

USGS National Hydrography Dataset Newsletter  
Vol. 5, No. 10, August 2006  
by Jeff Simley, USGS

### **NHD User Group Meeting**

About 50 members of the nation's hydrography community participated in the NHD User Group Meeting at the recent ESRI User Conference. The session gave these GIS professionals a chance to voice their views on the NHD program. Here is what was discussed: (1) there needs to be a representative from the states on the NHD technical panel (now composed of USGS, USEPA, and USFS), (2) users would like to see the edits made to the NHDPlus reflected in the high-resolution NHD, (3) new event tools are being developed by BLM that would benefit the community, (4) data stewardship points-of-contact provided by the USGS will be very beneficial, (5) users would like to see the integration of the NHD and WBD, (6) users would like to see the stewardship of the NHD combined with the stewardship of the WBD, (7) serving data over the web is highly desirable, (8) densification of the NHD in the Pacific Northwest is very important, (9) Texas is developing web-based NHD maintenance, (10) states would like an attribute field or table to hold state stream ID's, (11) local resolution hydrography (1:4,800-scale) will be produced more and more and needs to be a part of the NHD, (12) stormwater systems need to be integrated with the NHD, (13) international NHD is needed on border states, (14) there is a need for tools development to further exploit the utility of the NHD, (15) integration with NWI is desirable, (16) need more and improved access to NHD, (17) progress in the status of high-resolution NHD was applauded, and (18) the group had deep concerns about the health and future of the USGS and its ability to support the NHD.

### **Staff Losses**

The NHD program at the USGS owes its success to a talented and dedicated group of people. Two key people based in Rolla, Missouri have announced they are leaving the program. They are Dave Nail and Mark Thomas. Dave has been around from the start of the program and has been instrumental in training and advising many people from within the USGS and its outside partners. Mark has been a team leader who has expertly guided USGS staff in NHD data integration and provided excellent project management. Both have played a critical role in making it possible for the USGS to produce this outstanding dataset in an efficient and accurate manner.

### **What's New in ArcGIS 9.2**

The upcoming release of ArcGIS 9.2 will provide improvements to users of the NHD within the ArcGIS environment. There are general improvements in quality, documentation, and productivity. None of these are earth-shattering changes, but rather incremental steps forward. In ArcMap there are a number of "usability" enhancements in performing GIS operations on the screen. There are also improvements in tables, particularly the ability to use a Microsoft Excel file directly within ArcMap. This is a big plus to NHD users since scientific data is often conveniently placed in an Excel spreadsheet and then linked to the NHD framework by linear referencing or use of a feature. For more information, including quick on-line demonstrations see <http://www.esri.com/software/arcgis/about/whats-coming.html>. Perhaps the biggest impacts on the NHD will be the use of a new File Geodatabase and improved transaction management. These will be discussed in future NHD Newsletters.

### **Update on NHDPlus Availability**

The NHDPlus team at the U.S. Environmental Protection Agency and U.S. Geological Survey has announced that a number of new hydrologic regions are now available. These include: Region 04-Great Lakes, Region 12-Texas/Gulf, Region 13-Rio Grande, Region 16-Great Basin, and Region 18-California.

In addition, two hydrologic regions have been re-released to correct a zip file path problem in the Flow Accumulation/Direction grid. These are Region 14-Upper Colorado, and Region 15-Lower Colorado. Previously released were all hydrologic regions making up the Mississippi drainage. These include Regions 05, 06, 07, 08, 10, 11, and Subregion 0318. Also previously released was hydrologic region 17-Pacific Northwest. Expected in September are: Region 01-New England, Region 02-Mid-Atlantic, Region 03-South Atlantic, and Region 09-Souris/Red/Rainy. To learn more about the NHDPlus, go to <http://www.epa.gov/waters/> and click on NHDPlus.

### **ESRI User Conference – Spill Modeling Using NHDPlus**

Bill Samuels of SAIC gave a presentation on spill modeling using NHDPlus. The project is developing ICWater - the Incident Command Tool for Protecting Drinking Water, which has its origins in the RiverSpill tool. The work is being done under contract from the U.S. Forest Service and in cooperation with the U.S. Environmental Protection Agency. Some of new features include an updated agent database, which provides asset databases, spill sources, the NHDPlus, and real-time flow (from streamgages). Also new are the use of ArcGIS and desktop web service versions. ICWater looks at the time of travel, time of decay, and dispersion of agents. Some of the constituent inputs include mass, location, half-life, and concerns. The user interface allows you to zoom to an area of interest, identify the lat/long of the incident, and then identify the agent (such as benzene). Furthermore, the user inputs the duration of the spill, concentration (mg/l), and the nearest streamgage (for real-time flow conditions). Predicted flow is calculated and then adjusted by current flow conditions. The output shows the path downstream, drinking water intakes, a hydrograph of flow, and a breakthrough curve. The breakthrough curve shows the concentration over time for each intake, allowing responders to close the intake for the necessary interval from the leading edge to trailing edge of the plume. Also, the system allows a search upstream if an agent has been detected to locate potential sources. You can learn more at <http://eh2o.saic.com/icwater/>.

### **ESRI User Conference – NHD and NHDPlus Applications**

Kristen Gunthardt of the U.S. Environmental Protection Agency presented a talk on NHD and NHDPlus Applications. One particularly interesting part of the talk demonstrated the role flow volume estimates can have on hydrologic equity - a uniform presentation of stream density. A map was shown of stream density discontinuity caused by variations in individual topographic maps. The example was clearly problematic. Next, the same map was shown with all streams below an estimated flow of two cubic feet per second eliminated. The result dramatically showed clear consistency in density, demonstrating the value of this generalization technique. Kristen went on to discuss subjects dealing with the NHD as the spatial framework for the EPA WATERS architecture, assessing recovery potential of impaired waters, the downstream affect of pesticides on endangered species, SPARROW modeling, National Water Quality Assessment for major river basins, relative debris flow hazard response based on precipitation over time, USGS Streamstats, and NOAA status and trend monitoring database dealing with fish abundance. You can see the PowerPoint slides for this paper at [http://www.epa.gov/waters/nhdplus/NHDPlus\\_Applications\\_esri\\_final.ppt](http://www.epa.gov/waters/nhdplus/NHDPlus_Applications_esri_final.ppt). You can contact Kristen at [gunthardt.kristen@epamail.epa.gov](mailto:gunthardt.kristen@epamail.epa.gov).

### **NEIEN Grant Notice**

The U.S. Environmental Protection Agency expects the 2007 Environmental Information Exchange Network grants to be announced in early September at <http://www.grants.gov/>. The Environmental Information Exchange Network (Exchange Network) is a new approach for exchanging environmental data between EPA, states, and other partners. Using the Internet and standardized data formats, the Network exchanges information between nodes, or portals maintained individually by participating

partners. The Exchange Network became operational in 2003 after performing its first automated data exchange. Today, the Exchange Network consists of more than 30 state partners. You can learn more about this at <http://www.epa.gov/onestop/info/index.html>.

### **Answer to July Hydrography Quiz / New August Quiz**

Ken Koch of the Washington State Department of Ecology was the first to correctly guess last month's hydrography quiz <ftp://nhdftp.usgs.gov/Quiz/Hydrography14.pdf> as the Gulf Coast of Florida at Carrabelle with the Ochlockonee River draining to Apalachicola Bay. This is on Florida's Panhandle coast south-west of Tallahassee. Ken is a Water Quality Assessment Coordinator who prepares Washington's 303(d)/305(b) reports for the Department of Ecology. These are also known as the Water Quality Assessment for Washington. You can find more about Ken's work at <http://apps.ecy.wa.gov/wqawa/viewer.htm>. Ken found the location by working his way east from Texas along the Gulf Coast until he found the match. Others with the correct answer were Roger Barlow, David Asbury, Thomas Denslinger, Shane Wright, Matthew Heberger, Joanna Wood, and Doug Clark.

For the August quiz look at <ftp://nhdftp.usgs.gov/Quiz/Hydrography15.pdf>. Can you identify where this is? North is on top (of course) and the water flows from South to North. This is a pretty famous location, not some obscure junction in the middle of Montana. The dark blue lines are major rivers; the light blue lines are more minor rivers and streams; the turquoise lines are canals. How many major rivers do you see? Are we in a floodplain? Send your guess to [jdsimley@usgs.gov](mailto:jdsimley@usgs.gov).

### **Current USGS NHD Data Stewardship Contacts**

Maine, New Hampshire, Vermont, New York, Massachusetts, Connecticut, Rhode Island, Pennsylvania, New Jersey, West Virginia, Maryland, Delaware, Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Puerto Rico, and Virgin Islands – Carl Nelson [cwnelson@usgs.gov](mailto:cwnelson@usgs.gov)

Michigan, Indiana, Ohio, Kentucky Tennessee, Minnesota, North Dakota, South Dakota, Nebraska, Wyoming, Montana, Idaho, Washington, Oregon, Alaska – Paul Kimsey [pjkimsey@usgs.gov](mailto:pjkimsey@usgs.gov)

Wisconsin, Illinois, Iowa, Missouri, Arkansas, Kansas – Tim Hines [thines@usgs.gov](mailto:thines@usgs.gov)

Louisiana, Texas, Oklahoma, New Mexico, Colorado, Utah, Arizona Nevada, California, Hawaii, Guam, American Samoa – Bill Smith [wjsmith@usgs.gov](mailto:wjsmith@usgs.gov)

### **Upcoming One-Day NHD Application Workshops**

Albuquerque, New Mexico – September 12, 13, & 14, 2006. Contact Gary Kress at [gekress@usgs.gov](mailto:gekress@usgs.gov).

St. Cloud, Minnesota – October 4, 2006. Contact Ron Wencl at [rwenc1@usgs.gov](mailto:rwenc1@usgs.gov).

Helena, Montana – October 23, 2006. Contact Sibyl Govan at [sgovan@mt.gov](mailto:sgovan@mt.gov).

Bismarck, North Dakota – October 25, 2006. Contact Bob Nutsch at [bnutsch@nd.gov](mailto:bnutsch@nd.gov).

Salem and Portland, Oregon – November 13 & 14, 2006. Contact Nancy Tubbs at [ntubbs@usgs.gov](mailto:ntubbs@usgs.gov).

Olympia, Washington – November 16 & 17, 2006. Contact Sam Bardelson at [stbardelson@usgs.gov](mailto:stbardelson@usgs.gov).

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Thanks to Bill Samuels, Kristen Gunthardt, Tommy Dewald, Cindy McKay, and Terry Higgins.

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.