

USGS National Hydrography Dataset Newsletter
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The NHD in Florida

The State of Florida has given the U.S. Geological Survey (USGS) the go-ahead to complete the high resolution NHD in the State. In this arrangement, sponsored by the Florida Department of Environmental Protection Division of State Lands, the State and the USGS will equally share the cost of production for fourteen of the remaining subbasins in the State. The USGS will be doing the work at the Rocky Mountain Mapping Center and the Mid-Continent Mapping Center. The final phase, involving subbasins adjoining Georgia and those in the Everglades, will be completed utilizing funds from the State's fiscal year 2004 budget starting in late summer 2003. Currently, there are three projects in-work for Florida. One is sponsored by the South West Florida Water Management District (SWFWMD) and covers the area centered on Tampa Bay. The other two efforts are over the Northern half of the Atlantic coast and the Western Panhandle of the State and are sponsored by different Divisions of Florida Department of Environmental Protection. Florida is a particular challenge for NHD production due to the very flat coastal terrain, numerous canals, and expansive swamps that make flow direction very difficult to determine. The Everglades subbasin, 03090202, has over 25,000 reaches at medium resolution, compared to an average of 5,000 reaches elsewhere in the country. This makes production relatively expensive; however, experience with the current work has allowed the development of new tools and procedures to optimize the process.

The Rocky Mountain Mapping Center

The Rocky Mountain Mapping Center (RMMC), located in Denver, Colorado, is one of three U.S. Geological Survey Mapping Centers developing the National Hydrography Dataset (NHD). The Center's hydrography operations consists of five teams: (1) the NHD Production Team – responsible for production, maintenance, technical support, and training; (2) the NHD Support Team – responsible for source data integration; (3) the Partner Data Team – responsible for the quality assurance of partner-produced data; (4) Texas Hydro Revision Team – responsible for the quality assurance of revised hydrography in Texas; and (5) the Research Team – responsible for state-of-the-art developments in hydrography modeling and applications. Forty-seven employees are involved in the hydrography program at the Center, with a third of the payroll funded through agreements with other agencies. The RMMC is currently in the process of creating a second NHD Production Team to support a growing workload from cooperators. The Center has been active in the NHD from its inception and quickly developed a production operation to meet the needs of the first NHD project in partnership with the Environmental Protection Agency. During this effort to complete Nation-wide coverage of the medium-resolution NHD, the RMMC produced 1,178 of 2,120 subbasins. The operation then continued to support this project by recalculating stream ordering for the entire Nation. With this complete, the Center now supports the creation of the high-resolution NHD across the Nation, including complete first-time coverage for Alaska. The current RMMC program is largely consumed in an effort to support the U.S. Forest Service in a cooperative program to provide high-resolution NHD coverage for all of the Nation's Forests and associated subbasins, an effort which will provide data for two-fifths of the Nation. Other significant partnerships include work supporting Texas, Colorado, Utah, California, Hawaii, Alaska, New Jersey, Delaware, and Florida, as well as the Department of Interior High Priority Lands program throughout the country. Production at the RMMC uses the custom-built and highly efficient Framework Tools Interface (FTI) system. The RMMC has thus far completed 132 subbasins in-house and archived 24 partner-produced subbasins. The NHD support team has produced 1,451 Tagged Vector Hydrography source quadrangles and integrated 1,773 Forest Service hydrography source quadrangles (a subbasin has an average of 32 quadrangles). The Texas Hydro Revision team has provided quality assurance for 2,938

hydrography source quadrangles. The Center's Research Team is instrumental in the NHD's continuing development as a leading example of state-of-the-art geospatial data. This effort involves the use of new advancements from the private sector. The team is also a valued advisor to the private sector and academia in guiding the development of new models. As the high-resolution NHD comes closer to completion, the Rocky Mountain Mapping Center will transition from a data producer to that of data stewardship and maintenance to allow the NHD to remain forever current and relevant to the Nation.

Recommended Web Site

The U.S. Forest Service is largely responsible for the progress of high resolution NHD coverage for the United States. Their need for the NHD created a partnership with U.S. Geological Survey that doubled the buying power of each agency and transformed a moderate program into a major one involving 90 USGS employees plus many more in the private sector and state government. To learn more about the role of the NHD in the Forest Service, see: http://www.fs.fed.us/emc/nris/water/nhd_lib/index.htm.

Surf Your Watershed

The Environmental Protection Agency (EPA) was the U.S. Geological Survey's partner in producing the completed medium resolution NHD for the U.S. The EPA has developed many capabilities and tools for the NHD, applicable for the medium resolution and high resolution alike. Of the many tools, one very handy one is Surf Your Watershed. This tool gives you a number of choices to find the subbasin covering your area of interest. You can enter your stream name, city name, zip code, or point on a map. The subbasins meeting your criteria can then be selected and displayed on a map, making it easy to understand the geographic footprint of the subbasin. The subbasin is the hydrologic unit in which the NHD is managed. Once you have selected the correct subbasin, links are provided to many web sites giving you a wealth of information about the subbasin, including water quality, stream flow, and organizations associated with the watershed. See: <http://cfpub1.epa.gov/surf/locate/index.cfm>.

Working with Multiple Subbasins

Many people have dipped into the world of the NHD by downloading a subbasin, loading it into ArcView, and using some of the tools such as navigation - all amazingly simple steps - but that's just part of the picture. Inevitably, the water flows into yet another subbasin and it would be interesting to see what happens next. You have two options. The simplest is to load the adjacent subbasin into the same view. You will find that all navigation and reach indexing work seamlessly. This can be repeated up to a point where there may be too much data for the system to process and performance will begin to suffer. Remember that as you increase your area, you need to consider the scale and density of your dataset and often switching from high resolution to medium resolution data is wise. The second method is to use NHD Append. This is an AML that runs in Arc, and although that makes things a little more complicated, it has the advantage of producing a single dataset that can be easier to manage. You can find out more about NHD Append at: <http://nhd.usgs.gov/tools.html#append>. In either case, you will find that working with multiple subbasins is as easy as working with one subbasin as long as the total number of reaches is manageable. A few trials will help you understand your system's limits.

Recent Completions

(1) Tahoe project (CA), (2) Shoshone project (MT-WY), (3) Ouachita NF (AR-OK).

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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Jeff Simley, USGS, assumes full responsibility for the content of this newsletter.