

## **NHD/WBD Technical Architecture Planning Meeting**

The NHD/WBD Management Team composed of the USGS and a number of principal partners held a Technical Architecture Planning Meeting May 11-13, 2010 in Denver, CO. The meeting objectives were to (1) Strategize for 1-2 (short), 3-5 (mid), 6-10 (long) year time windows, (2) Gain understanding of current USGS plans, (3) Provide input from key stewardship partners, (4) Establish and improve lines of communication, and (5) Confirm roles and responsibilities. The meeting started off with a round-robin of viewpoints on the NHD/WBD from the partners. The overwhelming message was that many users have invested heavily in the NHD as a critical solution for their business needs. There is an increasing need and priority for water information. The NHD is fundamental to supporting this need. Users need to understand USGS developments early in the process so that their own architecture can anticipate changes. Users are best served when the NHD/WBD is widely used by all organizations so that improved efficiency and compatibility through a common solution. In the future, users see the use of a single version of the NHD/WBD accessed, processed, and edited via web services rather than with distributed copies.

The message was clear that the USGS needs to offer an efficient data maintenance capability with a focus on simplified editing, preferably using web-based tools while keeping a desktop solution for more complex problems. There were calls to review the data model to simplify it or at least build the tools to make the complexity transparent. Historically the USGS has focused on maintaining legacy systems and addressing short-term needs. Now the USGS will turn its attention to more total solutions through better strategic, long-term approaches, using an enterprise architecture and an organization more suited to technology. The USGS will address technology by making immediate improvements to the existing systems as appropriate as a short-term strategy, addressing the full range of users as a medium-term strategy, and looking at web services, web editing tools, and applications as a long-term strategy. Strategies will involve stakeholders. An important part of the NHD/WBD is to create a useful common water information system based on a geospatial component and taking full advantage of the ability to link intelligence about the water along with an analysis function to maximize the value of this data.

A number of existing projects were reviewed: The *NHD Update Process* which is developing a revised data maintenance process to vastly improve the software and processes utilized to update the NHD. The update will take the existing process of some 29 steps and greatly reduce this to a more acceptable number. This will reduce the level of complexity allowing a broader audience, reduce training time, reduce the need for constant technical support, and will hopefully eliminate the need for retraining. It will rely heavily on data replication to reduce the current burdensome data management system. However, the net benefit of data replication needs to be thoroughly developed and tested to determine its actual impact. The *Generalization Project* will move from a purely research effort into more of an implementation capability and address the requirement for cartographic and hydrologic needs. Generalization of hydrography will deal with both the pruning of features in the network and the simplification of the geometry. In a related project, the need for a single *Multi-Resolution Hydrography* dataset needs to be fully developed to handle the multiple resolutions of new data which will make up the best available coverage of the nation's surface water. *Conflation* is very important to the NHD program because of the existing and anticipated influx of higher resolution data which needs to be incorporated into the existing NHD framework. The existing capability needs to be thoroughly analyzed to determine if it is suitable as a long-range solution, and if not, a new approach needs to be created. The *Integration of NHD and WBD* is an ongoing project, which is seeing various components of the overall plan phased in over time. The

initial desired level of integration should be achieved by Spring 2011, however, the WBD is currently implemented in the NHD geodatabase.

Also reviewed was the *Web Edit Tool (WET)* under development by the state of Alabama. The original purpose of the tool was to allow sub-stewards in Alabama to better participate in stewardship by providing them with a simple capability to mark-up necessary changes to the NHD, which would later be implemented by the full capabilities of the state steward. The USGS believed that investing in this tool would provide a useful prototype to a national application that could be used by other states throughout the country. The tool that is now in development allows (1) name and attribute changes, (2) markup of geometry changes, and (3) capabilities for more advanced users to reshape, move, and add features. A new second phase to this project will allow national deployment. It is anticipated that this will then allow a large population of more casual users of the NHD an opportunity to identify and upload edits to the state stewards, giving this large segment of the community an effective role in stewardship.

### **WBD/NHD Integration Status Report – by Stephen Daw**

Contrary to last month's report, WBD and NHD are not yet integrated. There are still some issues related to reach code migration, but the main holdup is making sure the NHD tools work properly with WBD data and the new 2.0 NHD data model. We expect integration to happen within the next few weeks. Please be advised that even when integration has taken place, it will still be several months before the pre-staged datasets are regenerated to reflect WBD inclusion. The latest version of the WBD data model is: WBDHU12\_24Jun2010\_ArcGIS9.2\_File.gdb. A zip file of this can be found at the updated NRCS gateway site: <ftp://gateway2.ftw.nrcs.usda.gov/Gateway/WBD/>. WBD edit tools development is proceeding.

### **Access to Streamgage Locations**

A process has been set up to obtain streamgage locations similar to accessing dam locations. You can now download streamgage locations at: <ftp://nhdftp.usgs.gov/DataSets/National/>. Look for the streamgage or dam files in personal or file geodatabase. These files are refreshed weekly.

### **Pennsylvania National Hydrography Mini-Conference**

Mark your calendars for September 8<sup>th</sup> and 9<sup>th</sup> of 2010 for the Pennsylvania National Hydrography Mini-Conference in Harrisburg, Pennsylvania. Topics to include: (1) What can NHD do for you? (2) A Discussion of an RFP to complete local resolution for Pennsylvania and New York, and (3) A Discussion of revised NHDGeoEdit tool. Registration will be free. More information to come. Contact Tom Mueller, Chair of Pennsylvania NHD Committee, [Mueller@calu.edu](mailto:Mueller@calu.edu).

### **Idaho Steward**

Genna Ashley is the new technical steward for Idaho. She has many years of stewardship and water related experience behind her to qualify her for this role. Genna began her GIS career at the Idaho Department of Water Resources (IDWR) in 1991, working with a variety of water-related spatial data; from digitizing points of diversion, to land-use data for the State. She left Water Resources in 1997 to work for the Boise Project Board of Control, an operating agency responsible for administering surface irrigation water for the U.S. Bureau of Reclamation. During her tenure at the Boise Project, Genna was involved in an effort to map the irrigation facilities for each of the five irrigation districts within the Boise Project boundary area. Upon returning to IDWR in April of 2001, Genna became a state Watershed Boundary Dataset (WBD) Coordinator. In that role, Genna was involved in a multi-year project to successfully bring the Idaho WBD 4<sup>th</sup> through 6<sup>th</sup> field subbasins to a certified status, obtained in

December 2008. Since that time, she has remained the WBD technical contact for Idaho in a stewardship and maintenance role. Most recently, Genna has been sharpening her NHD editing tools, and is looking forward to continuing her work with both the WBD and NHD data in Idaho. Contact Genna at [genna.ashley@idwr.idaho.gov](mailto:genna.ashley@idwr.idaho.gov).

## **National Map Video**

Get an overview of The National Map by viewing a short video at <http://nationalmap.gov/> and clicking on the video.

## **ESRI User Conference Sessions of Interest to Water Specialists**

Tue, Jul 13, 8:30AM - 9:45AM Location: Room 25 C

### ***Introduction to the Hydrography Event Management (HEM) Tools***

*Ariel Bates, U.S. Geological Survey*

### ***Diversion Structures in the NHD***

*Jeffrey Simley, U.S. Geological Survey*

### ***WBD/NHD Integration - A New Opportunity for GIS***

*Stephen Daw, U.S. Geological Survey*

### ***International Watersheds Initiative, Binational Hydrographic Data Harmonization Effort***

*Michael Laitta, International Joint Commission of Canada and US*

Tue, Jul 13, 10:15AM - 11:30AM Location: Room 25 C

### ***What's Happening with the National Hydrography Dataset Plus (NHDPlus)?***

*Tommy Dewald, USEPA - Office of Water*

### ***National Hydrography Dataset Plus (NHDPlus) Version 2.0***

*Cindy McKay, Horizon Systems Corporation*

### ***Improving Stream Flow Estimates in NHDPlus***

*Timothy Bondelid, Independent Consultant, Kernell Ries, U.S.G.S, Richard Moore, U.S.G.S.*

Tue, July 13, 12:00 – 1:00 PM Location: Room 25 C

### **NHD User Group Meeting**

Tue, Jul 13, 1:30PM - 2:45PM Location: Room 28 D

### ***An ArcInfo Programming Odyssey - AML to Python Script Conversion***

*Donna Knifong, USGS - CA WSC*

Tue, Jul 13, 3:15PM - 4:30PM Location: Room 25 C

### ***Building a Water-Resources Geodatabase for the Rio Grande Basin***

*Thomas Burley, U.S. Geological Survey (USGS)*

### ***An Overview of Newfoundland and Labrador's Water Resources Portal***

*Ali Khan, Government of Newfoundland and Labrador, Corey Tucker, Province of Newfoundland and Labrador*

### ***Using GIS to Protect Public Drinking Water in West Virginia***

*Yueming Wu, WVDHHR*

### ***GIS-based Mapping System to Identify Causes of Water Pollution***

*Chul-yup Choi, K-Water*

Tue, Jul 13, 3:15PM - 4:30PM Location: Room 30 E

### ***eCatch - web based co-management of fisheries***

*Matt Merrifield, The Nature Conservancy*

***Flying Fisheries: Aerial Survey Monitoring Tools for Impact Assessment***  
*Simon Ross, Environmental Resources Management, Adam Payne, ERM*  
***Linking Fish-Population Characteristics with Habitat Structure using GIS***  
*Michael Breedlove, U.S.G.S, Michael Yard, U.S.G.S.*

Wed, Jul 14, 10:15AM - 11:30AM Location: Room 23 B  
***Creating the U.S. Topo – A Process Discussion***  
*Bobby Davis, USGS, Helmut Lestinsky, USGS*  
***The National Atlas of the United States 1:1,000,000-Scale Hydrography Dataset***  
*Florence Thompson, USGS*  
***A Custom Projection for Lake Powell Designed Using ArcGIS***  
*David Minkel, National Geodetic Survey, Lex Newcomb, National Park Service*

Wed, Jul 14, 10:15AM - 11:30AM Location: Room 28 D  
***Geospatial Line of Business – Lifecycle Management (Panel Discussion)***  
*Wendy Blake-Coleman, USEPA, Lewis Sanford, U.S.G.S., Lorri Peltz-Lewis, DOI - USBR*

Wed, Jul 14, 1:30PM - 2:45PM Location: Room 23 B  
***Designing USGS topographic mapping for multiscale online use***  
*Cynthia Brewer, Pennsylvania State University, Barbara Buttenfield, University of Colorado-Boulder, E. Usery, Center for Excellence in Geospatial Information Science*

Wed, Jul 14, 3:15PM - 4:30PM Location: Room 30 B  
***Mobile Mapping of Fish Movements in the Lower Missouri River***  
*Kim Chojnacki, USGS, Aaron DeLonay, USGS*

Thu, Jul 15, 10:15AM - 11:30AM Location: Room 30 D  
***Improving Clean Water Conservation in Western Ethiopia Using ArcGIS Server***  
*Apollinaire William, The University of Redlands MS GIS Program*  
***Completion of the Binational U.S.-Mexico Watershed Boundaries and Hydrography Network***  
*Karen Hanson, USGS, Jean Parcher, USGS, Paul Kimsey, USGS, Rubin Carrasco Esparza, Mexican Instituto Nacional de Estadística y Geografía, Victor Romero Benitez, National Institute of Statistics and geography, INEGI*

## **NHD Photo of the Month**

This month's photo was submitted by Roger Barlow of the USGS and shows a liaison enjoying lunch in a spot that overlooks Banks Lake. The Grand Coulee stretches to the north 800 feet below. The map showing where the photo was taken was created by Kathy Isham. To see the photo of the month go to <ftp://nhdftp.usgs.gov/Hydro/Images/Bankslake.pdf>. Submit your photo for the NHD Photo of the Month by sending it to [krisham@usgs.gov](mailto:krisham@usgs.gov).

## **May Hydrography Quiz / New June Quiz**

Gerry Daumiller of Montana State Library was the first to correctly guess the May hydrography quiz as the Salton Sea in southern California. See <ftp://nhdftp.usgs.gov/Quiz/Hydrography58.pdf>. Gerry's been a GIS Analyst at the State Library for 22 years. The Natural Resource Information System (NRIS, <http://nris.mt.gov/gis>) of the Montana State Library is a clearinghouse and repository for the state's GIS data and help's the state's natural resource agencies make their spatial and non-spatial databases available on-line. NRIS is Montana's steward of the NHD, and Duane Lund of the staff was responsible for reviewing the original version of the high-resolution NHD in Montana and fixing the network connectivity and flow direction so that it was all correct. Gerry was responsible for administering the

NHD contract with the USGS in 2008. Gerry maintains the GIS data section of the web site, administer our SDE databases, help people around the state with their GIS and geography questions, and is the State Names Advisor to the U.S. Board of Geographic Names.

In 1905, a diversion was engineered in the Colorado River, in Baja California, Mexico, a few miles South of Yuma, Arizona, for the purpose of conveying water to irrigate lands in the Imperial Valley, in Imperial County, California, located to the Northwest. The diversion, of inadequate size and built with temporary structures, went sour, and the Colorado river changed course, first flowing West and then North in the direction of the Salton depression. By the time the river was brought under control, in 1907, the water had filled the depression to the level of -195 ft, effectively creating the Salton Sea. Left on its own, the water in the sea would have eventually evaporated. This is because the region's mean annual precipitation is only about 2.3 inches, while the mean annual evaporation is 70.8 inches. By the early 1920's, the sea had reached a record low of -250 ft. However, in 1928, Congress acted to designate the lands within the Salton basin below -220 ft as storage for wastes and seepage water from irrigated lands in Imperial Valley. Since then, the sea has been used mainly as a repository for agricultural wastewaters, with the water level rising gradually to its present -227 ft. The average depth of the sea is about 30 ft, and the maximum is 51 ft. From: <http://saltonsea.sdsu.edu/> sent in by Linda Davis.

Others with the correct answer were (in order received): Al Rea, Linda Davis, David Asbury, Mike Wiedmer, Joy Hecht, Tom Christy, Tom Denslinger, Dave Greenlee, Mike Domaratz, Barb Rosenbaum, Richard Patton, Dan Sandhaus, Greg Overtoom, Roger Barlow, David Straub, Gary Penn, Jennifer Campbell-Allison, Mike Stewart, Lin Neifert, Dave Arnold, Ian Reid, Ken Koch, Abbey Edwin, and John Lynam.

This month's hydrography quiz can be found at <ftp://nhdftp.usgs.gov/Quiz/Hydrography59.pdf>. This has to do with drainage patterns and why there is so little hydrography over this vast expanse. The magenta line in the middle is the artificial path of a famous river. The area in the extreme southwest is the Atlantic Ocean. Name the river and explain the lack of hydrography. Send your guess to [jdsimley@usgs.gov](mailto:jdsimley@usgs.gov).

### **Upcoming NHD Training**

July 20-22, 2010: Conflation - Indianapolis, IN, Contact Elizabeth McCartney [emccartney@usgs.gov](mailto:emccartney@usgs.gov) or Jim Sparks [jsparks@iot.IN.gov](mailto:jsparks@iot.IN.gov)

July 27-28: NHDGeoEdit Tool - Rolla, MO. Contact Ray Postolovski [rpostolovski@usgs.gov](mailto:rpostolovski@usgs.gov) or Jeff Schloss [Jeff.Schloss@oa.mo.gov](mailto:Jeff.Schloss@oa.mo.gov)

August 4-5, 2010: HEM 2 Day Classroom - Denver, CO, Contact [HEM@usgs.gov](mailto:HEM@usgs.gov), registration information at <http://nhd.usgs.gov/tools.html#hem>

September 13-16, 2010: NHDGeoEdit Tool - Waterbury, VT. - Contact David Anderson [danderson@usgs.gov](mailto:danderson@usgs.gov)

September 8-9, 2010: NHD Applications - Pennsylvania Hydrographic Committee - Contact David Anderson [danderson@usgs.gov](mailto:danderson@usgs.gov) or David Terrell [dterrell@usgs.gov](mailto:dterrell@usgs.gov)

September 17, 2010: HEM Basic/Advanced short course - Waterbury, VT - Contact David Anderson [danderson@usgs.gov](mailto:danderson@usgs.gov)

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Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

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The NHD Newsletter is published monthly. Get on the mailing list by contacting [jdsimley@usgs.gov](mailto:jdsimley@usgs.gov).

You can view past NHD Newsletters at [http://nhd.usgs.gov/newsletter\\_list.html](http://nhd.usgs.gov/newsletter_list.html)

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