WBD NATIONAL SEAMLESS DATABASE - FUTURE DIRECTIONS

April 1-3, 2008
Tuesday @ 2:00pm to Wednesday @ 5:00pm

National Cartography & Geospatial Center Conference Room, Fort Worth, Texas

Meeting called by:	Katherine Lins, Chief, Office of Water Information, WRD, USGS, Reston, VA	**Type of meeting:**	**Strategy for Developing a National Maintenance Plan for WBD**
Facilitator:	Tommie Parham, NCGC Director	**Note taker:**	Steve Nechero, Technology Applications

Attendees:	William J. Carswell, Jr., Katherine Lins, Jeff Simley, Tommie Parham, Steve Nechero, Wayne Griffin, Ken Becker, Laura Davenport, Rob Vreeland, Paul Fukuhara, Karen Hanson
Please bring:	National Seamless Geodatabase experiences and lessons learned

AGENDA ITEMS

Topic	Presenter	Time allotted
Tuesday 1 April 2008		2:00pm
✓ Welcome & Introductions	Tommie Parham	10 minutes
✓ Meeting Objectives	Carswell, Lins, Parham	20 minutes
✓ WBD Project Status	Karen Hanson, via mymeeting	30 minutes
✓ National Seamless Database Workflow concepts & objectives	Lins, Nechero, Vreeland	30 minutes
✓ USDA and DOI National Warehouse activities – Hosting, Portals, Map and Data Web Services, process models, tools for national geospatial database maintenance	Group	30 minutes
✓ Tour NCGC	Paul Fukuhara	30 minutes
✓ Adjourn		5:00pm
Wednesday 2 April 2008		8:00am
✓ NHD National Seamless Work Flow	Jeff Simley	1 hour
✓ "As Is" WBD National Seamless Work Flow	Laura Davenport	1 hour
✓ Break	Group	30 minutes
✓ NHD/WBD National Maintenance Program	Group	1 hour
✓ Lunch		11:30-1:00pm
✓ "To Be" WBD National Seamless Work Flow		
✓ Next Steps to Develop the WBD Maintenance Plan		1:00-5:00pm
✓ Summarize Action Items & Meeting Wrap Up		

NCGC Technical Support Staff: Ken Becker, Cartography & Data Services Team Leader
Laura Davenport, WBD Technical Team Representative

Rob Vreeland, NCGC national layer geodatabase expert

Resources: WBD Website http://www.ncgc.nrcs.usda.gov/products/datasets/watershed/
NHD Website http://nhd.usgs.gov/

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Tuesday Notes:

Bill Carswell, Katherine Lins and Tommie Parham gave their meeting objectives.

- Strengthen Partnership between NRCS and USGS on Watershed Boundary Dataset
- Set Future Directions for WBD National Seamless Database
- Create a Better Understanding of WBD Processes
- Gain a Better "Understanding of NHD Processes
- Gain a Better Understanding of NRCS and USGS WBD Stakeholders
- Evaluate and Determine if Synergy Exist Between WBD and NHD for Maintenance
- Determine Next Steps to Develop the WBD Maintenance Plan

Tommie gave a handout and the NCGC one pager
Tommie provided an overview of the National Cartographic and Geospatial Center provides geospatial data and services to their 2,500 service centers. The NCGC delivers authoritative trusted data for field operations for their applications. The data products provided are considered value added products because they are customized for their requestors. NCGC also partners with other agencies on datasets. e.g. DEM and DRG data with USGS.
They are in the fourth year as a government A-76 MEO organization. They are organized into three branches: **Geographic Sciences Branch, Resource Technology Branch, Geospatial Technology Branch.** Their Geospatial strategy report is do out soon.

Karen Hanson provided an overview of the WBD status information. The project maps are maintained on the USGS ftp site. Status maps of certified and provisionally certified states are posted to the NRCS website.

Steve Nechero gave an overview of NCGC activities and GIS implementation in USDA SCA.
Geospatial Data Gateway Delivery of WBD data
National Geospatial Data Management Workflow

Rob Vreeland gave an overview of the National seamless Soil (SSURGO) geodatabase workflow

Katherine Lins gave an overview of the NWI data management workflow performed by CAPP

Paul Fukuhara took the group on the NCGC Tour

Wednesday Notes - Overview of NHD

Jeff Simley gave an verview of NHD
The NHD is the national stream network in digital form with additional attributes such as feature tired to the reaches as well as upstream and downstream addressing system. IT has 26 million features and 6.5 million lakes and pond polygons. The data are provided by ftp in either Shapefile format 3/4th of the requests, or Geodatabase format 1/4th of the requests.

Stewardship:
USGS started the stewardship process for NHD about 2 years ago. Some like the PacNW are "densifying" the 1:24K data to include more streams. The added streams are labeled in the national dataset as ephemeral streams. The current philosophy is that the states own that data and that the states are the trusted sources of the data. It is accepted that they are the reliable sources of the data because they have the local knowledge. This trust relationship is because of the partnerships established between us and the states. We share tools and training. The states may ask and receive advice but the quality assurance is with the state. Many states are now interested in the1:4800 scale.

There are four roles those of USGS, the States, the Maintainers and the Users. Sometimes an entity can be more than one. The steward has the data ownership responsibility for authoritative data. USGS has a change management process. They keep records and details of the history of the data. The States provide the knowledge of the hydrology, quality assurance and edit capability. The Maintainer (often the state) may also have data serving capabilities. Requests for changes may come in from the Users.

Need to develop a process for governance model when national interpretation deviates from the local interpretation. Ken mentioned the Pacific Northwest and Jeff showed the MA example. One concern is that data accuracy, quality assurance guidance, and interpretation can result in questions of the legality of the data related to the published map. The assumption is that the data that stewards provide to USGS is good and reliable

Jeff provided examples of how NHD is used for analysis.

Data Delivery –

The NHD has a Web Mapping service and is developing a web feature service (which requires much greater bandwidth). The EPA Enviromapper links 8 million records to the NHD and 20 databases are linked to their core system. This provides the power of NHD with its attributes and upstream and downstream links to all applications connected to the Enviromapper.

EPA maintains and delivers the NHD Plus at 1:100K is an enhancement of the NHD and includes a complete national dataset of catchments, and flow volume and velocity associated with each reach.

WBD Processing –
Laura provided an overview of the steps in the processing of the WBD data into the national dataset once it is received at the NRCS. The data are received, reviewed, provisionally certified with letters to the states, and when final fully certified. The steps in the processing involve much operator intervention to match the new data to the existing data in the database. There could be some backlog when there is a surge of data coming in at the end of this production cycle.

WBD – Effort (Hours) to Date at NCGC; and examples of WBD in NRCS Reporting Applications –

Ken presented a slide that showed total hours for FY06, 07, and so far in 08 - reported to 4 different WBD Categories, for NCGC. Hours so far total about 3770. For FY08 the hours will be significantly higher, due to the high number of States submitting for certification this year. Resources may be an issue if all the data arrives in a relatively short time span.

A few slides were presented which illustrated the HUC12 and HUC8 layers used in Production Reporting System (PRS) applications. The HUC8 is a "hybrid" of HUC12 data dissolved down to HUC8 level and the USGS HUC8 1:250K data. Jeff mentioned that Hank Nelson in Denver was doing the same work, but put a hold on it until WBD is completed nationwide. Duplication of effort is a concern.

Art Ullman **–** NCGC is moving toward using ArcGIS Server.. They will be more able to do so after the next release. May do the processing at Ft. Worth and data feature service at Kansas City – TBD.

NHD Data Maintenance

USGS has 42 liaisons in the states. Visit http://nmcatalog.usgs.gov/crreps/faces/crreps.jspx

NHD Stewardship
12 states have signed agreements
13 states are in progress

43 states went to the conference last year in Denver

Upper Management
One view is that the USGS liaison role should evolve into stewardship and work across multiple themes related to the National Map.

USGS Liaison role – The NHD program divides the US into nine geographic regions based on common hydrology. For each one there will be a Hydrography Area Specialist whose responsibility is coordination and promotion of the application of the NHD and tools for data enhancements. They are advocates for the NHD and can provide edit tools and training in the region.

NHD Revisions – The first priority is obvious errors, then tiered to lesser issues. They make changes as errors are encountered and save remaining fixes for a later time.

Stratify the errors (error stratification)

Big Ticket items:
Name issues
New lakes and reservoirs
Mislabeled names
Gaps in the network
Disconnections in the network

Maintenance Process –
Agency contact, the Area Hydrography Specialist, sends in an update as an XML transaction. The National Dataset is refreshed every two weeks. Management keeps up-to-date records of changes. They use ArcEditor and a Change Management Tool. ESRI developed the tool for USFS and USGS modified it for its use with the NHD.

Less than one percent of the network changes over 50 years. Hydrology is relatively static except for where we build reservoirs, urban settings, etc.

$2 million investment per year by USGS to run the NHD program

Geodatabase Design of NHD
Two feature dataset
- Hydrography
- Hydrologic Units

NHD Processing Parameter Table
Version
Schema

USGS does not actually check out data. Just check in. The NHD versioning process was developed before ESRI had the capability at Arc 9.2. USFS spent the money to have ESRI build the tool. This tool been out for about two years. At least 3 days of training is mandatory. Follow up training sessions.

Relationship to the WBD

Jeff feels that the stewardship should be bundled together for NHD and WBD
Develop a process before it comes to USGS and NRCS

One first step can be to tie the WBD to the NHD by adding the NHD ComID to each sub-watershed. This would give the WBD the power of the entire NHD database.

The group agreed that there should be three levels of effort:

1) Complete the national seamless dataset as a first priority without disrupting that process.
2) Relate the NHD to the WBD by adding the ComID. This can be done at the database level and the state maintainers can be offered opportunity to cross check the accuracy.
3) Evaluate and modify the edit tools to include the WBD. Train and coordinate with the state stewards to use the tools for updating the WBD as they update the NHD in the future. This is especially true for any larger-scale work.

Meeting Wrap Up - Next steps

1. We need to develop an over arching MOU to cover the partnership between the USGS National Geospatial Program Office and NRCS NCGC to cover WBD, NHD, elevation programs
    - Review the existing WBD Charter
    - Review the draft elevation MOU
    - Look at other MOUs between USGS and NRCS
    - Ensure the document gives us the authority to do what we want to do

    Bill and Tommie will sign the MOU
    Get the draft together and in front of the group by the end of April

2. USGS NHD GeoHydro tool training in FTW - Will provide overview of tool as potential foundation for added WBD edit functions. Better ability to implement joint stewardship.
    - Look at the schedule and pick out dates

3. Hank Nelson & Rob Vreeland are both editing an 8 digit boundary. We need a follow up discussion about the USGS and NRCS business needs to create a hybrid 8 digit boundary that is from mixed scales (1:250,000 and 1:24,000).

4. Technical data exchange between NHD and WBD. Streamline existing processes to get snapshot versions of NHD to NCGC and sending ArcSDE or shapefiles WBD to USGS Denver, so they do not have to download the new data from the Geospatial Data Gateway.

5. Geodatabase design and future directions for WBD, invite business and technical staff from USGS, NRCS and EPA to enhance the current data model (adding ComID and reach codes to the attribute table of WBD as well as implementing aspects of the NHD change management system into WBD. This will lead to better interoperability between the two datasets.

6. Provide white paper response from Katherine Lins and Tommie Parham back to the group that submitted the stewardship proposal.

Final Thoughts…..

There is general consensus that WBD should merge into a maintenance and stewardship program with NHD. The details and timeline need to be flushed out while the WBD team completes the national seamless geodatabase at NCGC using the existing process that meet the FEDERAL STANDARDS FOR DELINEATION OF HYDROLOGIC UNIT BOUNDARIES; Version 2.0 October 1, 2004

Next Steps:

ACTION: Steve will provide a copy of the draft MOU on the DEMs and provide a first draft MOU.

(Lins/Nechero/Simely)

ACTION: Katherine will provide the Charter to Bill Carswell.

ACTION: All -- Consider joint committee on WBD and NHD geodatabase design. May want to invite some of the White Paper constituents to participate.

ACTION: Katherine Lins to draft for Tommie's and her signature the responce to the White Paper Constituents (Dan Wickwire) with the proposed next steps and invite them to be participants. To include points:

1) We are committed to maintaining the National Datasets for WBD and NHD.
2) We will work together with the NHD program to develop a comprehensive Stewardship process.
3) We will be including the WBD stewardship in the April 2009 Stewardship Workshop.
4) We would like to work with a State group to develop the agenda for the meeting.

ACTION: Ongoing activity -- NHD Program in USGS to develop and provide an edit tool for WBD/NHD.