

## USGS National Hydrography Dataset Newsletter

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by Steve Aichele and Al Rea, USGS

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### Alaska Status Update

by Kacy Krieger

Alaska is an expansive state (one-fifth the size of the “lower 48” US) with abundant water resources. Most of the current NHD in Alaska is based on hydrography from 1950s-era USGS Historical Topographic Maps and is mapped at 1:63,360-scale. The USGS and partners are engaged in an effort to remap the surface waters of Alaska and improve the NHD to meet national 1:24,000-scale standards. Initial efforts began in 2010 and activities have increased drastically over the past two years.

NHD updates in Alaska are coordinated by the Alaska Hydrography Technical Working Group (AHTWG). AHTWG is an active group with representatives from federal, state, local, academic and non-profit entities that address surface water mapping needs and issues in the state. AHTWG successfully employs a stewardship model, known as the Alaska Hydrography Database or AK Hydro, to coordinate, fund and move updated hydrography from partners into the NHD.

AK Hydro has two goals: first, update the NHD in Alaska to national high-resolution standards and second, meet the needs of Alaskan agencies. AK Hydro streamlines the task of updating the NHD by centralizing NHD maintenance services within a single group for all of Alaska. In doing so, the numerous agencies participating in surface water mapping across the state no longer need to run the complex NHD GeoConflation or update tools. Instead, partners and editors provide updated hydrography data that meet statewide and national standards to AK Hydro. Data stewards at AK Hydro then use the NHD GeoConflation and update tools to submit updates back to the NHD. This workflow ensures that the updates that are happening throughout the state make their way into the NHD in a timely and consistent manner, and allows

for partners throughout the state to include important and necessary attributes with their mapped water data.

The successes of early collaborative NHD update efforts in Alaska have led to numerous projects across the state (figure 1). Completed projects include: the Matanuska-Susitna Basin in southcentral Alaska (at approximately 25,000 mi<sup>2</sup> the project covers an area roughly the size of West Virginia and was updated using 5m ifsar and lidar data); updates in several National Parks including Denali National Park, Cape Krusenstern National Monument, Bering Land Bridge National Park, Glacier Bay National Park and edits in progress in Wrangell-St. Elias National Park and Preserve; completed and ongoing editing in the Tongass and Chugach National Forests in southeast and southcentral Alaska; prioritized watersheds in Arctic Alaska including NPRA and TEON watersheds; and the Nushagak/Kvichak Basin in southwest Alaska. These efforts have led to nearly 20% of the NHD in Alaska now meeting national 1:24,000 scale standards.

Partners are planning additional updates in several areas including: Selawik National Wildlife Refuge, Cook Inlet, US Army Lands, additional National Parks, and Forest Service Lands. Additionally, efforts by USGS editors (QC checks and edits, network improvement, hydro-image integration) are improving the existing NHD and making future edits and updates happen smoother.

## Alaska Hydrography Update Status

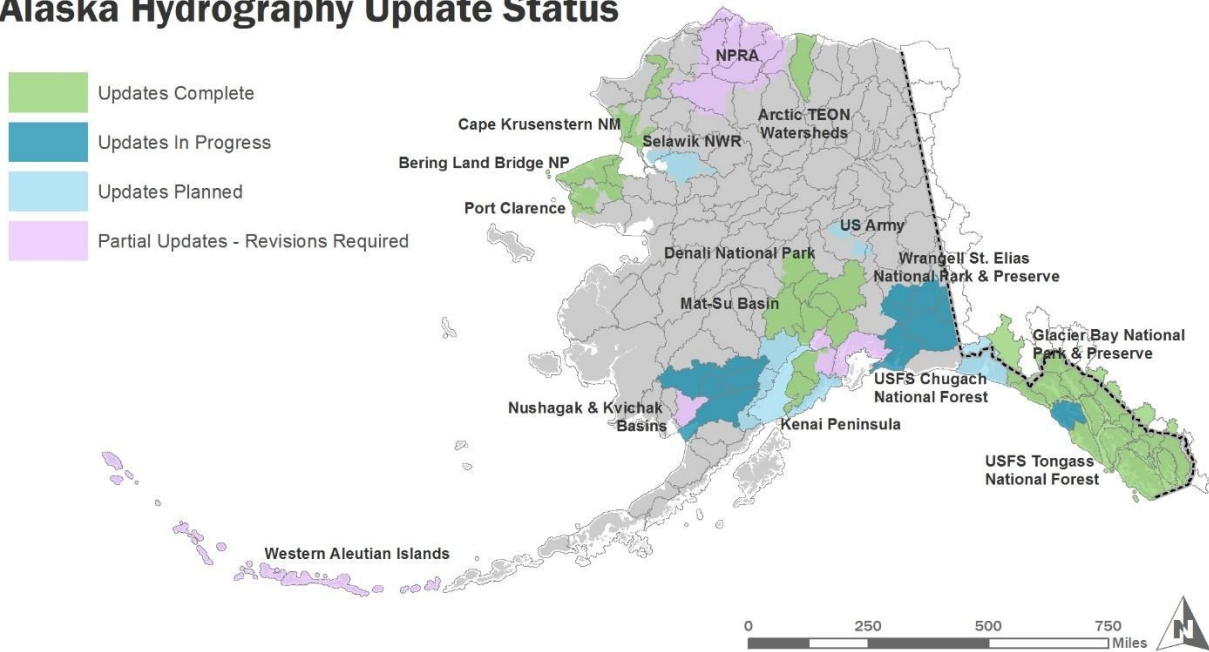


Figure 1. Status of Alaska NHD updates as of September 30, 2016.

## Rebecca (Becci) Anderson selected as Hydrography theme co-lead

By Vicki Lukas

I am very pleased to announce that Becci Anderson has been selected as the new hydrography co-lead, to backfill the position vacated by the retirement of Jeff Simley.

Becci Anderson has over fifteen years of experience in the mapping profession with expertise in GIS, cartography, data analysis, database management, and program coordination and management. Most recently, Becci was the Coordinator for Arctic Science and Plans for the USGS Alaska Region, where she worked on multiple international projects and programs, including the Arctic Spatial Data Infrastructure, and was the lead author on the Coastal Chapter of the forthcoming U.S Arctic Research Plan: FY2017-2021. Previously, Becci served as the USGS Geospatial Liaison for Alaska and was a founding member of the Alaska Hydrography Technical Working Group. She has also formerly served as the program administrator for an Air Force base mapping program and as the GIS coordinator for the Oregon Watershed Enhancement Board. Becci co-authored a watershed assessment for an environmental consulting company and was the project coordinator and cartographer for a United Nations Environment Programme atlas detailing the world's transboundary freshwater agreements. Becci holds a Master of Science degree in Geography from Oregon State University, focusing geographic techniques, biogeography and landscape ecology, and is the Secretary for URISA Alaska.

## WBD FY17 Plans - Research WBD and NHDPlus HR Catchment Integration

Elizabeth Stevens-Klein, Kimberly Jones, Susan Buto

NHD, WBD, 3DEP, and NHDPlus HR together are the basis for a hydrologic data information framework for the nation. These datasets need to be fully integrated and seamless in order to ensure the framework functions properly. For WBD this means working toward a state where data linked to an NHDPlus HR catchment or a model built on NHDPlus HR can be rolled up seamlessly to any HU level for reporting. The ideal state is to have a one-to-one relationship between a collection of NHDPlus catchments and any WBD HU. This will require improving the relationship between NHDPlus catchments and the WBD. WBD and Medium resolution NHDPlus V2.1 are well aligned in a large proportion of HUs but there are cases where the datasets are not well aligned. Examples of common causes for the differences between WBD and NHDPlus V2.1 are outlined in Appendix F of the NHDPlus V2.1 user guide ([https://s3.amazonaws.com/nhdplus/NHDPlusV21/Documentation/NHDPlusV2\\_User\\_Guide.pdf](https://s3.amazonaws.com/nhdplus/NHDPlusV21/Documentation/NHDPlusV2_User_Guide.pdf))

). Similar issues are expected to occur in the updated NHDPlus HR which is currently under development.

The WBD team will start a research project in FY 2017 to identify areas where NHDPlus HR catchments and WBD differ and to propose solutions to resolve those differences. Proposed solutions may include changes to NHD reach rules or to WBD delineation rules. A plan outlining proposed solutions and steps for implementation will be submitted to the WBD community for review and discussion after the initial research project is completed.

## Official release of HEM Tool v 2.8.0.5 for ArcGIS 10.3.1

By Mike Tinker

HEM 2.8.0.5 for ArcGIS 10.3.1 and NHD model 2.2.1 is officially released! Improvements for this release of HEM include faster Import and Synchronize, improvements to the Synchronize user interface and queue, nullable ReachSMDate in all HEM feature classes, and all outputs from HEM are now file geodatabases, rather than personal geodatabases. The help files have also been updated and include a new general “HEM Workflow” section. HEM Help is now web-based, but stand alone HTML help files can always be downloaded from the HDC HEM Help and Documentation page

(<https://my.usgs.gov/confluence/display/hdc/HEM+Help+and+Documentation>). For a full list of what’s new with HEM for Arc 10.3.1, see the “Resolved Tasks” document, also at the HEM Help and Documentation. For those of you who don’t know yet, the Hydrography Event Management (HEM) Tool provides full functionality for adding, editing, and tracking events indexed to the NHD. Events are external scientific data linked to the NHD by the ReachCode and measure of the NHDFlowlines. The ability to link external scientific information to the NHD is central to the NHD model. HEM tool can index point and line events to NHD flowlines, and index polygonal area events to NHD waterbodies. HEM events utilize the NHD schema and follow the NHD metadata model, so event history and edits can be tracked. The tool also provides network measuring capabilities to determine distances through the NHDFlowline network.

The new HEM tool, and all previous version of HEM, can be downloaded from the Hydrographic Data Community HEM Tools page

(<https://my.usgs.gov/confluence/display/hdc/HEM+Tool+Downloads>). HEM 2.8 is also available at the tools section at NHD core website (<http://nhd.usgs.gov/tools.html>).

## NHDPlus High Resolution Beta QC Effort

By Tatyana DiMascio

As NHDPlus High Resolution (NHDPlusHR) Beta products are completed for several regions, the NGTOC has began to engage the user community to help identify problems in the data. A

group of stakeholders from Region 06 (The Tennessee River Basin) is the first group to participate in this QC process. The NGTOC provided the reviewers with instructions and map packages that contain Beta datasets, simple tools, and QC reference layers. The reviewers will use preset editing layers and map packages to compile and submit their comments back to the NGTOC. The results from this initial QC process will help to identify any issues that need to be fixed prior to the refresh of NHDPlusHR. In addition, the feedback and experience will guide the design of the web-based markup tool, which we hope to start using in the future QC reviews. The QC effort in Region 06 began in mid-September and is expected to wrap up in early October.

For questions related to NHDPlusHR Beta QC contact Tatyana DiMascio ([tdimascio@usgs.gov](mailto:tdimascio@usgs.gov)).

## September 2016 NHD Network Improvement Project Status Report

By Cynthia Ritmiller, Project Manager

The NGTOC continues its focus on the Network Improvement Project with the goal of identifying and correcting network and data quality issues existing in the high resolution NHD. One of the key drivers for this effort is the need to provide data ready to use for the production of NHDPlus High Resolution (NHDPlusHR). Data is being reviewed and edited to support the production schedule for NHDPlusHR beginning with Regions 06, 01,12,02,14,and 15. Coordination with appropriate NHD POC's will begin prior to review. Please see status information for details.

Network Improvement- Status (As of September 28, 2016):

Network Improvement Regions Completed: 01, 02, 06, 12, 14, 15, 20, 21 and 22

Network Improvement Regions In Work:

\*\*\*Note: For all regions listed below, as new data becomes available it will go through the QA/QC process.

Region 02 - Subregions 0202 through 0208 have been reviewed and sent to Horizon Systems for NHDPlusHR processing.

Region 07 - Tanya Buxton-Torres is reviewing sub-region's 1701 - 1714.

Region 10 - Chris Helm, Travis Landauer, and Tanya Buxton-Torres are reviewing sub-regions 1002 - 1030.

Region 13 - Charles Browker is reviewing 1301 - 1309.

Region 16 - Cynthia Ritmiller is reviewing 1601 - 1606.

Region 17 - Allen Karsh is reviewing 1701 -1712.

Work started and will continue within regions 03, 04, 05, 08, and 11.

Network Improvement Regions Remaining: 03, 04, 05, 08, 09, 11, 17, 18, and 19

## New Metadata Information Page at the Hydrographic Data Community

By Mike Tinker

There is a new community page at the Hydrographic Data Community: “Metadata for NHD and WBD”. We know that metadata in the NHD and WBD can be tricky--it can be difficult to know just what table does what, or how some of the fields are used. So we have created this new page to help users understand our metadata model. If you are a steward in the business of creating metadata for the NHD or WBD, we have posted several documents and links to help you create good metadata. We have also posted examples of what we think are good metadata. You will also find information about the Federal Geographic Data Committee (FGDC), dataset-level metadata, feature-level metadata, as well as tools to help you create FGDC-compliant XML metadata documents. Finally, you can download the NHD Metadata Viewer Tool for ArcGIS 10.3.1 and a beta version for ArcGIS Pro. Check it out at:

<https://my.usgs.gov/confluence/display/hdc/Metadata+for+NHD+and+WBD>

## NHD Photo

This month's photo of Lake Isabelle in the Indian Peaks Wilderness Area located in Colorado was contributed by John Todesco.

Check it out at [http://nhd.usgs.gov/photo\\_month.html](http://nhd.usgs.gov/photo_month.html)

## NHD Quiz

James Simard was the first to respond with Baton Rouge as the answer to last month's quiz (and to follow the instruction to change the subject line in the email) to last month's hydrography quiz. James is a GIS Analyst and Manager for inland flood models at AIR Worldwide. AIR Worldwide (AIR) provides catastrophe risk modeling solutions that make individuals, businesses, and society more resilient. AIR models the risk from natural catastrophes and terrorism globally. Insurance, reinsurance, financial, corporate, and government clients rely on AIR's advanced science, software, and consulting services for catastrophe risk management, insurance-linked securities, site-specific engineering analyses, and agricultural risk management. AIR Worldwide is headquartered in Boston with additional offices in North America, Europe, and Asia.

Others who replied with the correct answer and changed the subject line were: James Sherwood, Calvin Meyer, Becca Conklin, Stephanie Kula, David Saghy, Mike Major, Brigitta Urban-Mathieux, Jim McDonald, Mark Yandrick, John Kosovich, Aaron Perry, Mark Rehwald, Ron Wencil, Becky McKinley, Roger Barlow, David Szczebak, Yvonne Allen. Others with the correct answer included Dan Button, Barbara Rosenbaum, David Straub, and Tara Manno.

This month's quiz, in recognition of Becci taking over the editorship of the newsletter, this month's quiz was contributed by Kacy Krieger and comes from Alaska:

What glacier is this bay (in the center of the map) named after?

This tidewater glacier is known for being a fast moving glacier experiencing "catastrophic" retreat. It is 32 miles long and 1800 feet thick, but was much larger in recent times. It has retreated nearly 10 miles since 1982 (the length of the bay visible in the map) . The glacier is noted for calving and dumping more than 2 cubic miles of icebergs into the ocean each year. Icebergs from this glacier played a role in the Exxon Valdez Oil Spill. Send your answers (with an email subject including the word "Quiz") to **Becci Anderson** at [rdanderson@usgs.gov](mailto:rdanderson@usgs.gov).

