**WATER RESOURCES RESEARCH GRANT PROPOSAL**

**Project ID:** 2004WV24B

**Title:** Ecological Impact and Flow Variations of Mine Water used for Small-Scale Trout Production

**Project Type:** Research

**Focus Categories:** Ecology, Hydrology, Water Use

**Keywords:** Nutrient impact, hydrology, mine water use

**Start Date:** 03/01/2004

**End Date:** 12/30/2005

**Federal Funds:** $12,300

**Non-Federal Matching Funds:** $81,000

**Congressional District:** 1

**Principal Investigators:**
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## Abstract

The coal mining industry possesses some of West Virginia's best water resources for trout production, because the stable water temperatures are ideal for trout growth, when discharged from the mines. West Virginia has dozens of undeveloped mine flows in the southern mining area at least as large as the proposed research site. Developing some of these mine discharge sites with the ecological production of trout will benefit the mining industry by allowing mine owners to lease or sell the water rights, reduce reclamation costs, and utilize the present infrastructure for fish production. This site has recently received approval from the Office of Surface Mining (OSM) for this project. The objective of this research is to show that by measuring the hydrological discharge from the flooded Dorothy coal seam, efficient production planning can be made for a small scale trout facility. The nutrient sampling will contribute to measuring a cause for possible environmental diversity changes. West Virginia's largest trout processing facility is located in an area (adjacent county) where large mine water discharges are concentrated. The facility has the capacity to process and market twice as many pounds of trout than is presently being done. The reason for the shortfall is the lack of developed

trout culture sites in the region. The present rate of production at the processing plant is not sufficient to make a profit, and additional sources of trout are needed to overcome this problem. The processing plant is being leased from the state, and may return to the state if the plant is unable to increase the annual volume of fish processed. Standard methods for collecting and measuring water quality and quantity will be used. A high-energy extruded commercial trout feed will be used to maximize assimilation of the feed, thereby reducing waste. Rapid bioassement protocols (EPA- RBP) developed for benthic macroinvertebrates have been used to collect samples from this site as background data. This study is unique in that OSM is allowing a waiver to a high wall reclamation at the site. Water from the Dorothy coal seam has never been used for commercial trout production. This project will also complement the background data by measuring the change in biodiversity which may result due to the feed (nutrients)added to the water.