

The National Hydrography Requirements and Benefits Study by Steve Aichele

The National Hydrography Requirements and Benefits Study (HRBS) is continuing to gather information from users. The questionnaire closed in March, with 595 Mission Critical Activities submitted by 532 respondents. Respondents included representatives from 24 Federal agencies, all 50 states, tribal governments, and non-profits. Dewberry, the contractor conducting the survey, and the USGS National Map Liaisons are currently in the process of conducting follow up interviews with the respondents, clarifying and consolidating some of the information submitted on the online questionnaire. As of Friday, July 24, 26 State interviews had been held, and 9 interviews with Federal agencies had been completed. The remaining interviews will be completed by mid-August. User requirements and benefits information will be loaded into a geodatabase in September, and a report describing the study methods and results will be available at the end of the calendar year. The information will then be used to guide the USGS to better meet the geospatial needs in water science in the years to come.

The Future of the NHD in South Carolina by Dave Arnold, Silvia Terziotti, and Jimmy Clark

South Carolina has lidar-derived hydrography breaklines for most of the State, and intends to create local resolution NHD throughout the state at a scale of 1:4,800 using the NHD GeoConflation tool. In late 2010 and early 2011, the USGS Geospatial Liaison to South Carolina, the USGS NHD POC, and a representative from Sumter County, South Carolina worked on a pilot project to establish the process for getting lidar-derived hydrography into the national NHD database. This successful process was well documented and presented at the Inaugural National Map Conference held in Denver, Colorado in May 2011. The hydrography breakline data in the state is organized by county in multiple files. One file contains polygon features representing NHDWaterbody features while another file contains linear features that represent NHDFlowline features, but also represent stream banks, which are used to create the wider hydrography features found in the NHDArea feature class. Prior to using these data for local resolution NHD, they must be “cleaned up”, properly aligned, and imported into a NHD geodatabase model template.

Over the last six months, a hydrologist from the South Carolina Department of Natural Resources and representatives from the U.S. Geological Survey’s South Atlantic Water Science Center (SAWSC) have discussed the task of putting this lidar-derived hydrography into the national NHD database. The hydrography data will be utilized in the state’s StreamStats application, due for completion in 2018. This project is managed by the SAWSC and cooperatively funded with the South Carolina Department of Transportation. The detailed lidar-derived hydrography data will be edge matched and edited to create a consistent density of connected hydrographic features. This dendritic network will be used for hydro-enforcement and generation of basin characteristics within StreamStats, and the high-resolution NHD will be used for stream navigation. Due to the time involved in the conversion and GeoConflation processes, the StreamStats project is not scheduled to update the official NHD dataset. SAWSC is currently seeking funding to update the NHD with the lidar-derived hydrography data.

NHD Update Quality Control Checks Documentation Upgrade by Dave Arnold

Since the first release of the NHD Update tool several years ago, the quality control check documents have been a weak spot in an otherwise useful set of documentation. As of the release of NHD Update tool version 6.2.0, there were 95 different quality control checks within the Invalid Geometry Checks, Spatial Checks, Database Integrity Checks, Flow Checks, Back Flow Checks, Check for Pseudo Nodes and Check for Spatial Vertical Relationships. Many of these checks were previously documented as to what the check is verifying, but there are a significant number of new checks that have been introduced over the last couple years that are not properly documented. In the process of adding explanations for these additional checks, the overview document for each check category has been rewritten and will provide information to help the editor deal with the error. Specifically, the overviews will include the check name, how the error the check finds is identified in the Data Reviewer table with respect to the Notes and ReviewStatus columns, the severity level of the error, and the options the editor is allowed to enter in the VerificationStatus column of the Data Reviewer table. Finally, to make the quality control check process more convenient, each of the 95 errors will have a document, linkable from the individual check names in the quality control check overview pages, that includes screenshots explaining what the problem is and, more importantly, how to fix the error. It is our intent to have this rewrite of the quality control check documentation available by the end of September 2015. At some point during the month of September, the new documentation will be presented during an NHD Advisory Committee meeting. In the meantime, check the NHD Update tool documentation to monitor the progress as new quality control check documents are rolled out over the next couple of months.

NHD GeoConflation Tool update by David Anderson

The NHD GeoConflation tool is typically used to import new higher resolution geometry into the NHD and transfer the existing rich set of attributes onto that geometry to make the best dataset possible. The tool has undergone many changes since the previous ArcInfo AML tool. The Science Systems Development Section - Desktop Development Team has spent considerable time in modernizing and refactoring code to allow users a more user-friendly experience with much less manual involvement. Many tasks that once called for users to alter or adjust data in order to proceed through the conflation process have been automated. The team also refactored the Queued Edit review graphical interface (GUI) and process to provide an easier to understand interface. The version of GeoConflation for ArcGIS 10.1 (v2.0) was released on February 25, 2015. Since the initial release very few errors have been reported when using the tool, but some reports required additional development and a second release occurred on June 12th of this year.

Currently, the team is occupied generating a version for use with ArcGIS 10.2.2 (v2.1.1). This version will accomplish several more items requested by users including:

- Compatibility with both personal- (mdb)(ESRI 9.3.1) and file-based (gdb) geodatabase (ESRI 10.x).
- Slightly faster processing on file-GDB formats.
- An “About” button which allows the user to identify the version without having to go to the Windows Control Panel.
- Carry over reachcodes from the source database for non-traditional reachcode assigned features such as SwampMarsh and IceMass features.
- Ability to retain source NHDLine and NHDPoint features if the target feature classes are empty. This prevents accidental loss of those features.
- The new version *may* also include a metadata form (similar to other hydrography based tools) so manual entry of metadata is no longer required.

There are still several other issues on the docket for future enhancements including enhanced processing management, simplification of processing methods, incorporation of a couple of external tools, and additional automated processing to assist the user through the process. Several of these requests are very resource intensive issues and will take time to incorporate as GeoConflation is only one of several tools the Desktop Development team is working on.

If you have any questions about the GeoConflation process or tools used, please contact David Anderson danderson@usgs.gov or nhd-gct@usgs.gov for more information.

NHD/WBD Stewardship Website Upgrade and Improvements by Paul Kimsey

The NHD/WBD stewardship website is a critical piece in the NHD/WBD editing workflow. Requesting a replica (Job) checkout is the first step in the editing process. The website locks down the checked out extent and acts as a valuable project management tool through the graphic display and reporting capability. As the USGS upgrades the NHD/WBD servers and services to ArcGIS 10.x, and the editing tools to ArcGIS 10.2.2, the stewardship website must follow suit and be able to manage the new 10.x replica checkouts. The new stewardship website also includes improvements over the previous ArcGIS 9.3.1 website. Once again, a training website and production website will be available. The new url's for the training and production websites will be posted on the Hydrographic Data Community (HDC), MyUSGS, Confluence site and exposed for external use.

Notable changes are listed below:

While logged In

- 1) User Profile
 - i) Default Checkout Format: File Geodatabase
 - ii) Default Checkout version: ESRI 10.1
- 2) Home Page
 - i) Added Job ID to display
 - ii) Checkout
 - (1) Changed naming convention 8-digit HU
 - (2) 10-digit HU checkout available (Conflation editor role only)
 - (3) File geodatabase checkout only
 - iii) Generate report
 - (1) Will include 10-digit information for conflation checkouts
- 3) Download Software Page:
 - i) ArcGIS 10.2.2 software to be added
- 4) Report Bugs Page:
 - i) Software version
 - (1) Remove 6.0.1 & 6.1.0
 - (2) Add 6.2.0

While logged Out

- 1) Create New Account
 - i) Added text to Create New User window
 - ii) If new account is created or the password is reset, it will also add a new account or reset password on 9.3.1 implementation while they are running concurrently
- 2) Report Data Issue:
 - i) Added text box to allow for more information to be passed back to submitter

StreamStats Update by Pete Steeves

StreamStats (<http://water.usgs.gov/osw/streamstats/index.html>) has been discussed a handful of times in the NHD Newsletter. It is web mapping application that incorporates a GIS to provide users with access to an assortment of analytical tools that are useful for a variety of water-resources planning and management purposes, and for engineering and design purposes. The primary product of StreamStats is on-the-fly regression-based flow statistics from any NHD stream location. There are also a number of other NHD-based tools available to users, including navigating the network, and locating point events up and downstream (such as dams and gages).

StreamStats Version 3 is now available for all implemented states. StreamStats Version 2 was retired on July 14. The version 2 retirement was required because it was operated on computers that used an older operating system, which was considered a security risk for use on U.S. government servers. Currently StreamStats Version 3 has functionality limited to tools that are necessary for its primary use: Users can get information for USGS data-collection stations throughout the U.S. Users also can get basin delineations, basin characteristics, and estimates of streamflow statistics from regression equations for user-selected ungaged sites in states that are implemented, as well as download shapefiles of the delineations that include whatever basin characteristics and streamflow statistics that have been calculated. All other functionality that was available in Version 2, including all tools that rely on stream-network navigation, will not be available until they can be redeveloped. It is planned to release the redeveloped tools as they become available, with a goal of having all functionality available by the end of 2015.

New USGS Watershed Boundary Dataset Program Lead

Susan Buto is now temporarily leading the WBD program for the USGS in place of Karen Hanson who has recently retired. Susan is a Physical Scientist currently working in the Nevada Water Science Center (WSC) in Carson City, Nevada. She holds a Bachelor of Science in Geological Engineering and a Master of Science in Mineral Engineering from New Mexico Institute of Mining and Technology. She also holds an Associate of Science in GIS from Western Nevada College. She has been with the USGS water mission area since 2001 working in both the Nevada and Utah WSCs. During her tenure in the Utah WSC, Susan was the technical lead on completion of the Nevada Watershed Boundary dataset. Susan's current work is concentrated on geospatial analysis in support of hydrologic studies including SPARROW model support in the Upper Colorado River Basin and quantification of evapotranspiration from phreatophytic vegetation in the Great Basin using remote sensing techniques.

New USGS Watershed Boundary Dataset Technical Lead

Kimberly Jones is now the acting technical lead for WBD at the USGS National Geospatial Technical Operations Center on a 120 day detail. She is filling in behind Stephen Daw who previously held this position. Kim will continue to work out of the Utah Water Science Center during this time. She is very excited about this assignment and hopes she can contribute a lot while learning even more about the WBD. Kim has a Bachelor of Science in Applied Environmental Geoscience with a minor in GIS from Weber State University. She started with the USGS at the Utah Water Science Center in 2001 as a student intern working on the WBD for Utah. Over the last 14 years Kim has worked with Karen Hanson on a number of WBD related projects where she was the National Technical lead for steward support and national WBD work efforts. Over the last 9 years she has worked with the International Joint Commission under the International Water Initiative on a project to harmonize hydrologic data across the U.S./Canadian border. She also worked with her colleagues in Mexico on the same type of work along the U.S./Mexico border. As a member of these teams she has developed excellent working relationships on both sides of the borders and has also been able to see some outstanding territory across the continent.

Kim spends much of her spare time with family and friends, made even better at her cabin on the shores of Bear Lake.

WBD Status Report by Kimberly Jones

Tools

The USGS and WBD editors are still working with the 10.0 and 10.1 versions of the WBD ArcGIS edit tools and WBD Add-Ins. These tools will be maintained for the near future (no enhancements or bug fixes) while the backend migration from ArcSDE 9.3.1 to ArcSDE 10.1 occurs. Over the next month, once this migration occurs, the 10.0 and 10.1 tools will be phased out and will be replaced with a set of tools that works with both ArcSDE 9.3.1 and ArcSDE 10.1 jobs. The Vector Tool development team is working on a release of the WBD Edit Tools, Add-Ins and NQC tools for ArcGIS 10.2.2. These new tools will support both jobs from the ArcSDE 9.3.1 environment (existing/current job checkouts) and the new ArcSDE 10.1 environment. Minor bug fixes have been addressed, but no enhancements to the tool are going to be implemented. This release is now more important due to the reported security vulnerabilities with ArcGIS 10.0, ArcGIS 10.1 and ArcGIS 10.2x (MSXML Vulnerability). It should be noted, that during the transition phase, the WBD Edit tools for ArcGIS 10.0 and ArcGIS 10.1 will still support ArcGIS 9.3.1 job editing/check-ins but will not support ArcGIS 10.1 checkouts. Once the ArcSDE 10.1 goes live and the ArcSDE 9.3.1 is shut off, the WBD Edit tools for ArcGIS 10.0 and ArcGIS 10.1 will no longer work and cannot be used.

WBD TEM

The Technical Exchange Meetings are held for partners to ask questions about the WBD model, USGS generated tools (WBD Edit tools), or other activities related to the maintenance of the Watershed Boundary Dataset (WBD). These meeting also allow the Partner Support staff to elaborate or communicate on reported issues, WBD update process, and to provide additional information on other items of interest to the stewardship community. The next WBD Technical Exchange Meeting (TEM) will be held on Wednesday, August 12, 2015 at 10:00 AM MST. During which the WBD product lead will provide information regarding the next tool release, information on the usage of the Hydrographic Data Community (<https://my.usgs.gov/confluence/display/hdc/Hydrographic+Data+Community>) as well as answering any questions that participants may have. Current members of the Hydrographic Data Community please provide any topics for discussion using the following link <https://my.usgs.gov/confluence/display/hdc/Technical+Exchange+Meeting+%28TEM%29+Information> All other inquires and discussion topics can be submitted to Kimberly Jones at kjones@usgs.gov

Thanks to the many stewards who work so hard to keep this data current.

Hydrography Seminar Series

The next Hydrograph Seminar will be Thursday, September 24, 2015, at 2:00 PM Eastern Time. It will feature a presentation on nutrient transport using the SPARROW modeling system. More information will follow in the August NHD Newsletter.

NHD Photo of the Month

This month's photo is Sunset Lake in Wyoming. The photo was taken by Kathy Yoder. See ftp://nhdftp.usgs.gov/Hydro_Images/SunsetLake.jpg. Submit your photo for the NHD Photo of the Month by sending it to jdsimley@usgs.gov.

June Hydrography Quiz / New July Quiz

Rob Pruyne of the Rockingham Planning Commission in New Hampshire was the first to correctly guess the June NHD quiz as the Great Bay Estuary formed by the Piscataqua River at Portsmouth, New Hampshire. See <ftp://nhdftp.usgs.gov/Quiz/Hydrography119.jpg>. Rob is the GIS Specialist at the Rockingham Planning Commission in Exeter, New Hampshire. The RPC is the regional planning agency for the Seacoast area of New Hampshire. The RPC serves in an advisory role to local governments in order to promote coordinated planning, orderly growth, efficient land use, transportation access, and environmental protection. Recently, Rob has been working on a project to map the inundation that may occur at several sea level rise scenarios vs regional and municipal assets (such as landuse, infrastructure and natural resources).

Others with the correct answer (in order received) were: Mike Wiedmer, Tom Falk, Joanna Wood, Calvin Meyer, John Lynam, Evan Hammer, Ellen D'Amico, David Fetter, David Straub, Al Rea, Alex Pellett, Linda Davis, Matt Wood, Tom Christy, David Asbury, Matt Rehwald, Joseph McGarry, Gerry Daumiller, Tom Denslinger, Ellen Lesch, Gayle Sironen, Becky Schaffner, Roger Barlow, Steve Aichele, John Kosovich, David Hockman-Wert, Cindy Engel, and Robert Wurgler.

This month's hydrography quiz can be found at <ftp://nhdftp.usgs.gov/Quiz/Hydrography120.JPG>. This is a refreshing glass of beer (hint) with three natural lakes (hint) imprinted on the glass. The largest of the lakes is well known because more theses and dissertations have been written about it than any other lake in the world. That's because there is a major University (hint) on its shore. Where is it? 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.

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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.