

NHD Stewardship
Thoughts and Updates
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The purpose of this document is to compile some recent thoughts I have had in regards to NHD stewardship. This document is broken into two principal sections. The first section is a new description of the NHD stewardship process including a more detailed breakdown of organizational practices and roles. The second section contains some specific recommendations as to the proposed future of stewardship in West Virginia. All of the content herein is sourced from the 2009 NHD/WBD Stewardship Conference held in Denver, Colorado from April 13th-17th.

The Stewardship Process

The 2009 stewardship conference provided a valuable chance for people like myself – stewardship planners and advocates – to learn about the ways in which other states have chosen to structure their stewardship program. I learned several key things, but perhaps none more important than this simple fact: not one state is attempting operate a stewardship program through a single office or person. Without exception, NHD stewardship is a distributed process wherein many people make edits. The principal steward in some cases does not make any direct edits to the data at all, but rather, acts as a coordinator or supervisor. More often, however, the principal steward is one editor among many. Some clarification on roles is necessary. Please keep in mind that these descriptions are flexible and should not be considered absolute. NHD stewardship programs have many common elements, but rarely are they executed or organized in exactly the same way from state to state.

The Principal Steward (PS). The principal steward (or, alternatively, their technical representative/lead) of the NHD in a state is that entity which signs a memorandum of understanding with the USGS, committing themselves to “leading” the stewardship process in their state. The content and makeup of the MOU can vary from state to state, but generally speaking, the USGS commits to a certain amount of technical support and the steward agrees to coordinate and supervise stewardship in their region of interest. As such, the principal steward has several important **jobs**:

1. The principal steward acts as a leader and coordinator. Most states operate in a steward/sub-steward (see below) system. The PS must work to ensure that all sub-stewards follow protocol and work in a way that ensures the highest quality edits are made to the NHD. The PS must also recognize who is best qualified to make what edits (based on jurisdiction, for instance). The PS works to ensure the coordination of work and to minimize the repetition of effort.
2. The principal steward interfaces with the WBD steward. This year will see the inclusion of the WBD (watershed boundary dataset) into the NHD. In most states, the WBD steward and NHD steward are not the same person. For this reason, the two stewards must work closely with one another to ensure the integrity of the two elements.
3. The principal steward is an advocate of the NHD. The National Hydrographic Dataset is a powerful tool for hydrologic modeling. It's existence is the result of substantial cross-agency coordination and for it's continued development and evolution to occur, it is not only important that the PS ensure stewardship of the dataset, but also use of the dataset. The PS must advocate among key hydrographic stakeholders for the utilization of the dataset.
4. The principal steward may be an editor of the NHD. In most states, the PS is, in fact, an active editor of the dataset. This is not universally the case, however, and is not generally viewed by the USGS as an absolute requirement.

There are also several **pre-requisites** the PS should meet in order to help ensure the success of a stewardship program:

1. The principal steward must be familiar with the NHD data model. The NHD data model is complicated, though not impossibly so. An understanding of the model design, as well as its strengths, weaknesses and capabilities is a must for the PS.
2. The principal steward should have a strong knowledge of the NHD user community. Due to the volume of potential work facing the NHD steward, it is important the PS have a fairly substantial awareness of who the principal users of the data are. This will allow for coordination and prioritization of efforts.
3. The principal steward “agency” should be able to make some level of personnel commitment to NHD Stewardship, particularly in the start up phase. Start up funding is available from the USGS to help facilitate this.

The Sub-Steward(s). In most states, the principal editors of the NHD are actually sub-stewards rather than the principal steward. The reasons for this vary. In some cases, the only entity or agency that was willing to take on the PS role was ill suited technically to edit the NHD. More common, however, is that the PS agency is one of many agencies that have knowledge about the NHD data in the region of interest. Given the land ownership/management puzzle, it is only natural that the coordination of several key entities will be crucial if all of the “knowledge gaps” are to be filled. It has been the observation of other states that, no matter what the mission of a particular agency such as a “Department of Water Resources,” said agency cannot possibly have all of the knowledge necessary to maintain the NHD.

Arrangements wherein Sub-Stewards complete edits of the NHD which are checked and turned in by the PS are common. Coordination of the sub-stewards by the PS is not generally direct, but rather involves coordination to minimize or eliminate repetition of effort. The PS is able to, along with the USGS, determine who can and cannot edit sub-basins within their state boundary.

The NHD User Community (UC). Coordination of the user community is important for several reasons, a few of which were mentioned above. I envision two major roles for the UC:

1. One of the most important roles the UC may have is to aid the PS and sub-stewards in the resolution of stewardship policy issues. In West Virginia, for instance, one of the principal causes of change on the ground (leading to changes in streams which need to be reflected in the NHD) is surface mining. At present, there is no policy as to how to account for these changes in the dataset. Should the future NHD editors endeavor to include actual surface mine drainage features such as ponds and ditches or should they, instead, for the sake of speed and efficiency, simply “connect” the drainage across the mine feature in order to ensure flow?
2. The UC, given their knowledge, will be an integral part of identifying possible edits in the NHD. A few states have deployed (and many more are planning to deploy) web based applications to facilitate the collection of potential edits in the NHD. These edits are, of course, sourced primarily from the UC and other stakeholders. Given the variation of technical ability among the UC and other stakeholders, it is necessary that these web based applications are both easy to use, and useful. To my knowledge, all of the web applications currently deployed are open source and available for other states to use.

NHD stewardship is a community process involving a great number of people. During the conference I commented that I wished I had a highlight video of all of the participants so that when I tell potential stewards in the state of West Virginia “there is a large community out there that's willing to help,” those people could see and understand what I mean. For stewardship to succeed, it is vital that the roles outlined here be filled with persons and/or agencies that have a vested interest and willingness to edit and maintain the NHD.

New Recommendations for NHD Stewardship in WV

NHD stewardship in WV is, at best, in its infancy. One of the universal messages of the 2009 Stewardship Conference is that many of the challenges of stewardship have been faced and defeated before. The current participants in this discussion have the power to facilitate stewardship in the state.

This section of the document contains recommendations for the future of NHD stewardship. These are

not arranged in any particular manner and they cover a range of topics and scales, from detailed, process specific recommendations to the more general. These recommendations are solely those of myself and should not be considered anything more than food for thought.

1. Identification of the principal steward of NHD in West Virginia is a top priority. This entity must understand the role as I have outlined it in this document and be willing to act as a leader, coordinator and advocate for NHD in West Virginia.
2. Identification of a core group of sub-stewards who are willing to make edits to the NHD must also take place as soon as possible. The fact of the matter is, NHD stewardship in West Virginia will be a big job, particularly at the outset. The front leading of edit needs means that only a coordinated effort will suffice. It is vital that, from the outset, the PS does not find themselves “alone in the jungle,” as it were.
3. Once the PS and sub-stewards are identified, those parties must work with both the NSDI liaison for West Virginia and the regional point of contact for the NHD, Craig Neidig and George Heleine, respectively, to secure a multi-agency cost sharing arrangement for the establishment of a stewardship program in West Virginia.
4. Continue the compilation of known errors to the NHD. NRAC and WVDEP have already begun this process, including the categorization of errors by type. This process is vital and should continue.
5. As a subset of the above step, the PS, sub-stewards and all other interested parties should develop a plan to address the geometric edits necessary as a result of surface mining.
6. Convene a hydrographic data users group, probably as a subset of the WVAGP. While this group should definitely include current users of the NHD, including more “traditional” hydro scientists may help accelerate the adoption and use of the NHD. Suggested tasks for the users group:
 - Develop a “best practices” document for NHD data use within agencies.
 - Explore the many applications of NHD as well as the software that exists to support those applications, such as the Hydro Event Management (HEM) tool.
 - Identify potential policy issues with NHD stewardship (such as the mining area question outlined in this document) and discuss them.

Developing NHD stewardship in West Virginia will not be easy. The fact of the matter is, however, adoption of the dataset is increasing and many state and federal agencies are working together to improve and maintain NHD. It is not difficult to imagine a situation wherein NHD will not just be the best dataset for hydrologic work, it will be the required dataset to do that work. If West Virginia agencies are to be prepared for this inevitability, adoption of the dataset and establishment of a stewardship program is vital.