



## Project Summary

# Geographic Information System Documentation Of Watershed Data for Direct/Delayed Response Project — Southern Blue Ridge Province Database

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The Direct/Delayed Response Project (DDRP) was designed by the U.S. Environmental Protection Agency (EPA) within the National Acid Precipitation Assessment Program (NAPAP) to predict the long-term response of watersheds and surface waters to acidic deposition. The purpose of the DDRP is to investigate and distinguish the time scales over which surface water systems might change chemically under varying levels of acidic deposition. The DDRP is examining a sub-set of watersheds sampled in the U.S. EPA - National Surface Water Survey (NSWS). In the Southern Blue Ridge Province Region of the United States, 35 watersheds are under study. The DDRP required detailed watershed information on those characteristics thought important relative to the effects of acid deposition. This information was then mapped, then entered into a Geographic Information System (GIS). The purpose of this document is to discuss what protocols, guidelines, and standards were used to complete GIS entry of the mapping data, and what quality control procedures were used to ensure accuracy and consistency.

*This Project Summary was developed by EPA's Environmental Research Laboratory, Corvallis, OR, to announce key findings of the research*

*project that is fully documented in a separate report of the same title (see Project Report ordering information at back).*

### Introduction

The Direct/Delayed Response Project (DDRP) was designed by the U.S. Environmental Protection Agency (EPA) within the National Acid Precipitation Assessment Program (NAPAP) to predict the long-term response of watersheds and surface waters to acidic deposition. The purpose of the DDRP is to investigate and distinguish the time scales over which surface water systems might change chemically under varying levels of acidic deposition. The DDRP is examining a sub-set of watersheds sampled in the U.S. EPA - National Surface Water Survey (NSWS). In the Southern Blue Ridge Province Region of the United States, 35 watersheds are under study.

The DDRP required detailed watershed information on those characteristics thought important relative to the effects of acid deposition. Such characteristics include soils, vegetation/land use, depth to bedrock, geology, and streams. This information was mapped by the USDA - Soil Conservation Service in cooperation with the EPA or obtained by existing maps published by the U.S. Geological Survey. These maps were then entered into a Geographic Information System

(GIS). The purpose of this document is to discuss what protocols, guidelines, and standards were used to complete GIS entry of the mapping data, and what quality control (QC) procedures were used to ensure accuracy and consistency.

## General Procedures

To ensure accuracy and consistency, the same general QC measures were taken for each watershed. First, the registration of the manuscript maps was checked. Any necessary corrections were made before proceeding. Second, a standard allowance for transformation error was set to control the accuracy of digital registration. Third, editing software was used to detect and correct any errors within a coverage. Next, preliminary plots were made and overlaid with

the original maps. Any line discrepancies were corrected before continuing. Attributes were written on each plot and then added to the digitized map. The attributes were checked with the data file for completeness. The coverage was then plotted for the final quality check. This plot was overlaid with the original map and checked for line and attribute discrepancies. If an error was found, it was corrected and any necessary QC procedures repeated. If no errors were found, the plot was checked again individually by another technician. If any discrepancies were found by the second technician, they were corrected and any necessary QC procedures repeated until both technicians agreed the final plot to be accurate.

After the data were entered, further QC measures were taken. First the attri-

butes were listed, sorted, and checked for consistency and accuracy throughout the dataset. Next, total area for each coverage within a particular watershed was calculated and compared. Lastly, the data were compiled into reports for the project analysis. These reports matched the attribute code to the description of that code. Any possible ambiguous codes were detected and suitably modified during this process.

## Conclusion

These QC procedures were done throughout the entire dataset. We conclude that there is only a minimal amount of error introduced during digitization of the mapped data.

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*The complete report, entitled "Geographic Information System Documentation of Watershed Data for Direct/Delayed Response Project — Southern Blue Ridge Province Database" (Order No. PB 89-219 539/AS; Cost: \$13.95, subject to change) will be available only from:*

*National Technical Information Service  
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