

USGS National Hydrography Dataset Newsletter
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by Jeff Simley, USGS

Colorado National Hydrography Dataset Stewardship Pilot Report

A report is now available describing NHD data stewardship issues facing the Colorado hydrography community. This is a good reference document for other states contemplating data stewardship. A Colorado NHD Stewardship pilot was conceived to define the processes and costs associated with managing edits. The Colorado Department of Natural Resources, Division of Water Resources contracted with LSA Associates, Inc. to provide: (1) Documentation of existing conditions and the stewardship program countrywide, (2) Recommendations on stewardship organization, and (3) Recommendations on technical issues related to stewardship. The report includes participation from: (1) The USGS, (2) The Colorado Department of Natural Resources and specifically the Division of Water Resources, (3) A subset of the Colorado Water Resources GIS Consortium, and (4) The stakeholders or interested parties in the NHD edit process (for example, various conservancy districts, water management organizations, and municipalities). This report is organized into: (1) An executive Summary, (2) Determining stewardship needs through pilot process, (3) Recommendations for implementing stewardship in Colorado, and (4) Supporting appendices. You can access the report at:

ftp://nhdftp.usgs.gov/Stewardship/CO_NHD_Stewardship_Recommendations.pdf

NHD in Google Earth

It is possible to display the NHD in Google Earth by taking advantage of The National Map Catalog API Query Service. This is a mechanism for making The National Map database available to outside users and applications. To display the NHD, you create a KML using the Application Program Interface (API). Go to The National Map Catalog Query to build the query. This will produce a XML that you can save as a KML for use in Google Earth. With Google Earth installed, double-clicking on the KML will open Google Earth and display the NHD. The results are excellent. For a guide with step-by-step instructions on this prototype process, contact Ariel Bates at atbates@usgs.gov.

Watershed Boundary Dataset (WBD) Status - Karen Hanson, USGS

The Watershed Boundary Dataset (WBD) is a national consistent, seamless, and hierarchical hydrologic unit dataset based on topographic and hydrologic features across the United States. This Watershed Boundary Dataset (WBD) at a 1:24,000-scale for the conterminous U.S., 1:25,000-scale for the Caribbean, and 1:63:360 scale for Alaska consists of digital geographic data that include two additional levels of detailed hydrologic unit boundaries nested within existing or modified 1:250,000-scale hydrologic units. This dataset provides a consistent framework for local, regional, and national applications to manage, archive, exchange, and analyze data by hydrologic features.

The WBD for the nation is scheduled to be completed, and fully certified, except for Alaska, by the end of calendar year 2008. The graphic referenced below defines levels of certification. Currently 3 states have received full certification, 26 have been certified/provisionally certified. In review for certification, are 7 additional states (6 shown on the referenced graphic, plus Hawaii), with the 13 remaining conterminous states scheduled to be submitted for certification review over the next few months. A planned workshop in the state of Alaska is scheduled for the end of August 2008, in order to assess level of effort for

completion and to build a team and strategy to expedite that work. See the graphic at ftp://nhdftp.usgs.gov/NHD_Status/WBD_Plan_7_24_08

Hydrography Event Management Tool (HEM) 2.0 Update – Dan Wickwire, BLM

Work is currently underway on development of version 2.0 of the Hydrography Event Management (HEM) Tools. Initially released in Spring 2007, development of the first version of the HEM Tools was sponsored by the Pacific Northwest Hydrography Framework and focused on providing basic editing functionality for event data referenced to the National Hydrography Dataset. Sponsored by the USEPA, HEM Version 2 focuses on additional editing functionality and meeting the business needs of the EPA partners. Highlights include: (1) Editing support for polygon (area) events, (2) Split & merge Events, (3) Create new events from selected flowline features, and (4) Metadata Editor. Work on this release is well underway and should be ready for distribution in Fall 2008. Much of the work has been completed except for the Metadata Editor and enhancements to the Event Synchronization Tool. For more information about HEM 2.0, check out Tim Smith's presentation at the ESRI User Conference noted below. If you have any questions about the HEM Tools, please contact: Dan Wickwire, US Bureau of Land Management, dwickwir@or.blm.gov, 503-808-6272 or Dana Baker, US Bureau of Land Management, d2baker@or.blm.gov, 503-808-6320.

NHD Special Interest Group Meeting at the ESRI User Conference

Be sure to stop by the NHD Special Interest Group Meeting on Wednesday from 12:00 – 1:00 PM in room 25C. This is an annual gathering of people interested in the NHD to meet in an informal setting to exchange thoughts, ideas, and news about the NHD program. The first order of business will be to listen to user's ideas about the program. The second is to review what has been happening at the USGS, and the third is to outline the features of the NHD Stewardship web site.

NHD at the ESRI User Conference

If you are attending the ESRI International User Conference August 4-8, look for the following NHD sessions:

NHDPlus and NHD Applications
Tue, Aug 5, 10:15AM - 11:30AM
Room 25 C

National Hydrography Dataset Plus (NHDPlus) Applications Sampler

Tommy Dewald, USEPA - Office of Water

The National Hydrography Dataset (NHD) provides for mapping hydrologic features, linking water information to the national surface water drainage network, and up/downstream modeling. NHDPlus is the outcome of a multi-agency effort aimed at developing NHD stream flow volume and velocity estimates to support pollution fate-and-transport models. NHDPlus extends the NHD by integrating it with the National Elevation Dataset to develop a suite of geospatial data products, including a stream network (based on the 1:100,000-scale NHD) with improved networking, naming, and "value-added attributes", such as stream order. NHDPlus also includes elevation-derived catchments (drainage areas) for each NHD reach, a flow direction grid, a flow accumulation grid, and National Land Cover Dataset attributes assigned to the catchments. This presentation will provide an overview of significant NHDPlus applications developed since NHDPlus was first released in 2006.

NHDPlus Navigation and Reporting Toolset for Connecticut River Watershed Atlas

Craig Johnston, USGS

John Waterman, GCS

A Service-Oriented Architecture (SOA) toolset has been developed for the Connecticut River Watershed Atlas. The toolset includes WFS feature extraction, flow line navigation, and watershed-based NHDPlus reporting. The benefits of the proposed toolsets allow organizations to perform geospatial analysis based on watershed boundaries generated on-the-fly via the NHDPlus Navigation tools. With the NHDPlus Navigation tools, users will be able to access detailed watershed information for approximately 12,500 stream segments of the NHDPlus in the Connecticut River Watershed. The ability to access specific watershed information and conceptualize their physical boundaries in relation to other datasets is unprecedented. The SOA will include a web application and ArcGIS Explorer clients. ArcGIS Server 9.3 beta technology will be used as the foundation for geospatial analysis and WFS feature extraction. This project has been funded by an NSDI 2008 CAP grant and implemented through collaboration between USGS, EPA, GCS Research, and Horizon Systems.

Hydrography Event Management (HEM) Tools

Dan Wickwire, U.S. Bureau of Land Management - Oregon State Office

Dana Baker, Northrop Grumman

Tim Smith, Bureau of Land Management

The Hydrography Event Management (HEM) Tools are a set of ArcGIS tools designed to support the creation, management, and refresh of event data that is referenced to stream data in the National Hydrography Dataset (NHD) format. Developed by contractors at the Bureau of Land Management - Oregon State Office, this product was sponsored by the Pacific Northwest Hydrography Framework Partnership and NHD partners. The presentation will include an overview of the business requirements, development history, and a discussion of the tools. Special emphasis will be placed on how these generic tools can be integrated with agency-specific aquatic applications.

NHD Status Map

When using the NHD Viewer at <http://nhdgeo.usgs.gov/viewer.htm>, note that subbasins are color coded by their status in the Maintenance Lite (USGS) program, and their status in the Revision (stewardship) program. Be sure to turn on the legend in the upper right corner to see what the colors represent. Use the Identify function in the left margin to also show the status.

American Water Resources Association GIS in Water Resources Conference

The American Water Resources Association bi-annual conference on GIS In Water Resources was held in San Mateo, California March 17-19. The conference featured 230 papers. Here is a continuation from previous newsletters of a sampling of papers presented.

Development of a Web-Based Toxic Spill Model –Bill Samuels (SAIC) presented a paper on a web version of the ICWater Tool called ICWater Web. It inputs (1) NHDPlus, (2) streamgages, (3) assets, and (4) contaminants, which are processed on a ArcGIS server using the River Spill software, and using source and terminus points calculates (1) a downstream trace, (2) upstream trace, and (3) a breakthrough curve. This version is not in the public domain and requires a log-in code. The starting location can be entered with a GNIS name. The type of spill (bacterial, chemical, radiological) is specified along with the duration of the spill and source strength (such as a railcar). Flow conditions are then determined using mean annual flows (NHDPlus), nearby streamgages, or user-specified flow. The calculation shows downstream path to cut-off point and produces a leading-edge – peak concentration – trailing edge breakthrough curve. The system also produces various reports such as concentrations, sequenced reaches,

and facility lists. The stand-alone version of this has been deployed to several hundred users involved in emergency response and security operations. The web version will further extend the user base.

June Hydrography Quiz / New July Quiz

Jory Hecht, a hydrologist with the Illinois State Water Survey, was the first to correctly guess last month's hydrography quiz <ftp://nhdftp.usgs.gov/Quiz/Hydrography36.pdf> as the Maine coastline south of Bangor in the Deer Island – Mount Desert Island area including Acadia National Park. Jory is also a member of the Institute of Natural Resources Sustainability at the University of Illinois at Urbana - Champaign. Jory's work is focused upon evaluating drought risks to community water systems, and is currently conducting a study on the adequacy of Illinois' community surface water systems for various design droughts. For more information on the Illinois State Water Survey's activities, please visit <http://www.sws.uiuc.edu/>.

Others with the correct answer were (in order received): James Seay, Michael Smith, Thom DeGriselles, Roger Barlow, Pete Steeves, Richard Patton, David Asbury, Ken Koch, Joanna Wood, James Ray, Tom Denslinger, Dan Walters, Jim Sherwood, David Straub, Jim McDonald, Matt Rehwald, and Steve Shivers.

This month's hydrography quiz can be found at <ftp://nhdftp.usgs.gov/Quiz/Hydrography37.pdf>. The lighter blue lines are intermittent streams, the dark blue lines are perennial streams, the light blue polygon is a submerged stream, the dark blue polygon is a lake, the dark red line is artificial path, and the short thick red line is a dam. Note the jagged shoreline. This all means that this is a big dammed river out west. The river flows north to south. The map is 40 miles top to bottom. The lake is about 1.5 – 2.5 miles wide and overall is about 150 miles long. The lake connects two state capitols. Where is this? Send your guess to jdsimley@usgs.gov.

Upcoming NHD Geo Edit Tool Training

August 4-8, Tallahassee, FL, Contact Carl Nelson cwnelson@usgs.gov or David Anderson David.S.Anderson@dep.state.fl.us

Upcoming NHD Applications Training

August 12, Monterey, California, contact Carol Ostergren at costergren@usgs.gov

August 13, Sacramento, California, contact Carol Ostergren

Sept. 16-17, Portland, Oregon, contact Sheri Schneider at sschneid@usgs.gov

Sept. 18, Lacey, Washington, contact Allyson Jason at ajason@usgs.gov

Oct. 21, Laramie, Wyoming, ESRI SWUG, contact Paul Caffrey at Caffrey@uwyo.edu

October 7 and 8, Boise, Idaho, contact Scott Van Hoff at svanhoff@usgs.gov

November 3-7, additional California workshops in planning stages, contact Carol Ostergren

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

Thanks to Mark Eaton, Ariel Bates, Matt Tricomi, Karen Hanson, Dan Wickwire, ESRI, 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.