The Upper Susquehanna-Lackawanna Watershed Community Demonstration Project of the National Spatial Data Infrastructure

The Pennsylvania GIS Consortium has implemented a "Locally Independent, Regionally Coordinated Multiple-purpose GIS for Central and Northeastern Pennsylvania," including an integrated regional GIS to help local communities support an environmental master plan for an American Heritage River.

Where is the US-L Watershed and Why is it an NSDI Site?

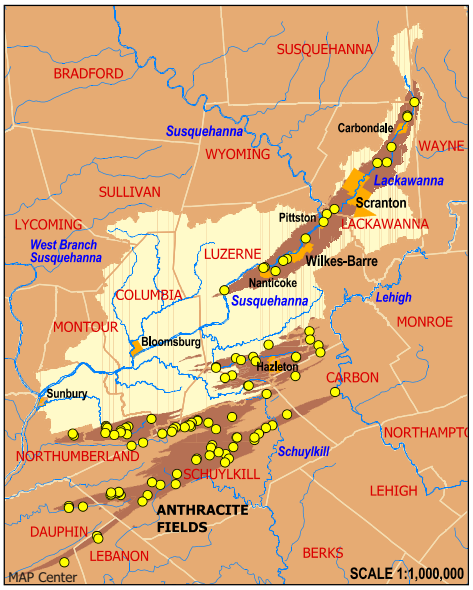
The Upper Susquehanna-Lackawanna (US-L) American Heritage River (AHR) Watershed is located on the Susquehanna River in Northeastern Pennsylvania. It covers 2000 square miles and has been heavily impacted over the last 150 years from regional anthracite coal mining (clean-up costs estimated at $1.9 billion). There are more than 225 combined sewer overflows (CSO's) that dump human sewage (from a population of over 500,000 people) mixed with runoff water into the river during storm events. Extensive land damage from mining and the resulting major degradation of a large river ecosystem has contributed to significant economic hardship in this 10 county area with its 196 municipal governments. The Susquehanna River contributes over half of all water that flows into the Chesapeake Bay Ecosystem and is the single, major source of industrial pollution to the Bay. A national initiative like NSDI was needed to launch community-federal partnerships and design and start a comprehensive watershed plan to deal with these significant environmental problems.

US-L Watershed's Relationship to the Chesapeake Bay

Who are the Partners in the US-L Watershed Project?

Partners who contributed time, ideas, expertise, and resources for the project:

- **Congressman Kanjorski and Staff** provided vision and leadership to bring diverse communities and agencies together to support the AHR program, local and regional GIS, and the GIS watershed plan
- **EPA and Federal GIS Champion, Dave Catlin,** provided expertise and technical advice on Federal data (e.g., EPA's EnviroMapper and BASINS), partnering, and Web based GIS; included several sources of funding to leverage ongoing and future work started in the NSDI project
- **AHR Program and US-L River Navigator, Alex Rogers,** led outreach and liaison to community leaders and local agencies for the watershed plan (USDA funding support)
- **Wilkes University** provided technical leadership on GIS, environmental and watershed analysis, river ecology, and project management
- **Sweet Solutions, Tom Sweet,** led in community partnering to implement a locally independent, regionally coordinated, multipurpose GIS for the US-L region
- **King's College** produced cartographic products, presentation materials and Web design; developed and maintained Web sites for the AHR and PA GIS Consortium



The 100 Largest Mine Discharge Sites in the Anthracite Region
(USGS Water Quality Survey)

- **ESRI and BAE Systems (ADR)** were our GIS and photogrammetry industry partners, respectively, and provided technical expertise for GIS applications and analysis of aerial photography; each company has made a commitment of $250,000 to the Consortium for partnering on local and regional GIS
- **USDA** provided support as part of a Rural GIS Consortium (RGIS) with seven other sites and universities across the country; provided resources to leverage training, research and outreach; USDA also supported the AHR River Navigator position for the US-L Watershed Project

Severely degraded stream with urban debris and mining sediments

How did we approach the Project?

We built upon earlier work by the Steering Committee of the US-L AHR program. Community outreach meetings identified local interests on specific problems like mining and CSOs and resulted in an AHR Work Plan that identified a comprehensive GIS Watershed Plan as a top priority. NSDI funding provided the initial impetus to start this watershed work, develop the Consortium, and deploy a local and regional GIS program. NSDI funding was leveraged with support from EPA, USDA, and Army Corps of Engineers.

What are the Results of the US-L Community NSDI Demonstration Project?

The US-L Watershed Project provided results on three major goals. **First**, we established the Pennsylvania GIS Consortium as a partnership between the Marketing and Planning Center at King's College and the GIS Center at Wilkes University. The Consortium is open to all private, public, and educational entities. The Consortium is intended to facilitate partnering among local communities and state and Federal agencies to support GIS for local government and to facilitate clean up and abatement of environmental pollution. The Consortium has set up a program to ensure that GIS is implemented in a manner that best serves the needs of local government, regional planning and economic development organizations, citizens, and businesses while also accomplishing the goals of the NSDI Demonstration Project. The Consortium characterizes this initiative as a *Locally Independent, Regionally Coordinated Multiple-purpose GIS for Central and Northeastern Pennsylvania*.

Mapping mine outfall locations with GPS

Second, we created a framework for a comprehensive GIS Master Plan for the US-L Watershed. This has been successfully launched as a community project with the leveraged sponsorship of the U.S. Army Corps of Engineers, the Environmental Protection Agency, the U.S. Geological Survey, and the U.S. Department of Agriculture. The project includes support for the AHR River Navigator position through a USDA contract to the PA GIS Consortium.

Third, we implemented a locally independent, regionally coordinated GIS deployment strategy. A survey indicated that each county polled is preparing for GIS implementation. However, no county has the resources to implement a regionally coordinated GIS. With the support of EPA, the Consortium is working with industry and local communities to leverage resources to collect and process aerial photography for an area of 3600 square miles.

Where are we going from here in the US-L Watershed Project?

Natural habitat of the river valley in a rural part of the watershed

Ongoing and future activities include completing data acquisition of aerial photography in spring 2001 through the support of EPA. Community partnering efforts also are underway for cost-sharing. A Web based data distribution strategy has been developed for working with EPA and local communities on a cooperative basis to demonstrate local scale GIS on the Web with EPA's EnviroMapper. In a related project, the Consortium will work with EPA on real-time water quality monitoring linked to the Web for community data and GIS environmental education.

The Consortium is also supporting training and outreach programs that will continue in the future. Speakers from academia, industry, and agencies are invited to make presentations at regular meetings sponsored by the Consortium for local GIS users. Special training applications of GIS have been conducted and are planned for the future. The goal is to develop a regional network of GIS data at the parcel level that is shared regionally via Web based GIS yet maintained and managed by local communities. Training is critical to the implementation of this plan.

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