DataServicesDriver with the “All states using current product” button.
        6. Check for the word ERROR in DataServicesDriver.log and fix any problems.
        7. Edit the MBRTable field in the Product table back to qd24keln and delete the ned10m table.
        8. Edit the field named CatSDEDataPath in the 1ConstantsNCGC in the zoneMBRdb.mdb to point to the permanent storage for NED10M.
        9. Move the maps to the permanent storage area.
        10. Run MakeCatalogs on NED10M in the permanent storage area.
        11. If there are any deleted maps in the MakeCatalogs log, delete the files from the permanent storage area and the ThumbNail previews directory. There should not be any deleted maps because USGS would not delete - only modify.

12. Run MakePreviews on NED10M in the permanent storage area to generate previews of the new maps.
13. Edit the field named CatSDEDataPath in the 1ConstantsNCGC in the zoneMBRdb.mdb and set it back to the previous value.
14. Edit gateway field process_date medatable in zonembrdb.mdb for all 3 rows and make it current year and month.
15. Run ArcMap to produce a status map.

8. Serving the 30/60 (1/2 arc second/1 second) meter NED

USGS makes new 30/60 meter NED maps from the 10 and 3 meter maps. There is a complete index map named qd1deg that serves as the 30/60 meter index and has quad index, county FIPS code and the four bounding rectangle fields. To find the modified 30/60 meter maps use the qd24keln above and select quads in that are newer than the newest date in the old database. Then run an ArcMap spatial select to find all polygons in qd1deg map that have their centroid in any of the new qd24keln polygons. Save these features to a map named new30m. Import the new30m.dbf into zoneMBRdb.mdb, rename the field "QuadID" to"CatID". Edit the product row MBRTable field for the NED30M in the 1ProductNCGC table to reference new30m. Also edit the SDElink field in the 1ProductNCGC table to point to the new database.

a. Run DataServicesDriver. Set the product to NED30m. Set the OrderID to NED30M and the ItemID to NED30M_01. Set the Minimum Bounding Rectangle to cover the polygons in new30m. Press the '1Degree Loop on Rectangle using current Product" button to generate new maps for the NED30M product.
b. Check for the word ERROR in DataServicesDriver.log and fix any problems.
c. Copy the newly created maps to the permanent storage are for NED30M.
d. Delete the newly created maps from the ftp site.
e. Edit the MBRTable field in the 1ProductNCGC table and set the value back to qd1deg. Delete the new30m table.
f. Edit the field named CatSDEDataPath in the 1ConstantsNCGC table to point to the permanent storage for NED30M.
g. Run MakeCatalogs on NED30M in the permanent storage area.
h. Run MakePreviews on NED30M in the permanent storage area to generate previews of the new maps.
i. You can greatly improve the performance of DataServicesDriver by using steps similar to the NED10M on the NED 30/160
j. Edit the field named CatSDEDataPath in the 1ConstantsNCGC table and set it back to the previous value.
k. Run ArcMap to produce a status map.

9. Serving the 3 meter (1/9 second) NED.

a. No index map exists for this data so one must be created. The index map is created by selecting from the SDE layer ned_conus_metadata (typically named NED.conus_ned_19_metadata) and joining by location the qd24kel map.
b. In ArcMap, add qd24kel and ned_conus_metadata to the legend.
c. To get NED 3 or better, use ArcMap select by attributes from the ned_conus_19_metadata map where resolution = 19
d. Spatially select those qd24kel quads which intersect with the selected quads above: In ArcMap,Selection ➔ Select By Location ➔ check qd24kel, choose "Have their centroid in" ➔ select ned_conus_19_metadata for 'The features in this layer", check "Use selected features) click Apply. Click close.
e. Save the selected features in the qd24kel to a map named qd24kelm by right click qd24kel/Data/Export Data. Enter qd24kelm. Then add it to the legend.

f. VERY CAREFULLY review qd24kelm. It must have the correct quads or all remaining steps will be incorrect. Save the result of the select from the metadata map and plot it in red. Plot qd24kelm in a light color. Scroll around the maps and look for any red peeking through. Those areas should have been in the qd24kelm map.
g. Put qd24kelm on ims2 in fpSource to use for making a catalog and status map showing updates. Put the qd24kelm.dbf into zoneMBRdb.mdb for use by the NED03M product data service which will deliver only NED 03 or better. Rename QUADID to CATID.
h. The layers names and information must be added to the NEDSDELayer table in zoneMBRdb.mdb. The ned layer named NED.conus_ned_19_plygn has the names of the SDE 19 layers. Save this map to a shape file. Then run addMBRFields on the map to generate the minimum bounding rectangle fields. Ensure that each SDE layer is in the NEDSDELayer table. There may be new rows from an update. Also, there is a possibility that the SDE layer has expanded its area so the MBR values in the map output from addMBRFields should be compared to the rows in NEDSDELayer.
i. As in the NED30 and NED10 maps, run the DataServicesDriver on the NED03M product with the one degree loop button.
j. You can greatly improve the performance of DataServicesDriver by using steps similar to the NED10M on the NED 3 meter
k. Run MakeCatalogs, MakePreviews, make a status map and news file.

10. Notify gateway Fort Collins team.
    a. Make a news file from the MakeCatalogs fpDest/NED30M.log, NED10M.log and NED03M.log.
    b. Update the process_date field in the GatewayMetadata table in the zoneMBRdb.mdb
    c. Notify gateway Fort Collins team to put the new qd24keln,qd24kelm, 1sdeNCGC,NEDSDELayer, and GatewayMetadata tables on all the data service machines
    d. Notify gateway Fort Collins team to load the catalogs, status maps and news

3. Technical Issues

a. Tiling

   Variable as needed during an extract.

b. Compression

   LZ77

c. Scale

   1:24,000 and 1:63,360-scale DEM data for Alaska.

d. Tonal Matching

   None

e. Edge-matching

   None

4. Quality Control

a. Procedures

Visual quality check

b. Acceptance Criteria

Visual quality check

5. Data Steward

a. Name and Organization

Currently, the data steward for the integrated data is:

Ken Becker
National Cartography and Geospatial Center
Natural Resources Conservation Service
US Department of Agriculture
501 Felix Street, Building 23
P. O. Box 6567
Fort Worth, Texas 76115-0567 USA

b. Responsibilities

Storage and access of the data.

B. Integrated Data Structure

1. Geospatial Data Format

a. Format (raster, vector, etc.)

ArcSDE Data Layers in Oracle Database

b. Format Name

ESRI SDE raster

c. Data Extent

Same as source data

d. Horizontal and Vertical Resolution

Same as source data

e. Absolute Horizontal and Vertical Accuracy

Same as source data

f. Nominal Scale

1:24,000 and 1:63,360-scale DEM data for Alaska.

g. Horizontal and Vertical Datum

Same as source data

h. Projection

Geographic

i. Coordinate Units

Degrees

j. Symbology

None

2. Attribute Data Format

a. Format Name

N/A Raster data

b. Database Size

636 GB

3. Data Model

a. Geospatial Data Structure

ESRI SDE raster

b. Attribute Data Structure

N/A raster data

c. Database Table Definition

N/A raster data

d. Data Relationship Definition

N/A raster data

e. Data Dictionary

N/A raster data

C. Resource Requirements

1. Hardware and Software

This is unknown at this time.

2. Staffing

This is unknown at this time.

D. Integration Cost

1. Hardware and Software

This is unknown at this time.

2. Staffing

This is unknown at this time.

IV. Delivery

The gateway extracts from the Oracle database using ESRI ArcObjects software in the gateway data services.

The NED is delivered as 7.5 minute quads for 10 meter NED and one degree blocks for the 30 meter NED.

The data is re-projected into UTM NAD83 to be consistent with the rest of the geospatial maps at the service center. GeoTIFF images are produced.

B. User Information

1. Accuracy Assessment

a. Alignment with Other Theme Geospatial Data

The data is captured at scales of 1:24,000 (1:63,360-scale DEM data for Alaska). This elevation data should be considered not sufficiently detailed for the purpose of analysis at large scales. Alignment with the other data layers will not be perfect due to the fact that the data is captured at different scales and at different dates from other data.

b. Content

This elevation data should be considered not sufficiently detailed for the purpose of analysis at large scales.

2. Appropriate Uses of the Geospatial Data

a. Display Scale

For a hillshade image, the scale of 1:24,000 or smaller.
For a contour map, the original data source scale or smaller, usually 1:24,000.

b. Plot Scale

For a hillshade image, the scale of 1:24,000 or smaller.
For the contour map, the original data source scale or smaller, usually 1:24,000.

c. Area Calculations

Area Calculations are as accurate as the source data and capture scale and the algorithm used by ESRI software.

d. Decision Making

The data is as accurate as the source data and capture scale and the algorithm used by ESRI software

C. Maintenance and Updating

1. Recommendations and Guidelines

a. Original data location and structure

The integrated database is at NCGC and the data is delivered to the Service Center.

b. Update Cycle

The updates from the USGS should be applied periodically. The current thought is quarterly would be sufficient.

c. Availability

When the source data is updated.

d. Change Control

This is to be determined.