

USGS National Hydrography Dataset Newsletter
Vol. 8, No. 2, December 2008
by Jeff Simley, USGS

Arkansas NHD Stewardship MOU Signed – by Bill Sneed

The Arkansas Department of Environmental Quality (ADEQ) and the USGS recently signed an agreement making ADEQ responsible for standardizing and maintaining water quality data collected in Arkansas and stored in an electronic database which is part of a national network of water quality data. The Memorandum of Understanding (MOU) designates the ADEQ as the primary steward for the National Hydrography Dataset (NHD) for Arkansas. The ADEQ, along with the Arkansas Geographic Information Office (AGIO) and Arkansas State Land Information Board (ASLIB) in partnership with the USGS is coordinating the Arkansas NHD Stewardship Program for the maintenance and stewardship of the high resolution NHD in Arkansas. Teresa Marks, Director of the ADEQ and Bill Sneed, USGS Geospatial Liaison for Arkansas participated in the signing ceremony held at the ADEQ. The ceremony was followed by a NHD Technical Working Group (TWG) meeting that included a cake depicting the NHD in Arkansas. Contact Bill Sneed at 501-228-3665 or wsneed@usgs.gov.

NHD Steering Committee Meeting

The NHD Management Team that works as a steering committee on the future of the NHD met in early December. The meeting brought together NHD managers from the USGS, USEPA, USFS, BLM, and state water agencies represented by Alabama, Arkansas, Minnesota, New York, Texas, Washington, and Wyoming. The focus of the meeting was the prioritization tasks the NHD program must address at present, and in the near future. The NHD has created new opportunities in water science and the demand for the dataset to achieve its full potential is beyond the resources that are available. Over 80 tasks have been identified that need to be addressed. The Management Team has prioritized these and grouped them into ten major projects. These are:

1. The NHD Data Update Processes including the NHDGeoEdit tool and transaction processing
2. NHD Data Quality Improvement Programs including USGS maintenance programs
3. Integration of the WBD into the NHD Geodatabase and joint program integration
4. NHD and WBD Data Stewardship Administration and Support
5. Issues on a Single Multi-Resolution Database of best available data
6. Use of the Hydrography Event Management Tool in the NHD program
7. Data Conflation Issues involving high resolution conflation with local data sources
8. Data Generalization Issues to provide datasets from a multi-resolution dataset
9. Enhancing the Content and Capabilities of the NHD
10. Other NHD Management Issues covering a myriad of miscellaneous NHD topics

A big part of properly managing the NHD program is to use well-developed project management practices to define the issues, the scope of those issues, the needs of users, defining the resources, defining milestones, managing the resources to meet milestones, understanding dependencies, implementation, and follow-up to ensure success. Each of the ten major topics above will have a manager who will be responsible for all aspects of the projects and lifecycle management of ongoing activities.

NHDPlus Version 2

The NHDPlus team has spent much of the past year working on the design of NHDPlus Version 2. The draft Functional Design and Database Design documents are now available at: <http://www.horizon-systems.com/nhdplus/documentation.php>. The implementation of version 2 will take the better part of the

next 18 months. Implementation will include building a robust set of NHDPlus Build/Refresh Tools and performing the production processing to refresh the medium resolution NHDPlus using the Version 2 data model. It is hoped that the Build/Refresh tools will ultimately be used to build higher resolution NHDPlus. As part of this effort, the team will be developing a set of user tools early in the implementation period. These tools are called the NHDPlus Build/Refresh User Toolbox and are designed to: (1) Help NHDPlus version 1 users make limited edits to the NHD component and then refresh the NHDPlus attributes and (2) Help NHD stewards insure that their high resolution NHD data is ready for the NHDPlus Version 2 build process when the full Build/Refresh tools are available. The first user tool in the NHDPlus Build/Refresh User Toolbox, the NHDPlus NHD QAQC Tool, is now available. At this time, this tool is primarily useful to the NHD stewardship community, but will be of interest to the NHDPlus version 1 user community when the associated editing tools become available in the toolbox. The NHDPlus Build/Refresh User Toolbox is available at: <http://www.horizon-systems.com/nhdplus/tools.php>. The NHDPlus team would appreciate your feedback on the NHDPlus Version 2 design documentation and on the NHDPlus Build/Refresh User Toolbox.

The Integration of the NHD and WBD

The Watershed Boundary Dataset (WBD) defines drainage areas across the United States in a nested system of ever-subdivided units. Originally four levels of hierarchy were defined at 1:250,000-scale. Recently the entire dataset has been re-analyzed to six levels of hierarchy at scales of 1:24,000 in the conterminous U.S., 1:25,000 in the Caribbean, or 1:63,360 in Alaska. This process used a rigorous hydrologic approach using a well-developed national standard. The program has been a joint effort between the USGS and the Natural Resource Conservation Service (NRCS) with significant funding from the Environmental Protection Agency. U.S. Forest Service, Bureau of Land Management, Bureau of Reclamation, and other federal and state partners have contributed toward this effort. The WBD database has been administered by the NRCS in Ft. Worth, Texas. Nationwide coverage of the new WBD will be completed shortly. The WBD is used extensively in hydrology, biology, and pollution control, just as is the NHD, and the two are often used together.

Since the NHD and the WBD naturally complement each other, the USGS and NRCS have developed a plan to integrate the two datasets into a single geodatabase. This offers many advantages to the WBD technology, improves interoperability for users, and helps facilitate joint stewardship of the NHD and WBD. This past summer a multi-agency team worked on the new geodatabase architecture. Implementation will begin in the first half of FY09. The current NHD geodatabase is subdivided into a NHD feature dataset and a stripped down version of the WBD in a separate feature dataset. This later feature dataset will be revised to include the full complement of the WBD, plus new additions to the WBD data design to help it integrate better with the NHD. The spatial integration of the two datasets will be addressed later.

Once fully implemented the NHD and WBD will be jointly housed in Denver, and Denver will be the interface node for stewardship maintenance transactions. The NRCS will house a replicate of this database for distribution purposes. Customers will obtain NHD and/or WBD data through (1) The National Map, (2) the NRCS Data Gateway, and (3) a hydrography specific web site (<http://nhd.usgs.gov>). Users will have several options for downloading. This will include (1) NHD-WBD options, (2) areas of coverage, and (3) levels of hierarchy.

Stewardship of the WBD will be folded into the NHD stewardship program using the same NHD technical and programmatic approach. NHD and WBD maintenance will need to be performed by certified editors and the incoming transactions will need to be quality controlled. This will be done separately for NHD and WBD, but in a typical scenario, both datasets will be utilized in the editing

session. The USGS currently has six hydrography points of contact (POC) who are experts in the NHD. A seventh person who is an expert in the WBD will be added to the staff. This person will be the point of contact for WBD stewardship and then help transition the other six POC's to be more fluent in the WBD. Karen Hanson will lead the WBD activities for the USGS.

Hydrography Stewardship Conference

A national conference will be held April 15-17, 2009 in Denver, Colorado to discuss hydrography data stewardship composed of the NHD and WBD. The goal of the conference is to better develop data stewardship by exchanging ideas amongst a broad group of participants to find out what works, what doesn't work, and how to make improvements. If you have ideas for the conference, send them to jdsimley@usgs.gov and put Stewardship Conference in the subject line.

November Hydrography Quiz / New December Quiz

Janel Day, a Cartographic Product Engineer at ESRI, was the first to correctly guess last month's hydrography quiz <ftp://nhdftp.usgs.gov/Quiz/Hydrography41.pdf> as Lake Powell. Before working at ESRI in Redlands, California, Janel was the hydrography intern at the USGS in Denver. She researched information about who was using the NHD to help the USGS better understand the customer base for the NHD. She also worked on user documentation. Now at ESRI, Janel is developing a standardized geologic symbology model. While she may have moved below the surface, she still works with the NHD on a regular basis as it is integrated into different map displays.

Others with the correct answer were (in order received): Jill Marshall, Tom Denslinger, Dave Greenlee, Richard Patton, Joanna Wood, Rob Dollison, Travis Scott, Dean Tucker, Gail Jackson, John Lynam, Linda Davis, Matt Rehwald, Ken Koch, Jim McDonald, Al Rea, Charley Hickman, David Straub, Jennifer Crea, Calvin Meyer, Thom DeGriselles, Hans Klausner, Cindy Martin, Greg Overtoom, Jennifer Campbell-Allison, David Asbury, and David Vincent.

Travis Scott pointed out that Google Earth shows the lake at a much smaller extent than the NHD. Matt Rehwald also pointed out the same thing in MODIS images. Matt notes "several years of drought in the West have significantly reduced inflow into the reservoir, while the rapid growth in Las Vegas increased demand for water." Ken Koch sent a nice photo showing the "bathtub ring" of exposed white rock that shows up on Lake Powell (and Lake Mead). The distinctive white band is caused by minerals left behind on the red Navajo Sandstone by receding waters. Jim McDonald notes that "... the large island (Antelope Island) near Glen Canyon Dam has become reconnected with mainland." Thom DeGriselles points out "... the entire (Colorado River) system is now threatened by the invasive quagga and zebra mussels. These mussels are now living throughout much of the system including Lake Mead, Lake Havasu, Lake Powell, Lake Mohave, and many canals all the way down to San Diego (The Municipal Water District of Southern California is having a tough time with these mussels right now as a matter of fact)." David Asbury wrote saying "... Lake Powell, created by Glen Canyon Dam, which flooded the Glen Canyon portion of the Colorado River. Its flooding was one of the great compromises of the environmental movement. In order to prevent another dam being built on the Green River in Dinosaur National Monument, David Brower and the Sierra Club agreed to the building of Glen Canyon Dam."

This month's hydrography quiz can be found at <ftp://nhdftp.usgs.gov/Quiz/Hydrography42.pdf>. Which state has the greatest percentage of its state boundary defined by rivers? Send your guess to jdsimley@usgs.gov.

Upcoming NHD Geo Edit Tool Training

Jan. 21-23, 2009, Honolulu, Hawaii. Contact Henry Wolter at hwolter@usgs.gov, or Hank Neslon at hpnelson@usgs.gov.

January 26-28, 2009, Tallahassee, Florida. Contact George Heleine at gheleine@usgs.gov, David Anderson at danderson@usgs.gov, or Joe North at joe.north@dep.state.fl.us

February 24-26, Rolla, Missouri. Contact Carl Nelson at cwnelwson@usgs.gov, or Susan T Phelps, CFM, GIS Department Manager Watershed Concepts, AECOM Water susan.phelps@aecom.com.

Upcoming NHD Applications Training

Jan. 20, 2009, Honolulu, Hawaii, contact Henry Wolter at hwolter@usgs.gov.

Feb. 17-20, 2009, Michigan, contact Steve Aichele at saichele@usgs.gov.

Feb. 18, 2009, Wisconsin Dells, Wisconsin, contact Dick Vraga at rsvraga@usgs.gov.

April 27, 2009, Snowbird, Utah, BLM/USFS Geospatial '09, see <http://fsgeodata.fs.fed.us/geoconference/>

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Thanks to Bill Sneed, Cindy McKay, Ariel Bates, and Terry Higgins.

The NHD Newsletter is published monthly. Get on the mailing list by contacting jdsimley@usgs.gov.

You can view past NHD Newsletters at http://nhd.usgs.gov/newsletter_list.html

Jeff Simley, USGS, assumes full responsibility for the content of this newsletter.