USGS National Hydrography Dataset Newsletter
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by Jeff Simley, USGS

What is NHDPlus?

NHDPlus is an enhancement to the 1:100,000-scale medium resolution National Hydrography Dataset designed to improve the utility of the NHD in applications, particularly those that deal with the modeling of water flow and those that need to tie the landscape to the stream network. The NHDPlus consists of 6 enhancements: (1) The Value Added Attribute (VAA) table is populated with a number of attributes to more quickly analyze the flow network; (2) Catchment polygons define the drainage area of each individual NHD flowline with known flow direction based on elevation data which has been modified to create more accurate results; (3) Improvements to the medium resolution NHD network geometry to produce more accurate flow navigation and improvements to the naming of water features; (4) Estimates of mean annual streamflow and velocity for each flowline with known flow direction. (5) Flow Accumulation grids derived from elevation models; and (6) Land use, precipitation and temperature data associated with each flowline catchment. The NHD component of NHDPlus comes in the NHDGEOinSHAPE model which is organized similar to the NHDinGEO model. NHDPlus is expected to be completed by the end of spring, 2006. As these data are completed, they will become available for download at http://www.epa.gov/waters.

The EPA and USGS have already linked numerous water quality databases to the underlying NHD by assigning NHD stream (reach) addresses to these entities, which include gaging stations, water quality monitoring sites and impaired waters, enabling them to be queried and analyzed in up/downstream order. Additional information about these linkages and the associated databases can also be found at http://www.epa.gov/waters.

For more information about the NHDPlus, see the August, 2005 (vol. 4, no. 10) and April, 2005 (vol. 4, no. 6) NHD Newsletters at http://nhd.usgs.gov/newsletter_list.html.

Status of NHD Geo Edit

The NHD Geo Edit tool was released for acceptance testing at the USFS in Corvallis, OR on Jan 9, 2006. The USGS began testing in Denver, CO and Rolla, MO the week of Jan 23. Testing is occurring on NHD data in both the Personal Geodatabase and SDE formats. Any issues identified during testing will be addressed in a short timeframe. Release of the tool will follow completion of testing and resolution of any problems found. It is not possible to give a precise release date at this time.

Linear Referencing Lines in ArcGIS

In the past, many people who mapped a linear portion of a river with an attribute did it by simply creating a polyline shape that overlayed the river. This line often was not coincident with the NHD, having come from another source. The line was then given some attribute to map the location of a fish species or type of riparian habitat for example. In the NHD world we want such attribute data, known as events, mapped using linear referencing because it makes data handling and analysis much more efficient. The ArcToolbox - Linear Referencing Tools – Locate Features Along Routes capability appears to allow users to use an input line as discussed above, and index it to the NHDFlowline route. The tool description in ArcToolbox 9.1 is “Computes the intersection of input features (point, line, or polygon) and route features and writes the route and measure information to a new event table.” Furthermore, when using the tool and using a line input feature, it is possible to enter a buffer to allow a larger possible intersection area. That should allow an inexact polyline to create an event. It would appear that the tool does just the trick,

just what many users need. However, in using the tool in this fashion in ArcToolbox 9.1, the results appear to be inconsistent. In over 20 trials with different input lines, different routes, and different buffers, the resulting event may be just what you wanted, almost what you wanted, and nothing like you wanted. In fact the same inputs will produce varying outputs. If you do this kind of work, give it a try and notify me of your results. That way we can help ESRI improve this important capability. It's easy to try it. Just digitize a line on top of a NHDFlowline (it shouldn't have to be exact) and try the tool.

Geometric Network Patch

John Tooley of the Washington Department of Ecology (http://www.ecy.wa.gov/services/gis) in Olympia, Washington has pointed out that there is a Patch available for geometric network trace results. This Patch allows users to perform trace analysis on a geometric network and return the results as a selection. We recommend anyone with ArcGIS Desktop 9.1 Service Pack 1 who performs trace analysis on geometric networks to install this Patch at their earliest convenience to ensure the highest quality experience.
http://support.esri.com/index.cfm?fa=downloads.patchesServicePacks.viewPatch&PID=43&MetaID=1100

Answer to December Hydrography Quiz / January Quiz

David Asbury, a GIS Analyst/Cartographer with the Center for Ecosystem Management and Restoration in Oakland, California was the first to correctly guess the location of last month's hydrography quiz as Hampton Roads and the mouth of the James River at Norfolk, Virginia (see ftp://nhdftp.usgs.gov/Quiz/Hydrography7.pdf). David pointed out that "The Naval Station Norfolk is a prominent feature on the image; much of the non-earthen shoreline consists of dock and shipbuilding facilities". David also noted that "the rectilinear feature looks like it might be dredge spoils from a glance at GoogleEarth". That is correct. It is known as the U.S Army Corps of Engineers' Disposal Area. Incidentally, a lot of people are using GoogleEarth on the Hydrography Quiz. David's organization, known as CEMAR (see http://www.cemar.org) works to assist policy makers in the effective use of scientific information. The goal is to promote greater respect for ecological systems and processes, as well as the restoration and sustainable management of natural ecosystems. Currently they are working to restore sustainable populations of threatened and endangered steelhead (Oncorhynchus mykiss) to the San Francisco Bay and the Southern California coast.

The January quiz is located at ftp://nhdftp.usgs.gov/Quiz/Hydrography8.pdf. Can you identify where this is? You will have to figure out the color coding yourself. Send your guess to jdsimley@usgs.gov.

Recent and Upcoming NHD Workshops

Portland, Oregon – January 23 & 24, 2006.
Olympia, Washington – January 25, 26 & 27, 2006.
Lafayette, Louisiana – February 15, 2006. Contact Pat O'Neil at pat_oneil@usgs.gov.
Phoenix, Arizona – March 1, 2006. Limited to the Bureau of Land Management.
Fayetteville, Arkansas – March 6 & 7, 2006. Contact Bill Sneed at wsneed@usgs.gov.
Little Rock, Arkansas – March 8, 9 & 10, 2006. Contact Bill Sneed at wsneed@usgs.gov.
Santa Barbara, California – April 3, 2006. Contact Carol Ostergren at costergren@usgs.gov.
Salt Lake City, Utah – April 20, 2006. Limited to the U.S. Forest Service.
Houston, Texas – May 9, 2006. Paper. American Water Resources Association. See http://www.awra.org/meetings/Houston2006/index.html.
Morgantown, West Virginia – May 16, 2006. Contact Bruce Bauch at bbauch@usgs.gov.
Harrisburg, Pennsylvania – May 17, 2006. Demonstration. Contact David Terrell at dterrell@usgs.gov.

Trenton, New Jersey – May 19, 2006. Contact Roger Barlow at rbarlow@usgs.gov.
Coeur d' Alene, ID – Summer, 2006. Contact Frank Roberts at fmroberts@cdatribe-nsn.gov.
Salem and Portland, Oregon – Summer, 2006. Contact Nancy Tubbs at ntubbs@usgs.gov.
Olympia, Washington – Summer, 2006. Contact Sam Bardelson at stbardelson@usgs.gov.

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The NHD Newsletter is published monthly. Get on the mailing list by contacting jdsimley@usgs.gov.
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Jeff Simley, USGS, assumes full responsibility for the content of this newsletter.