

USGS National Hydrography Dataset Newsletter
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Third Year of Newsletter

The USGS National Hydrography Dataset Newsletter is now starting its third year. This marks the 25th issue. The NHD Newsletter is sent to approximately 175 people every month and often is then forwarded by this group to many more in their respective organizations. Feel free to contact jdsimley@usgs.gov to add others to the email list and please forward the NHD Newsletter to those interested.

Measuring High Resolution Progress in Hydrologic Units

When studying water resources, it is particularly useful to use hydrologic boundaries for the study area. These boundaries are the natural basins in the landscape in which the water accumulates and flows. They are organized in a hierarchy of levels ranging from the 21 hydrologic Regions in the United States down through a second, third, and fourth level to the 2,265 Subbasins used by the NHD for packaging the data. A Nationwide effort is also underway to precisely define the fifth and sixth levels of the hierarchy for the Watershed Boundary Dataset http://www.ftw.nrcs.usda.gov/huc_data.html. Of the 2,265 Subbasins used by the NHD, 744 (33%) are complete with an additional 280 (12%) available without inter-subbasin connections and an additional 371 (16%) scheduled for completion, leaving 870 (39%) to be addressed. If a water resource study area needs to be expanded beyond the Subbasin size, it is often useful to jump up to the third level of the hierarchy, the Basin, to obtain the necessary data. The typical Subbasin is about 700 square miles, while the typical Basin is 10,600 square miles. Of the 377 Basins in the country, 63 (17%) have full completed coverage. A total of 164 (44%) Basins are currently scheduled for full coverage, leaving 213 to go. Of these 213, 44 need just one more Subbasin for full scheduled coverage. Since the NHD production program is largely geared towards Subbasin coverage over political boundaries, getting complete Basin coverage is more or less incidental and therefore not a direct goal. None-the-less, full Basin coverage is important in many applications and it is useful to measure progress on this basis. Next time, we'll look at Region and Sub-Region coverage.

American Water Resources Association Meeting

The American Water Resources Association has announced the 3rd meeting in its series of Specialty Conferences and Symposia on Geographic Information systems (GIS) and Water Resources. The 1st symposium in Mobile in 1993 documented the early efforts to apply GIS to water resources studies and introduced hundreds of practitioners to the exciting new field of GIS. The 2nd symposium in Ft. Lauderdale in 1996, showed how GIS was maturing and being applied to real-world problems. Now, the AWRA wants to provide practical workshops and the opportunity for technical exchange on the major applications where GIS is making great advances. They plan to have extended keynote talks on each major topic, followed by papers on specific applications. The National Hydrography Dataset will be an important topic at this conference. The format will be designed to allow participants plenty of opportunities to interact with some of the top researchers and practitioners in the GIS field today. If you are interested in hydrography and GIS, this is the conference for you.

<http://www.awra.org/meetings/Nashville2004/index.html>

The NHD in Canada, eh?

The Canadians are developing their own nationwide hydrography database, calling it the National Hydrography Network, or NHN. It is very similar to the NHD, despite being an independent development. Our understanding of the NHN comes from an initiative in British Columbia known as the Corporate Watershed Base, developed by the Ministry of Sustainable Resource Development. The CWB combines characteristics of the terrain and the stream network at 1:20,000-scale coverage, an improvement over traditional 1:50,000-scale coverage in Canada. The CWB uses Stream Segments, which are confluence-to-confluence segments with unique ID's and flow direction, similar to NHD

Reaches. Stream routes and lakes are composed of sequenced Stream Segments. The model allows network queries including network distance limits similar to our own Navigate function. Additionally, each Stream Segment includes an associated drainage area polygon, what we commonly call a catchment. Functionality also includes the ability to create the upstream drainage area for any point on the network, similar to the NHD Watershed application. “Business Attributes” are used similar to NHD Events to allow the linking of attribute data. A particular instance of a fish can therefore be queried and found in a table with a linear address reference to the CWB. Named Features also reside in the data model. An added characteristic is the z, z-prime, and g values. The z value is the raw derived elevation at each vertex, while the z-prime is the monotonic elevation – the adjusted elevation based on the continuous reduction in elevation in the downstream network. From this, the g value, or instantaneous gradient, can be calculated. The CWB also has “Extra-Jurisdictional” connections, which allow network connections to other datasets, implying potential network links to the NHD. The CWB is a spatial database that can be linked with other databases with an interface such as XML and to a variety of GIS formats. The structure of the CWB model is not unlike the structure of the NHD Geodatabase model.

Geodatabase Conversion

Conversion of the NHD to Geodatabase is now scheduled for January 31. Once this happens, you will have the option of downloading the NHD in Geodatabase or the traditional NHDinArc format.

Shutdown of the Feature Operational Database

The Feature Operational Database, known as the “FOD”, has reached the end of its life cycle. The FOD is the database that houses the NHD. Fortunately, the Geodatabase is coming online just in time to allow a transition from the FOD. The FOD will stop operating January 31, 2004. All loads to the FOD must be entered by January 15 to allow time for processing and availability to upload to the Geodatabase prior to January 31.

Highlight Your NHD Applications

The USGS is putting together a library of examples how the NHD is used in GIS. The examples will then be used in various presentations around the country to demonstrate how the NHD can be used in a GIS to analyze and solve problems. You are invited to contribute your work as an example. If you have a powerpoint slide or two that tells the story of how you are using the NHD, please send them to jdsimley@usgs.gov. Be sure to include your organization’s logo on the slides to provide proper credit.

High Resolution Status Web Site

The high-resolution NHD status can be found at: <http://rockys44.cr.usgs.gov/nhdstatus/viewer.htm> or you can try <http://statgraph.cr.usgs.gov>.

Recent Completions

West Virginia – full state coverage, Southwest Florida Water Management District (10 CU’s), Indiana JFA (10 CU’s), Bighorn Canyon (MT) project (1 CU), Delaware Bay project (1 CU), Lower Hudson (NJ/NY) project (7 CU’s), Colorado Division of Wildlife (CO) project, (9 CU’s), Chippewa NF (MN), Nicolet NF (WI), Manistee NF (MI), Sumter NF (SC), Lake of the Ozarks (MO) project (19 CU’s), project, Lake Okeechobee (FL) project, Middle Minnesota (MN) project (3 CU’s), Lower Kaskaskia (MO) project (1 CU), St. George-Sheepscot (ME) project (1 CU), Pemigewasset (NH) project (1 CU).

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