

# WV NHD Stewardship, Year One: Final Report

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## Introduction

This report summarizes the efforts of the WV NHD Stewardship team in the first year of our role and refers specifically to activities funded by the USGS from September 1, 2010 to August 31, 2011.

## Project Objectives

The original project proposal broke this project into two principal components:

(1) Establishment: The partners will establish the organizational basis of the NHD Stewardship program. This will include further engagement and organization of the NHD data users and stakeholders in the state of West Virginia to promote awareness of the stewardship process and to ensure long-term maintenance of the NHD. Efforts will also be initiated to align the NHD stewardship process into the revised State GIS strategic plan currently under development through the incorporation of a “Business Plan for the NHD in West Virginia.”

(2) Immediate Edits and Updates: The principal component of this year’s project will be maintenance in the form of immediate edits and updates to the existing HR-NHD. The majority of editing efforts will draw upon catalogs of known errors that have been compiled by the Natural Resource Analysis Center and West Virginia Department of Environmental Protection (WVDEP). The effort will also include a sub-project in support of future maintenance efforts:

- a) WVGISTC and NRAC will work with the WVDEP to organize relevant entities and personnel to track changes in the HR-NHD in areas of high change, such as the southern coalfields and areas of road construction and urban development.

The next section discusses each objective in detail.

## Project Review

**Establishment** Efforts to establish the NHD Stewardship program in West Virginia have been ongoing for some time now. The earliest meetings were held in 2007, long before this funding and initial project were available. Our actions have been focused primarily on educating the WV GIS Community on the capabilities of the NHD, ascertaining their current use of the NHD and speaking to them in small groups about the need for stewardship of the NHD. Several agencies have expressed strong interest in contributing to the project, in particular the WVDEP and the USDA Forest Service (Monongahela National Forest).

**Edits and Updates** Prior to the start of this project, the Division of Water Resources within the WV Department of Environmental Protection (WVDEP) in conjunction with the Natural Resources Analysis Center (NRAC), compiled a database of known problems with the High Resolution NHD for West Virginia.

This dataset serves as our primary guidance through the editing process. Known problems within the NHD that were compiled for this project include stream modifications mapped in-house by WVDEP (stream geometry changes), stream name issues, stream centerline delineation problems along major rivers, missing stream segments, and other minor edits. In addition to checking NHD features with known problems, we also conducted all of the standard checks provided within the NHD GeoEdit tool.

An NHD training session for use of the USGS NHD GeoEdit tool was held at the West Virginia GIS Technical Center (WVGISTC) from the 14<sup>th</sup> to the 16<sup>th</sup> of December, 2010. The course was taught by Dave Arnold of the USGS and there were four students in attendance: Evan Fedorko (WVGISTC), Maneesh Sharma (WVGISTC), Jackie Strager (NRAC), and Mike Metz (NRAC). Following that training session, Fedorko and Strager developed a basic plan for editing sub-basins in the southern portion of West Virginia, as depicted in Figure 1.

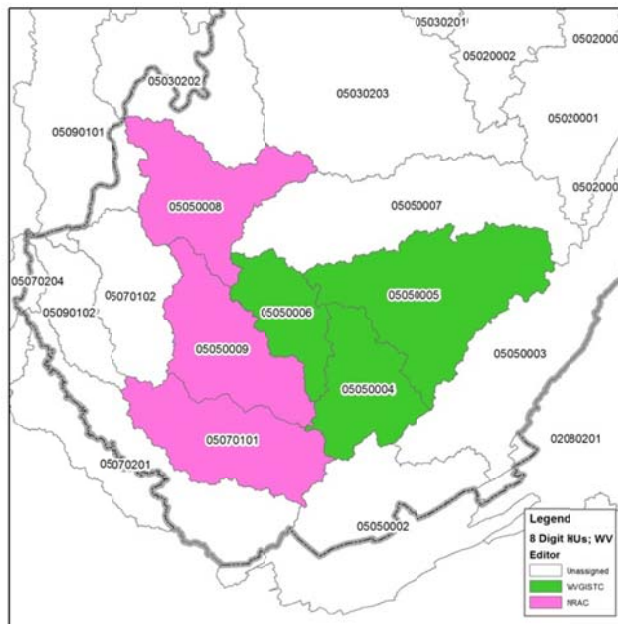


Figure 1. Initial editing assignments.

One of the early stumbling blocks we experienced in the project was setting up the software and operating system environment for the specifications required by the NHD GeoEdit tool. Due to the fact that the required Windows operating system and version of Arc Map are no longer utilized within our operations, it was necessary to turn to VirtualBox, an Oracle virtual machine software. Minor issues with tool installation (eventually addressed) slowed the start-up of the project.

Editing the NHD with the NHD GeoEdit tool has been an experience marked by starts and stops. For the most part, required edits to the NHD datasets were straightforward and well understood, work went smoothly and the tool performed correctly. However, when problems were encountered, delays in the form of slow technical support response time could be significant. These delays negatively affected the continuity of our workflow. Editing of two sub-basins was ultimately completed. We expect future edits to be smoother.

## Next Steps

We have several things planned for the second year of NHD stewardship in West Virginia, including another USGS funded project. This and other goals are reviewed in this section.

First and foremost, we intend to continue editing known errors, on a sub-basin by sub-basin basis, to the greatest extent possible. The near term goal is to complete edits in the six sub-basins targeted as part of the year one project.

It has become clear from feedback during our interactions with WV GIS users that more outreach in the form of training is necessary. While many users are familiar with the NHD dataset, very few utilize the dataset's advanced capabilities, such as feature addressing and querying based on upstream/downstream relationships. We intend to offer at least one training session on the subject targeted toward potential users within West Virginia.

Additionally, we will continue the ongoing task of accounting for changes on the ground in the coalfields region of West Virginia and editing the NHD to match those changes. We continue to face difficulties in determining the best course of action for maintaining data in high change areas affected modifications to surface water drainage patterns. More work is required in identifying areas requiring edits and in establishing protocols and best practices for edits to the NHD. The primary tasks of our year two project revolve around this set of problems.

## Conclusions

Overall, the first year of NHD Stewardship in West Virginia has moved slowly. There are several large agencies that have expressed a commitment to contributing knowledge to WV's NHD Stewardship program, including the Forest Service and the WVDEP. Widespread adoption of the dataset is our biggest barrier to a robust stewardship program in the state, and we expect to fully address this problem within the context of our year two project. Editing the NHD has been slower than anticipated, but having recently reached our first milestone of completing edits for two sub-basins, we expect the pace of editing to increase to a more acceptable level.