The North Fork Project

The North Fork Project illustrates a successful multi-agency partnership approach to solve a water quality problem on a scenic high quality trout stream located in the rural Potomac Headwaters area. As the result of the implementation of numerous best management practices (BMPs) funded under several Federal and State programs, it is now being suggested by WV Department of Agriculture that the North Fork River be removed or "de-listed" from the list of impaired waterbodies in West Virginia.

The North Fork, of the South Branch Potomac River Watershed is located in Pendleton and Grant Counties in West Virginia, with a portion of the watershed in Highland County, Virginia. The area within the watershed is predominantly forested, with agriculture as the second dominant land use. Beef and poultry enterprises are the main agricultural activities. Due to the rugged nature of the terrain, many of the concentrated livestock feeding areas and poultry operations were located on the narrow valley bottoms and floodplains adjacent to the streams. High levels of bacteria and sediment loading were adversely impacting the both the North Fork and South Branch Watersheds. A U.S. Geological Survey (USGS) surface water study found that numbers of feedlots and poultry houses per square mile had a positive correlation with concentrations of fecal coliform bacteria in surface streams. Total Maximum Daily Load (TMDL) allocations developed for the North Fork of the South Branch Potomac watershed required a 35 percent reduction in fecal coliform bacteria loading from agricultural land in order to meet State water quality standards.

The Potomac Headwaters area historically has produced beef cattle, forages, timber, and some corn and apples; however since the early 1990s, the area has seen a significant increase in the poultry industry. In 1993, this area became a component of the USDA Water Quality Initative, a cooperative effort of Federal, State, and local agencies to address water quality issues. In January 1997, a USDA administered Public Law-534 Land Treatment Watershed cost share program was started in the upper Potomac River basin to address the structural and technical needs of the area farmers in order to improve water quality and protect the associated natural resources of the area.

In March 2000, the North Fork Watershed Association launched a Section 319 Nonpoint Source Grant project to address bacteria and sediment problems associated with agricultural activities, past timbering operations, stream bank erosion, and road maintenance activities.. Partners in the development of the plan included the Potomac Valley Soil Conservation District, WV Soil Conservation Agency, WVU Extension Service, WV Division of Environmental Protection (DEP), WV Division of Forestry, WV Division of Highways, USDA

Natural Resources Conservation Service, and Trout Unlimited. The WV Agriculture Water Quality Loan Program, funded through the WV DEP Clean Water Act State Revolving Fund (SRF), also provided complementary low interest loans (2%) to landowners to help finance BMP installation.

Activities

To date, fourteen agricultural EPA Section 319 projects, one forestry Section 319 project, and nineteen USDA PL-534 projects/contracts have been implemented in the North Fork watershed to control nonpoint source pollution. A range of best management practices (BMPs) have been established to control runoff from feedlots, and eliminate or reduce cattle access to the streams. These BMPs include, stream bank fencing, relocating feedlots away from streams, constructing roofs over concentrated feeding areas, paving concentrated feeding areas and access areas, constructing animal waste storage facilities, controlling roof runoff, establishing filter strips, establishing riparian buffers, developing alternative livestock watering facilities, drilling livestock water wells, and stabilizing critical eroding areas.

Rotational grazing systems with intra-pasture fencing systems and alternative watering facilities were established to improve the conditions of pastures, reduce runoff and control bacterial, sediment, and nutrient pollution.

In order to control or eliminate runoff from the poultry operations, poultry litter storage sheds, waste composting facilities and mortality composters were constructed, and buffer/filter strips established.

In addition, nutrient management plans have been developed and implemented for over 340 acres of crop and pastureland receiving animal manure.

In cooperation with West Virginia Division of Forestry, educational workshops are being held to educate landowners and individuals within the forestry industry on conservation practices. Forestry plans are being developed by West Virginia foresters to promote forestry and logging conservation and best management practices. One severely eroded, steep, hillside site has been planted with trees and fenced for livestock exclusion as part of a reforestation project.

Another component to the North Fork Project has included working with the WV Division of Highways (DOH) to implement a variety of conservation practices, including a seeding demonstration utilizing poultry litter as a fertilizer, a sediment erosion control workshop for DOH employees, and the selection of a site on DOH property for the construction of a poultry mortality composting facility.

A research project by West Virginia University associated with the North Fork Project has selected a site to test if acid mine drainage (AMD) sludge, high in iron oxides, can be applied in buffer strips to absorb soluble phosphorus before it enters waterways. If results are favorable then AMD waste from the

nearby coal mining region can be used to reduce phosphorus pollution from excessive manure in the poultry producing region of the state.

Results

The agricultural community within the watershed has been extremely receptive, with 85% of the farmers participating in BMP implementation. Recent DNA studies of fecal coliform collected in the river and tributaries have revealed very little or no organisms associated with poultry wastes. Water quality monitoring conducted by the West Virginia Department of Agriculture have shown significant declines in fecal coliform levels at sites monitored earlier by USGS. Based on recent water quality monitoring results and the extent of BMPs installed, the North Fork River is currently being reviewed for possible "de-listing" from the 303(d) list of impaired waters in West Virginia.

Ongoing and Future Projects/Activities

Ongoing and future projects are emphasizing wetland and riparian corridor restoration. Working in cooperation with Trout Unlimited and Fish and Wildlife Service, stream channel restoration projects utilizing natural stream channel design technologies are being planned to address stream erosion and sedimentation problems. One site for a stream restoration project has been selected near Seneca Rocks scenic area; construction plans are presently being developed by Trout Unlimited. An educational display within the watershed is planned for the Monongahela National Forest Service, Seneca Rocks Visitors Center. Educational programs for landowners on stream channel protection and maintenance are planned, and water quality monitoring by the West Virginia Department of Agriculture is continuing.

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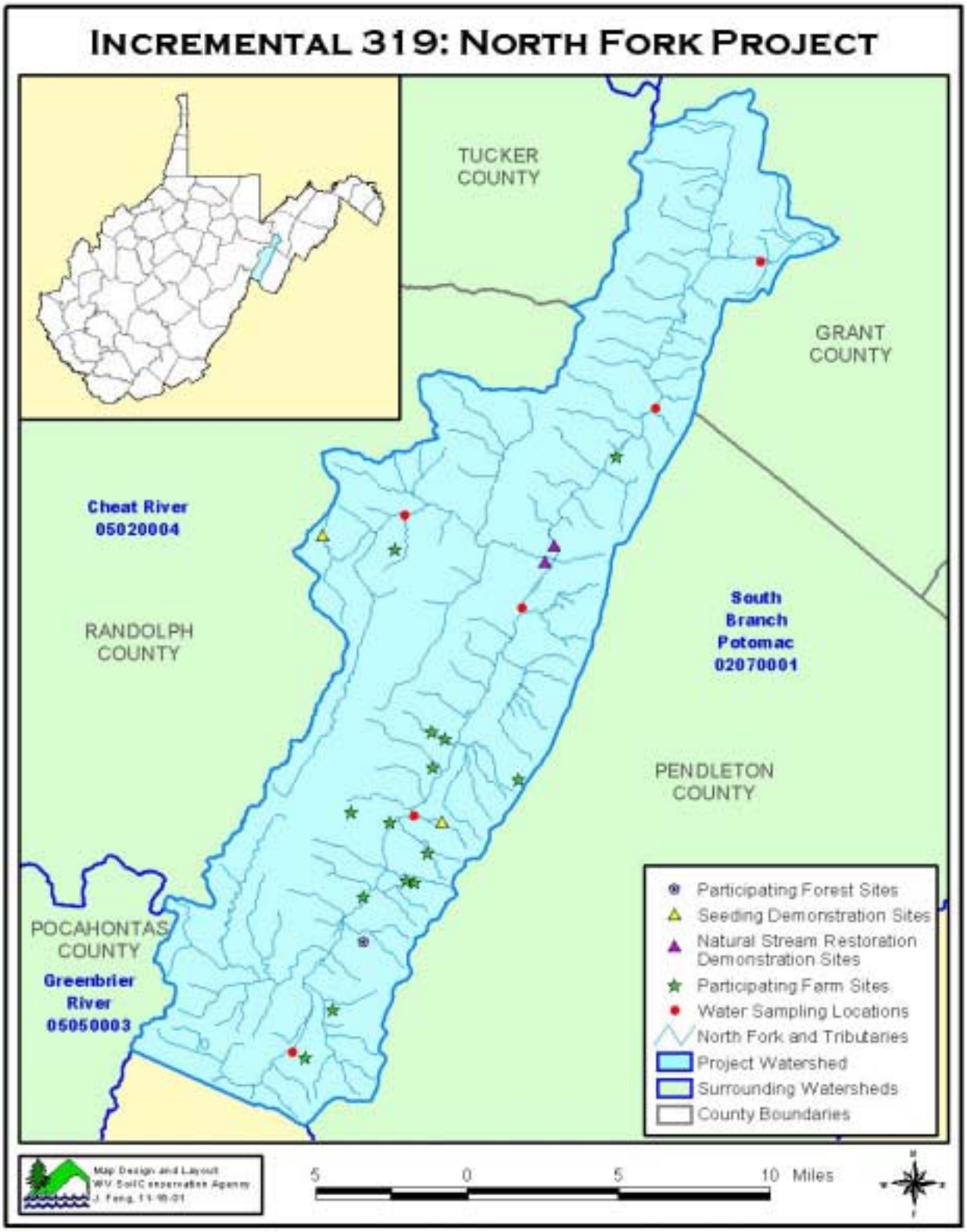
Project Location: Pendleton and Grant Counties, West Virginia
Primary Sources of Pollution: timbering; stream bank erosion; agriculture; roads
Primary NPS Pollutants: bacteria; sediment
Remediation/Project Activities: critical area planting, stream bank fencing, feedlot relocation; waste storage facilities, nutrient management plans
Results: plans; 85% agricultural landowner participation rate, 15 EPA-Section 319 contracts, 19 USDA PL-534 contracts.

Table 1

Comparison of USGS and WVDA Median Fecal Coliform Levels at Common Sampling Sites Before and After Installation of BMPs

Sampling Location	USGS Mar 1994-Aug 1995 cfu/100ml	WVDA Mar 1998-Aug 1999 cfu/100ml
South Branch @ Moyer Gap	45	49
South Branch @ Franklin	71	42
South Branch @ Upper Tract	145	54
South Branch @ Petersburg	56	16
North Fork @ Virginia State Line	56	18
North Fork @ Seneca Rocks	91	20
North Fork @ Cabins	18	14
Lunice Creek @ Petersburg	495	126



Concentrated Animal Feeding Area Prior to BMP Installation

Animal Feeding Area After Installation of Waste Storage Facility, Roof Runoff Control System, Stream Fencing, Clean Water Diversion, Paved Feeding Area, Livestock Watering Facility, Stabilized Access Road, & Critical Area Planting

Untreated Concentrated Animal Feeding Area Prior to BMP Installation

Gravel Paved Access Road and Covered Animal Feeding Pad

Animal Feeding Area After Installation of Waste Storage Structure, Roof Runoff Control System, Livestock Watering Facility, and Paved Feeding Area

Covered Animal Waste Storage Facility and Paved Feeding Area

Division of Highways Hydroseeding Demonstration Area Using Poultry Litter on Eroding Roadbank

Poultry Mortality Composting Facility Constructed on WVa Division of Highways Site

Eroding Woodland Logging Landing Prior to Application of BMPs

Stabilized Log Landing After Application of BMPs