

USGS National Hydrography Dataset Newsletter
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by Jeff Simley, USGS

Dewald and Roth Receive Henry Gannett Award

National Hydrography Dataset co-founders Tommy Dewald of the U.S. Environmental Protection Agency Office of Water and Keven Roth retired from the U.S. Geological Survey National Geospatial Program jointly received the Henry Gannett Award. The USGS presents the Henry Gannett Award annually to recognize especially distinguished contributions to the topographic mapping of the Nation. This year's award was presented at a special ceremony at the first annual The National Map Users Conference in Denver, Colorado May 12, 2011. The award was presented by Alison Gannett, great-niece of Henry Gannett. Henry Gannett began his work for the Hayden Survey in 1871. In 1882 Gannett was appointed Chief Geographer at the U.S. Geological Survey, a position he held until 1914. Many enduring methods and standards of mapmaking at the agency were developed under his leadership. The USGS Geography Program was established under his command and the program's first topographic map sheets were produced. Gannett was one of the founders of the National Geographic Society, the Geological Society of America, and the Association of American Geographers. USGS Director Dr. Marcia McNutt presented the award citation to the recipients before an audience of some 300 people. Dr. McNutt's citation read in part:

“Tommy Dewald and Keven Roth set about the task of developing a surface water dataset of the nation in the 1990's with a vision to create a solution for the 21st century when suitable water resources would become critical. What oil was for the 20th century, water would be for the 21st century. They methodically canvassed water scientists across the country to determine the elements that would create the solution they had envisioned. The result of their work then became a truly national hydrography dataset.

The success of the initial nationwide coverage quickly grew into demand for a more detailed coverage at 1:24,000-scale through an even larger consortium. Soon, state after state joined the program and contributed to the effort. When the U.S. Forest Service joined the NHD program with a large influx of funding the higher resolution dataset was cemented into a fully national production program with many additional states following suit. By 2007 this effort had been completed with over 25-million features in the dataset covering 7.5-million miles of streams and 6.5-million lakes.

By 2007 the number of scientific applications taking advantage of the unique analytical powers of the NHD had grown to cover all aspects of hydrology, pollution control, resource management, and fisheries biology. In the next four years the NHD had become even more widespread throughout the sciences to the point where any serious study of water resources demands the use of the National Hydrography Dataset.

Just as the current generation of scientists and cartographers using hydrography data have adopted the National Hydrography Dataset as a standard operating practice, the scientists and cartographers of tomorrow will continue to use and evolve this dataset to meet the challenges facing the earth sciences for the remainder of the century and beyond. It is therefore fitting that the Henry Gannett award should be bestowed upon two modern pioneers in mapping, Tommy Dewald and Keven Roth.”

Association of State Floodplain Managers

The Association of State Floodplain Managers national conference held in Louisville, Kentucky the week of May 16 presented 170 papers and four plenary sessions on floodplain topics. The Federal Emergency Management Agency, the U.S. Army Corps of Engineers, the National Oceanic and Atmospheric Agency,

and the U.S. Geological Survey played important roles at the conference alongside the many state and local government floodplain agencies across the country. Also of note were the many private firms that support floodplain work. A wide range of topics were discussed generally divided between riverine and coastal flooding. Mapping was a cross-cutting theme in every issue. Public safety was the ultimate objective of every topic presented along with the massive toll flooding has on property. Early warning has a tremendous impact of reducing human and property losses so forecasting was an important subject. Public awareness of flooding hazards is of paramount importance. A large majority of fatalities are related to automobiles caught in flood waters, often by attempts to ford flooded roadways. Issues such as dam and levee safety were obviously important. Fundamental to flooding is understanding the extent of floods at various stages. With this it is possible to mitigate loss by restricting development in affected areas. It also affects the building of infrastructure to minimize impact such as elevation of roads, bridge openings, bypass channels, and holding basins. Flood insurance and FEMA flood insurance rate maps were not significant themes at the conference, but rather the science and engineering behind preventing loss was most often discussed. Risk assessment, however, was commonly a part of many talks. A topic gaining more attention was the management of whole systems as opposed to local systems where communities individually build protection systems. Often, building levees may protect a community only to pass the problem off to someone else downstream. Consequently a succession of localized protection accumulates flooding to more catastrophic levels elsewhere. Wetlands for example are often an important buffer for absorbing floodwaters, but when isolated behind levees, they lose that function. LiDAR was often mentioned, but it certainly isn't viewed as a panacea. It provides a better understanding of risks, but that is only one factor in a complicated chain of steps in protecting the public.

Water Quality Assessment Tool by Jeff Schloss and Ray Postolovski

The State of Missouri joined the NHD stewardship program in 2010 and has been active performing data maintenance. Improving the NHD within Missouri is only one facet of their program. The true value comes from using the NHD. In an effort to streamline and manage all their Water Quality Assessment business data, the State of Missouri developed an application to integrate their business system with spatial data. The Missouri Department of Natural Resources' GIS Editor is a Web application that is integrated with the enterprise Water Quality Assessment (WQA) system. The integrated system provides water quality assessment staff with a platform to manage all the WQA business data and at the same time create and maintain the GIS feature classes associated with the data. The WQA system maintains information on toxic events, stream surveys, water sampling sites, nonpoint source areas, and assessments completed on waters of the State.

All editing for the WQA GIS data is done entirely in the GIS Editor application. The feature classes maintained using the GIS editor are point, line and polygon features related to almost all the data collected and stored in the business database, and six of the nine feature classes are referenced to the High Resolution NHD. Two of the point feature classes store the locations where samples are taken and where stream surveys are conducted. When a location is added, the GIS Editor performs a surface trace using a flow direction grid to determine the NHD reach code and measure which are stored with the point feature. A third point feature class is used strictly as means of establishing the most downstream point for lake assessment polygons and is not referenced to the NHD.

Line feature classes are used to represent toxic events that impact streams, stream survey use attainability ratings, and stream assessments. These are also referenced to the NHD and are attributed with a reach code, a "from" measure, and a "to" measure derived from a flowline trace between an upstream and downstream point indicated by the user. Streams that are too small to be included in the High Resolution NHD are handled by performing a surface trace to the nearest flowline. When the user indicates the upstream and downstream points of the segment of interest, the GIS Editor saves the surface

trace as a part of the feature class. These features are attributed with a reach code and measure that indicate where the trace intersected a flowline from the High Resolution NHD.

Polygons feature classes are used to represent nonpoint sources of pollution, toxic events that impact lakes, and lake assessments. Nonpoint sources are digitized by the user and are not referenced to the NHD. Toxic events that impact lakes are digitized and are not referenced to the NHD. Lake assessments can be copied from a polygon feature class representing Missouri's classified lakes which were created using the High Resolution NHD and are already attributed with a reach code. If a lake does not exist in the High Resolution NHD, it is digitized and will not have a reach code. For more information about this application, please contact Jeff Schloss at Jeff.Schloss@oa.mo.gov or (573) 751-5110.

NHD on Twitter and Facebook by Kathy Isham

Web 2.0 is revolutionizing the way people and organizations communicate. Governmental organizations are encouraged to utilize social networking websites to create an open and transparent government. The NHD has had a Twitter account since October of 2010. Twitter is a social networking website that asks the question: "What are you doing?" In 240 characters or less, the NHD can use this tool to deliver important information to its followers such as: the NHD Viewer being down, new updates on the website, or software updates. The NHD account reached a milestone this week of now having 203 followers that keep up on NHD news. The amount of people following NHD grows every day! The NHD twitter feed is displayed on the NHD homepage, so non-Twitter users can still keep up on the day to day goings on of the program. The Twitter feed provides news about the NHD program, stewardship, and anything related to hydrography. The USGS also has a facebook fan page where we can deliver news to 9,100 fans. You can find links for both the NHD Twitter account and the USGS Facebook fan page on the NHD homepage. If you have news that you would like to send out to the twittersphere or post on facebook, you can send it to Kathy Isham at krisham@usgs.gov. Also, don't hesitate to ask any questions about the role of social networking in the NHD or if you need help with creating and maintaining your own facebook and Twitter accounts. Finally, follow NHD on Twitter @USGSNHD, and become a fan of USGS at <https://www.facebook.com/USGeologicalSurvey>.

National Wetlands Inventory: A Strategy for the 21st Century

To get an overview of the strategy for the National Wetlands Inventory see the powerpoint presentation - National Wetlands Inventory: A Strategy for the 21st Century and Expanded Data for Landscape Level Assessment by the U. S. Fish and Wildlife Service, Branch of Habitat Assessment, National Wetlands Inventory Program, at: http://www.epa.gov/owow/wetlands/monitor/Cooper_and_Tiner.pdf

USGS Provides Grants to States

The USGS is in the process of providing grants to several states to assist them in developing and applying hydrography in The National Map using the NHD and/or the WBD. In addition to the states listed last month, new grants include:

Arkansas Department of Environmental Quality (ADEQ) – Updating to local resolution in Bayou Meto
Louisiana Department of Transportation and Development – Updating hydrography in delta
New Hampshire Geological Survey – Stream extraction from LiDAR DEM's
Washington Department of Ecology (ECY) – Adding dams, divergence, metering structures.
Kentucky Division of Water, USGS Kentucky Water Science Center – Adding karst streams
Mississippi Automated Resource Information System (MARIS) – Updating delta area NHD
New Jersey Department of Environmental Protection – Updated coastal areas in WBD and NHD

NHD Photo of the Month by Kathy Isham

This photo was submitted by Kenton Curtis, a former NHD intern. It shows the braided Chulitna River in Alaska containing glacial silt. Mount McKinley is shown in the background. To see the photo of the month go to ftp://nhdftp.usgs.gov/Hydro/Images/Chulitna_River.jpg. Submit your photo for the NHD Photo of the Month by sending it to krisham@usgs.gov. This will allow the program to build a library of real-world photos linked to the NHD.

April Hydrography Quiz / New May Quiz

Matt Rehwald of the Wisconsin Department of Natural Resources was the first to correctly guess the April hydrography quiz as the Portage Canal between the Wisconsin River and the Fox River at Portage, Wisconsin. At one time this flowed between hydrologic regions 4 and 7 until 1951. See <ftp://nhdftp.usgs.gov/Quiz/Hydrography69.pdf>. Matt is a GIS analyst for the water quality monitoring and assessment programs within Wisconsin DNR's Bureau of Watershed Management, managing spatial data infrastructure and web-mapping applications for the Bureau, and integrating the Watershed Boundary Dataset (WBD) into DNR reporting and modeling frameworks.

Others with the correct answer were (in order received): Calvin Meyer, Edwin Abbey, Ray Postolovski, Ken Koch, Linda Davis (who noted the Portage Canal is REACHCODE 04030201006171), Chris Lund, Tom Denslinger, Al Rea, Barb Rosenbaum, Ellen Lesch, and Dave Straub.

This month's hydrography quiz can be found at <ftp://nhdftp.usgs.gov/Quiz/Hydrography70.JPG>. The blue river is the Mississippi River and the red river is the Missouri River. Which is longer? For extra credit, how long are the two rivers? Send your guess to jdsimley@usgs.gov.

Upcoming NHD Training

Hydrography Event Management tool 4-hour WebEx training.

Sign up at: <http://nhd.usgs.gov/tools.html#hem> Contact: HEM@usgs.gov

Getting Started Part 1 - August 17

Advanced Editing Part 2 - June 7, September 7

Data Maintenance Part 3 - June 22, September 28

June 21, NHDGeoEdit Tool 1-Day Workshop, Cleveland, OH. Contact Elizabeth McCartney at emccartney@usgs.gov or Charley Hickman at chickman@usgs.gov for more information.

June 22, NHDGeoConflation Tool, 1-Day Workshop, Cleveland, OH. Contact Elizabeth McCartney at emccartney@usgs.gov or Charley Hickman at chickman@usgs.gov for more information.

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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.