

USGS National Hydrography Dataset Newsletter
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by Jeff Simley, USGS

New Regional NHD Consortium – by Ray Postolovski

A new regional NHD consortium has been established for Wyoming, Colorado, Nebraska, Kansas, Iowa and Missouri. These states joined this NHD collaboration with the purpose to share ideas about the NHD and its applications, as well as to work with neighboring states and understand how each maintains the NHD. During the initial kick-off meeting, it became apparent how valuable a resource this consortium will be for each member. Lively and constructive conversations ensued on various topics that affected the states and action plans were developed to address current issues. There is no doubt that these types of benefits will continue to come out of this group. For more information contact Ray Postolovski at rpostolovski@usgs.gov.

Central Arizona Project Completed

Although the Central Arizona Project was actually completed in 1994, it wasn't completed in the NHD until this month. The Central Arizona Project is a major water diversion aqueduct transferring water 336 miles through a canal and pipeline system from the Colorado River at Parker Dam on Lake Havasu to Phoenix, Tucson and surrounding agricultural areas. The aqueduct transfers about 1.3-million acre-feet of water per year. The project was authorized in 1968 and construction started in 1973 with a final project cost of \$4.4-billion. When the NHD was completed in 2007, only bits and pieces of the canal were included. This summer, USGS intern Kristiana Elite, with help from intern Michael Tinker, thoroughly researched the canal, digitized all missing segments, and built proper flow direction for the entire length. To do this, Kristiana learned to use the NHDGeoEdit tool and associated processing thanks to help from Charles Bowker, Tony Litschewski, and Ray Postolovski. Kristiana also received help from the Bureau of Reclamation. She resolved complex intersections with the natural drainage network and identified how pumping stations moved water uphill through underground pipelines. This project enables the NHD to provide a much improved and functional NHD for the state of Arizona and the Colorado River drainage in general by accurately representing this conduit for a major water diversion. Next on the agenda is the Colorado River Aqueduct, also originating at Lake Havasu, and delivering water to the Los Angeles basin.

Downloading NHD from The National Map Viewer

The U.S. Geological Survey's The National Map Viewer is one way to quickly view and download NHD data. Go to the viewer at <http://viewer.nationalmap.gov/viewer/>. Wait a few seconds until you see the map of the U.S. Zoom into your area of interest using your left-click-cursor-arrow to pan and mouse-wheel to zoom. The map will show generalized NHD based on your zoom factor. To download a subbasin, click on the Download Data icon in the upper right corner. A "Download Options" dialog box will appear. Under "Choose Reference Area", click on NHD Subbasins. Subbasin delineations will appear on the map. Click inside the subbasin you want to download. The subbasin will shade-in and the subbasin will be identified in the new dialog box. Click on the subbasin number in the dialog box. Another dialog box will appear, then click on See Available Data. This will bring up another dialog box. Click in the small box in front of Hydrography. If you want a different format, click on the down-arrow and select. Click Add to Cart. A "TNM Download Cart" dialog box will appear identifying the product, subbasin, and format. Click on Checkout and another dialog box will appear. Enter your email address (twice) and click on Place Order. Another TNM Download Cart box will appear and click Okay. You will receive an email to confirm your order and another to announce that your data is available.

To download a subregion it is the same procedure, except choose NHD Subregions in the “Choose Reference Area” box. Downloading by hydrologic region does not work. It is also possible to download the map extent you are viewing (a rectangle). To do this, click on “[Click here to download by current map extent.](#)” Then follow the same remaining procedure. Try downloading multiple subbasins by selecting them in the viewer. Check your results to see if the data you obtained meets your needs. Send information on your experiences downloading NHD data from this site to Kathy Isham at krisham@usgs.gov. Kathy is compiling information that will be used to ensure the download process works correctly.

Viewing NHD from The National Map Viewer

Viewing the NHD in The National Map viewer can be a little tricky, but with a little effort it works quite well. Go to the viewer <http://viewer.nationalmap.gov/viewer/> and zoom to your area of interest. The data you will see depends on your zoom factor. Click on the right-facing arrow in the extreme left-center of the “Overlays” margin. This will bring up a dialog box including the “Hydrography” theme amongst others. If you click on the small box in front of Hydrography the real NHD will appear – based on the viewing scale. To see more of the NHD, zoom-in further and eventually you will see all of the NHD, including all high resolution, medium resolution, and local resolution (if available). To selectively turn off the medium and local resolution to only see the high resolution, click on the “+” in front of Hydrography. Then click the “+” in front of “Medium Resolution” and “Local Resolution” (if necessary), and unclick each layer until left with just the high resolution. You can then selectively turn off various high resolution layers. Note that you are also seeing the Watershed Boundary Dataset, which can also be selectively turned off by layer. It is also possible to display other themes of data such as contours.

Virtual NHD: Streamlining NHD Training – by Ray Postolovski

Last month, the NHD Partner Support group successfully provided NHD GeoEdit training for the State of Missouri. So why is this newsworthy? Because the training utilized “virtual machines” created by VMWare software. So what is VMWare and Virtual Machines? VMWare is a PC virtualization application that allows us to create the most dependable, high-performing and secure virtual machine environment. Virtual machines are like the full equivalent of a standard computer packaged in a different platform. The USGS was able to easily create a virtual machine for training, which contained all the lessons, software applications and NHD tools required within a secure, isolated external hard drive. This ultimately means that each person in a class will have the exact same system setup, without adding any burden to the steward’s IT staff and computing environment. The virtual machines can be run on any computer using one of today’s popular operating systems and does not require any GIS software to be installed on the computer to operate. The only application required to be installed is the VMWare Player to power the virtual machine from an external hard drive. Once training concludes, this application is uninstalled from the steward’s computers. As a result, this will help eliminate pre-training system setup problems that typically occur which can delay training. The virtual machines will allow the USGS to provide plug-and-play training sessions that do not impact the steward’s computing environment and will deliver a reliable and consistent platform to streamline NHD training.

NHD Model for Downloads - by Gary Ott

All subbasins downloaded from the NHD download viewer are in the NHD model 2.0 and ArcGIS 9.2 format. This includes both high and medium resolution data. Also, all pre-staged high and medium resolution subregion files are also in the new format. Additionally 40 state downloads are in the new format with the exception of KS, KY, NC, NE, NM, NV, OK, OR, TX, WY, which will be completed in the next couple of weeks. The new files will be located in the new directories listed below.

New locations:

<ftp://nhdftp.usgs.gov/DataSets/Staged/States/>

<ftp://nhdftp.usgs.gov/DataSets/Staged/SubRegions/>

Old locations:

<ftp://nhdftp.usgs.gov/StateExtracts/>

<ftp://nhdftp.usgs.gov/SubRegions/>

NHD Image Update Status - by Marshall Creighton

West Virginia, Georgia, North Dakota, Delaware, Maryland, Montana, Arkansas, South Carolina, Michigan, Arizona, California, Louisiana, Nebraska, Alabama, Mississippi, South Dakota, Maine, Vermont, New Hampshire, Connecticut, Rhode Island and Massachusetts have been updated to ensure major NHD features are up-to-date based on contemporary imagery. Missouri and Illinois are currently in work, while Florida is planned. Error rates on completed States showed approx 4.02% of the quadrangles reviewed contained NHD features that qualified for revision. Approximately 17,060 quadrangles have been checked and 686 needed revision. Revisions were grouped as follows: geometry changes - 210, attribute changes - 14, geometry and attribution changes - 14, new features - 412. The majority of revisions involved adding new waterbodies, reshaping existing waterbodies and editing the geometry of existing features. Most of the revisions in the eastern part of the US involved new or existing waterbodies. Very little reshaping of NHD Area Stream/River was needed.

NHD Photo of the Month

This month's photo was submitted by Ariel Bates of the USGS and shows the spillway at Green Mountain Reservoir near Kremling, Colorado. Most of the water that flows out of the reservoir flows through an underground gate and the spillway is only used for overflow conditions. To see the photo of the month go to ftp://nhdftp.usgs.gov/Hydro_Images/Spillway-1.pdf. Submit your photo for the NHD Photo of the Month by sending it to krisham@usgs.gov.

July Hydrography Quiz / New August Quiz

Jennifer Sharpe was the first to correctly guess the July hydrography quiz as the Yukon River delta in western Alaska. See <ftp://nhdftp.usgs.gov/Quiz/Hydrography60.pdf>. Jennifer is a GIS specialist at the USGS Illinois Water Science Center in Urbana. Jennifer is currently assisting USGS hydrologists on several Great Lakes Restoration Initiative projects, including the inter-basin movement of Asian Carp in the Chicago Area Waterway System and the potential for breeding in Great Lake's tributaries. Other current work includes mapping of inundation areas in northeastern Illinois and determining basin characteristics for flood frequency in an urban setting. Jennifer also serves as the primary steward contact for the NHD in Illinois.

Others with the correct answer were (in order received): James Seay, Carl Zulick, Roger Barlow, Ken Koch, Richard Patton, Dave Greenlee, Dan Sandhaus, David Asbury, Steve Shivers, Al Rea, Gail Jackson, Tom Denslinger, Dave Straub, Elaine Blok, Barbara Rosenbaum, Robert Hawkins, Jim McDonald, John Lynam, Edwin Abbey, Tia Morita, and Ellen Finelli.

According to information from NASA found by Gail Jackson, the Yukon Delta at this location is only 2,500 years old, having been formed when the river shifted course. Gail also found on Wikipedia that this area is: "a part of the Yukon-Kuskokwim Delta which is one of the largest river deltas in the world, roughly the size of Oregon. It is located where the Yukon and Kuskokwim rivers empty into the Bering Sea on the west coast of the U.S. state of Alaska. The delta, which mostly consists of tundra, is protected as part of the Yukon Delta National Wildlife Refuge. Regarding the Yukon River ...the average flow is

227,000 ft³/s. The total drainage area is 321,500 mi², of which 126,300 mi² is in Canada. By comparison, the total area is more than 25% larger than Texas or Alberta.” Robert Hawkins suggests checking the delta out on Google Earth. It is very impressive. Edwin Abbey points out the following website: <http://www.yukoninfo.com/yukonriver/>, which states “The Yukon is one of the most important salmon-breeding rivers in the world. Each year it supports huge Chinook salmon returning to spawn in its tributary creeks. The Whitehorse Fishway is, at 366 meters (m) in length, the longest wooden fish ladder in the world. It was built beside the dam at Whitehorse to provide a channel for the salmon as they migrate upstream.”

This month’s hydrography quiz can be found at <ftp://nhdftp.usgs.gov/Quiz/Hydrography61.pdf>. What’s the name of this port. No chance of sharks in these waters. Send your guess to jdsimley@usgs.gov.

Upcoming NHD Training

September 8-9, 2010: NHD Applications - Pennsylvania Hydrographic Committee - Contact David Anderson danderson@usgs.gov or David Terrell dterrell@usgs.gov

September 13-16, 2010: NHDGeoEdit Tool - Waterbury, VT. - Contact David Anderson danderson@usgs.gov

September 17, 2010: HEM Basic/Advanced short course - Waterbury, VT - Contact David Anderson danderson@usgs.gov

September 28-30: Conlation - Urbana, IL, Contact Ray Postolovski rpostolovski@usgs.gov or Jennifer Sharpe jbsharpe@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 Ray Postolovski, Kristiana Elite, Gary Ott, Marshall Creighton, and Kathy Isham.

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.