

USGS National Hydrography Dataset Newsletter
Vol. 12, No. 9, July 2013
by Jeff Simley, USGS

Streamer - Trace America's Streams by Jay Donnelly and Florence Thompson

Earlier this month, the National Atlas of the United States[®] launched a new dynamic map called Streamer. Streamer features an easily used interface that allows anyone to map upstream and downstream traces; to generate reports for each trace; to click on map features for more information; to zoom, roam, or search for their area of interest; to print their maps; and to view online help files. Summary reports for stream traces include a map of the trace; its direction, total length, and outlet waterbody; its origin's stream name, coordinates, and elevation; and counts of the number of gages, streams, states, counties, and cities along the trace. Detailed reports list stream names and gaging stations, plus state, county, and city names as well as links to selected information maintained by the USGS NWISWeb and Census Bureau QuickFacts services.

Streamer is fueled by networked hydrography data generalized to one million-scale. The primary data sources were the medium resolution NHD and NHDPlus. These generalized data were subjected to two expert cartographic reviews to ensure appropriate representation of drainage at one million-scale and to maintain vertical integration with other base data produced at that scale by the National Atlas. Network topology was checked and rechecked. Streams and waterbodies are currently available in shapefile format. Four regional file geodatabases that include networked streams, waterbodies, coastlines, and streamflow gaging stations will be available later this year for the conterminous states, Alaska, Hawaii, and Puerto Rico-U.S. Virgin Islands.

Like *The National Map*, management and production of the National Atlas is the responsibility of the USGS National Geospatial Program. Streamer was developed by an innovative team from the USGS Texas Water Science Center in Austin, Texas. Florence Thompson led the project and Joe Vrabel was Streamer's chief programmer. Some near-term enhancements are already planned, including the addition of Congressional Districts and waterbodies to Streamer reports and the use of WaterWatch-styled symbology to display gaging stations by current streamflow conditions.

Go ahead and try Streamer at <http://nationalatlas.gov/streamer>

Announcing the Official Release of NHD Update Tool v6.0.1 (ArcGIS 10.1) by Paul Kimsey

The USGS is pleased to announce the availability of the new and improved NHD Update toolbar! It has been a long journey to get to where we are today and we truly appreciate the patience of our loyal editors who have weathered the difficult times and now will enjoy the ease and reliability of the new editing tool. We listened to the editing community and provided not just a tool but an entire update process that guides the editor through a complex process in a logical, streamlined and efficient workflow. Although no software can be advertised as "perfect" or "nearly perfect", so the NHD Update process is supported by on-line training and on-going technical support from your NHD Regional Technical Points of Contact (POC's) to make it the best possible experience.

So what's next? Current development is focused on the integration of the conflation process, which will allow the process to be performed within the NHD Update toolbar process and within a replica checkout. Down the road a Provisional GNIS ID and GNIS Name field will be introduced to allow NHD editors the ability to add names within the vector editing environment without going through the GNIS web page. And yes, of course, we will be migrating the source code to ArcGIS 10.2 as soon as possible.

Please see below for information on accessing the software, documentation and technical support.

- (1) The official release for v6.0.1 NHD Update Tool is now available for download from http://usgs-mrs.cr.usgs.gov/stewweb/software_nhd.html and <https://my.usgs.gov/confluence/display/hdc/NHD+Software+Downloads>
- (2) This version supersedes previous version 4.0.3 for ArcGIS 9.3.1 and 5.0.1 for ArcGIS 10.0.
- (3) Release notes are included with the download zip file and on-line help documentation can be accessed at <http://usgs-mrs.cr.usgs.gov/NHDHelp/WebHelp/whtdhtml.htm> Note that there is help specific to new ArcGIS 10.x functionality
- (4) Issues/problems with downloading/installing software or licensing issues should be directed to your NHD Regional Technical Point of Contact.
- (5) Tool issues should be reported at http://usgs-mrs.cr.usgs.gov/stewweb/bugs_nhd.html

NHD User Group Meeting at the Esri International User Conference by Karen Hanson, Jerry Ornelas, Drew Decker

The annual NHD User Group Meeting took place at the Esri International User Conference at noon on Tuesday, July 9, 2013. An overview of some of the current program events were provided by the presenters (Karen, Jerry and Drew). Topics included (1) Support for the Water Census, the (2) Hydrography Event Management tools, (3) Water Liaisons, (4) NHD and WBD Update tools, (5) Water Diversion Work Group, (6) the Network Improvement project, and the (7) Ele-Hydro User Survey. Following the formal presentations, there was an open forum provided in order to gain feedback from the NHD and WBD users that were in attendance. Topics such as stewardship challenges in California, LiDAR projects underway in Indiana and New Jersey were presented by representatives from their respective states, and overwhelming support for the Ele-Hydro concept were discussed. Some of the topics discussed include:

Support for the Water Census – Congress has tasked the governments to assess the nation’s water needs and water availability on a five year cycle. USGS is addressing this by creating a water budget equation for hydrologic units across the nation on a HUC12 basis, and by identifying water diversions between hydrologic units utilizing the capabilities of NHD and WBD. Identifying water use is another important component of the water budget equation. A database called SWUDS, Site Specific Water User Data System, can be linked to the WBD HUC12, and linear referenced to the NHD so we know where water is being used.

Water Liaisons - USGS's National Geospatial Program (NGP) has formed priority user communities to focus mapping needs on supporting scientific applications both within and outside the agency. These are called Communities of Use (COUs) and four have been initially developed - Water Resources, Geologic Mapping, Geologic Hazards, and Natural Resources Conservation. Some of the NGP geospatial liaisons will provide support for the Water Resource s COU, which is built around water-related science research and applications along with related data (such as NHD and WBD).

Water Diversion Work Group - The NHD program has had a work group examining the role of diversions in the NHD and WBD datasets and the need to adequately represent them. A preview on how diversions and associated network components (such as diversion events - removal/addition) would be covered in a later presentation was provided.

Network Improvement Project – The long-range objective of the NHD program is to evolve the NHD to be better integrated with the landscape, specifically with elevation data. A series of integrity checks are being run on the NHD to ensure the network is as connected and dendritic as possible. A number of other edits are also being made to area features. Once these improvements area completed efficient automated

processing of the network for Value Added Attributes will provide increased analytical power to the NHD.

Ele-Hydro User Survey - A survey went out to 60 users of The National Map with 30 respondents. The survey was designed to gauge the interest in a Ele-Hydro data model that combines elevation and hydrography data into a single package, similar to NHDPlus, but not necessarily in the same way. The response was overwhelmingly in favor of the development of such a packaged data model.

Expanding the MyUSGS Hydrographic Data Community by David Anderson

The MyUSGS Hydrographic Data Community (HDC) went live on May 1, 2013 and since then the administrators have added over 130 users to the open members group. The site has also expanded some of its capabilities. In concurrence with our community managers, the team has added individual product blogs for all major community groups – *NHD*, *WBD*, *HEM*, and *GCT*. These product blogs are to make users aware of non-critical information, but nonetheless important, such as staffing changes, announced meetings, and identified issues that are related only to that particular product. Using the WATCH function of the MyUSGS pages will keep users abreast of future blog postings and is recommended for all users, at least for the blog pages. Further information can be found in the “*Navigating the Confluence!*” document on the HDC front page.

The USGS has also added a page/section to the HDC for “Partner Developed Applications for Hydro.” This section was developed so the partner community could share applications and methodologies for using any of the NHD, WBD, and HEM datasets they have worked within the past or future. Partner Support will be monitoring the postings to this page, but there is also a disclaimer that should be read by users.

For questions about the MyUSGS (Confluence) or the Hydrographic Data Community in general, please contact one of the space administrators – David Anderson danderson@usgs.gov, Joel Skalet jjskalet@usgs.gov, Stephen Daw (WBD) sgdaw@usgs.gov, or Ariel Doumbouya (HEM) atdoubouya@usgs.gov.

Status and development of the NHD GeoConflation tools by David Anderson

The NHD GeoConflation tools have undergone initial beta testing for ArcGIS 10.1 (with great appreciation to Calvin Wolter of Iowa DNR for assisting in the beta testing) and are now in the final testing phase prior to release. The 10.1 GeoConflation tools are still based on ArcInfo Workstation – AML, and should be released within the month. Steps are being taken to keep the NHD GeoConflation and NHD Update tools in sync during future development.

Reimplementation of the GeoConflation tool that removes the necessity for ArcInfo Workstation is ongoing; approximately 75% complete, and should be 100% complete by the end of the fiscal year. According to ESRI, ArcGIS 10.2 will not include the ArcInfo Workstation package and because of USGS Workstation license differences from the general community, the reimplementation project is of the highest priority for FY13. The reimplementation will be based on ArcObjects code and include a new queued edit review (QEdit) when released.

A gathering of user requirements and planning for fiscal years 14-15 is also being undertaken. A meeting with current stakeholders (users) is in the planning to discuss how the GeoConflation tools can be made better for the community. Although not all ideas can be executed with current resources, any suggestions are welcome. For further information, contact David Anderson about these plans.

The hydrography conflation project is now being managed by David Anderson for development danderson@usgs.gov and Joel Skalet for training jskalet@usgs.gov. This is in place of Elizabeth McCartney who has moved to the Volunteer Geographic Information (VGI) group.

Network Improvement Project Status by David Kraemer

Regions completed: 06, 07, 09, 10, 11, 12, 13, 14, 15, 16, 17, and 18.

Remaining Region Completion Percentages

01 – 80% – On Hold – Remaining sub-basins will be completed after the Canadian border harmonization

02 – 70% – In Work – Some sub-basins checked out by Rolla NGTOC

03 – 70% – In Work – Some sub-basins checked out by Alabama, Florida, and Georgia

04 – 80% – On Hold – Remaining sub-basins will be completed after the Canadian border harmonization

05 – 90% – On Hold – Remaining sub-basins will be completed after Indiana has finished their editing

08 – 10% – In Work – Some sub-basins checked out by Arkansas, Louisiana, and Mississippi

19, 20, 21, 22 – To be completed in the future

Current editing is within the Atlantic and Gulf coast tidal areas that have high density hydrography; we are progressing steadily through these sub-basins.

As other projects and partners check-in their jobs then we will finish the uncompleted Regions.

USGS Hydrography Grants by Steve Aichele

During Fiscal Year 2013, The National Geospatial Program supported eighteen NHD and WBD projects across the country with almost \$800,000 in grants. These projects focused on building stewardship; increasing the value of the NHD and WBD to users with improved attribution and improved feature content, particularly engineered features; and continuing to explore methods for extracting hydrographic features from LiDAR and IfSAR data. Each month the NHD Newsletter will examine a few of the grants:

The Louisiana Department of Transportation and Development will work to complete their statewide update of the NHD. This project supports editing activities in west central coastal Louisiana (surrounding the Atchafalaya River), the Mississippi Delta, and the coastal area from the Mississippi River across the southern shore of Lake Ponchartrain.

The Indiana Office of Technology will complete 1:2,400-scale mapping of 8 subbasins in northern Indiana. This work will complete statewide local-resolution NHD for Indiana, and provide vital information for several important applications including 1) keeping Asian Carp and other invasive species out of the Great Lakes, 2) water quality monitoring and modeling, 3) restoration of wetlands, and 4) drainage management in very flat and poorly drained areas.

Wyoming completed WBD production before the standards were finalized. As a result the numbering of HUCs in Wyoming does not meet the national standards, which affects the utility of the WBD for some applications. This project will review and update HU codes for all 561 10-digit watersheds and 3319 12-digit watersheds to bring them into conformance with national standards. A crosswalk table will also be provided for users who have linked their data to the current numbering scheme.

Downloads of NHD Data from the USGS in June

During June there were 1,728 downloads of state-based high resolution NHD and 129 medium resolution downloads using file geodatabase. There were 2,283 subregion-based high resolution downloads and 1,044 medium resolution downloads for file based. There we 422 high resolution subbasin and 15 medium resolution subbasin downloads for personal geodatabase. That's a total of 5,621 datasets

downloaded by FTP download. To give an idea of the geography this represents, it is the equivalent of over 5,354,000 quadrangles of coverage, all in a single month.

Also during the period there were over 1,675 downloads from The National Map viewer, with 1,459 by rectangle extracts of various sizes and 216 by subbasin or county. That brings the download total to 7,296 for June.

NHD Photo of the Month

This month's photo features Roger's Lake as seen from the Continental Divide in Colorado. This is a classic high alpine lake located at timberline at 11,800 in elevation. To see the photo of the month go to ftp://nhdftp.usgs.gov/Hydro_Images/RogersLake.JPG. Submit your photo for the NHD Photo of the Month by sending it to kyoder@usgs.gov. This will allow the program to build a library of real-world photos linked to the NHD.

June Hydrography Quiz / New July Quiz

Michael Smith of the Maine Office of GIS was the first to guess the June NHD Quiz as San Diego Harbor on the Pacific Ocean in Southern California. See <ftp://nhdftp.usgs.gov/Quiz/Hydrography95.jpg>

Michael is the GIS manager for the state of Maine and oversees the central GIS activities. Before this he lived and did GIS in San Diego.

Others with the correct answer (in order received) were: Al Rea, Craig Johnston, Steve Char, Bob Denouden, Jon Labie, Steve Shivers, Dennis Dempsey, Laurie Williams, John Lynam, Dan Saul, Calvin Meyer, John Griffin, Kitty Kolb, Adam Oestreich, Donna Knifong, Keith McFadden, David Straub, Anji Auger, David Asbury, Evan Hammer, Kristina Yamamoto, Ken Koch, Baron Howe, Sheila Pelczarski, Steve Aichele, Ellen DAMico, Matt Rehwald, Kurt Johnson, Mike Martin, Richard Patton, Stephanie Bucknam, Janet Brewster, Marc Weber, Dennis Gookin, Adam Dresser, Dan Button, Pete Steves, Larry Sugarbaker, Janel Day, Chris Cretini, Linda Davis, Jamie Schubert, Terri Webster, Steve Goldman, Larry Harlan, Tom Christy, Elaine Bryant, Jenny Lanning-Rush, Pierre Dawson, Tom Shindler, Tommy Dewald, Conrad Wyrzykowski (Go Canada!), Diego Portillo, Leigh McDougal, Leigh McDougal, John Kosovich, David Hockman-Wert, and Roger Barlow.

This month's hydrography quiz can be found at <ftp://nhdftp.usgs.gov/Quiz/Hydrography96.jpg>. Where is this harbor? Send your guess to jdsimley@usgs.gov.

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 Jay Donnelly, Florence Thompson, Paul Kimsey, Karen Hanson, Jerry Ornelas, Drew Decker, David Kraemer, David Anderson, Steve Aichele, Gary Ott, and Kathy Yoder.

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.