Updated 9/2003

Watershed Restoration Action Strategy (WRAS)
State Water Plan Subbasin 18D
Blacklick Creek and Conemaugh River Watersheds
Indiana, Cambria and Westmoreland Counties

Introduction

Subbasin 18D covers a 700-square mile area in Indiana, Cambria and Westmoreland Counties. The subbasin is included in **HUC Area 5010007**, Conemaugh River, a Category I, FY99/2000 Priority watershed in the Pennsylvania Unified Watershed Assessment. The subbasin includes the 418-square mile Blacklick Creek watershed and the 282-square mile Conemaugh River and its tributaries downstream to the Conemaugh Dam. The Conemaugh River originates at the confluence of the Little Conemaugh River and Stonycreek River downstream. The Conemaugh River becomes the Kiskiminetas River (locally known as the Kiski) at the confluence of the Loyalhanna Creek. The Kiski-Conemaugh River system is part of the Allegheny River drainage basin.

The Conemaugh River flows for 52 miles from Johnstown to Saltsburg where it becomes the Kiski River. Blacklick Creek flows for 35 miles from Revloc and Colver in Cambria County to the backwaters of Conemaugh Lake near Blairsville. The US Army Corps of Engineers-owned Conemaugh Dam, with a surface area of 300 acres, is located 7.5 miles upstream of Saltsburg and impounds about 15 miles of the Conemaugh River, 9 miles of Blacklick Creek, 2 miles of Two Lick Creek and parts of many smaller tributaries. The primary purpose of the dam is flood control. About 5 miles of Two Lick Creek is impounded by a dam built by Pennlec for use at their power plant at Homer City. A smaller dam located downstream is used as a water supply for Indiana.

Geology/Soils

The entire subbasin is within the Central Appalachians Ecoregion. This ecoregion is divided into two parts in the basin, the Forested Hills and Mountains section (69a), which is restricted to the ridge tops at the eastern and western edges of the basin and the Uplands and Valleys of Mixed Land Use section (69b) in the valleys. The subbasin is bordered on the east by the anticlinal mountain, Laurel Hill.

The Forested Hills and Valleys section occupies the highest and most rugged parts of the Central Appalachians. Ridges are steep sided and the valleys are narrow. The Conemaugh River and Blacklick Creek are entrenched in gorges as they flow through Laurel Hill and Chestnut Ridge. These gorges are inaccessible except by railroad or water. The 7-mile long Conemaugh River gorge through Laurel Hill is the 2nd deepest river gorge in PA. The infertile, often acidic soils, steep slopes and short growing season make this portion of the subbasin generally unsuitable for agriculture. Much of this portion of the subbasin is forested. Sandstone and conglomerate of the Pottsville and Pocono Groups and sedimentary rocks of the Mauch Chunk and Conemaugh Groups underlie this section. Streams whose watersheds are comprised mainly of the Pottsville Group sandstone have very little buffering capacity and subject to acid precipitation.

Uplands and Valleys of Mixed Land Use section is a dissected upland plateau characterized by woodlands and agriculture. Shale, siltstone, sandstone, and coal are exposed. Soils are of low to moderate fertility.

Coal deposits underlie the entire subbasin and natural gas deposits underlie portions of the subbasin. The majority of the coal mining in the basin has been in the Allegheny Group coals, which were both surface and deep mined. Cyclic sequences of sandstone, shale, limestone, clay, occur with the coal. Oil and gas production also occurs in the subbasin, with Indiana County the major gas-producing area. The Loyalhanna Limestone is a valuable aggregate rock that has been quarried in the subbasin. A few sandstone quarries are located in the upper portion of the subbasin.

Land Use:
The subbasin is largely rural. Much of the Indiana County portion of the subbasin is in agricultural land use, including several large Christmas tree farms. Abandoned surface mines and refuse piles are common in the subbasin. Part of the city of Johnstown is in the subbasin, as well as the boroughs of Blairsville, Indiana, Clymer, and Homer City and many other small boroughs and villages. Population centers and transportation routes follow the stream valleys. US Routes 22, 422 and 119 are the major highways in the subbasin. Many of the original settlements were small mining towns that followed the opening of deep mines in the early 1800's and the steel mills in the Johnstown area. When most of the mines and steel mills closed in the late 1900's, unemployment became widespread and many people moved out of the region. The subbasin population was 105,736 in 1990 and is projected to decrease to 98,329 by the year 2040. Industrial, commercial and manufacturing centers are located in Johnstown, Blairsville, Homer City, and Indiana. Indiana has the campus of Indiana University of Pennsylvania. The Homer City, Seward and Conemaugh coal fired electric generating plants are located in the subbasin.

Natural/Recreational Resources:
State owned recreational or scenic lands:
- Yellow Creek State Park which contains a 740-acre lake, a warm water fishery.
- State Game Lands #42 on Chestnut Ridge west of Johnstown
- State Game Lands #153 along the Conemaugh River
- State Game Lands #276 between Homer City and Blacklick Boroughs
- State Game Lands # 79 south of Strongstown
- State Game Lands #248 adjacent to Two Lick Reservoir
- Charles Lewis Natural Area
- Conemaugh Gorge Scenic Area

Federal Recreational Areas:
- Army Corps of Engineers Conemaugh Lake

Indiana County owned parks and recreational areas:
- Ghost Town Trail, a 12-mile trail along the Blacklick Creek from Dilltown in Indiana County to Nanty Glo in Cambria County. The trail follows the South Branch from Vintondale to Nanty Glo. An extension to Revloc is planned.
- Blacklick Valley Natural Area
- Buttermilk Falls

Fisheries:
- PA Fish and Boat Commission Class A (highest biomass category) trout streams:
  - Tubmill Creek, rainbow trout, from the headwaters downstream to Tub Mill Reservoir (4.1 miles)
- Two Lick Reservoir, which was once severely impacted from abandoned mine discharges, has become an excellent warm water fishery. Populations of striped bass and smallmouth bass are found in the reservoir and trout are living below the dam. The reservoir is privately leased from the power company and is not open to the public.

DEP Chapter 93 designated Exceptional Value (EV) and High Quality (HQ) Streams:
EV:
- Baldwin Creek down to New Florence Dam
- Powdermill Run
- Tubmill Creek down to Tub Mill Reservoir.

HQ:
- Laurel Run at Coopersdale

- Clark Run
- Findley Run
- Baldwin Creek, main stem and unnamed tributaries from New Florence Dam to mouth
- Poplar Run
- Shannon Run
- Shirey Run
- Stewart Run at Nanty Glo
- South Branch Two Lick Creek, source to North Branch
- Little Yellow Creek
- Spruce Run

Water Quality Impairment
Both Blacklick Creek watershed and the main stem Conemaugh River watershed suffer from severe acid mine drainage. The subbasin is impacted by discharges from more than 300 surface coal mines, 170 coal refuse dumps and 200 miles of underground mines. The watershed receives more than 300,000 pounds of acid per day from over 90 known pollution sources. The main stems of both Blacklick Creek and the Conemaugh River have a thick coating of orange iron precipitate. Discharges from gas well production and storage and disposal of brines has resulted in degraded surface and groundwater in some areas.

In addition to discharges from AMD, the watershed is degraded by numerous discharges of untreated sanitary wastes from municipalities and on-lot private residences. McCarthy Run and Marsh Run, tributaries of Stoney Run, were thermally impaired from urban sources. Nutrients and suspended solids from agriculture cause impairment to portions of the Conemaugh River and Clarke Run, a tributary of Blacklick Creek. Combined storm/sewer overflows contaminate water in most of the villages and boroughs.

Much of the groundwater is contaminated by mine drainage. Clean water for use as individual on-lot water supplies wells is difficult to find in the subbasin. Many of the residents are served by public water supply reservoirs located in the mountains upstream of the mine drainage or on watersheds that were protected from mining.

Monitoring/Evaluation:
The subbasin has not yet been assessed under the DEP unassessed waters program. The Blacklick Creek Watershed Association (BCWA) has been evaluating the water quality and locating and cataloging mine discharges or major pollution sources affecting the 5 subwatersheds of Blacklick Creek. BCWA determined that the North Branch has 5 discharges, the South Branch 5, main stem Blacklick Creek 10, Two Lick Creek 16, and Yellow Creek 4. BCWA is actively pursuing ways to remediate the discharges and improve water quality.

A DEP Bureau of Abandoned Mine Reclamation (BAMR) survey of Two Lick Creek showed a pH above 6.4 throughout much of its length and relatively high alkalinity. The major pollutant was elevated iron and aluminum. A summer intern mapped discharges in Two Lick Creek watershed in 1999. The Blacklick Creek Watershed Association and the Indiana County CD are seeking assistance in remediation of this watershed and NRCS is considering a PL-566 study. Both sides of Two Lick Creek have numerous surface mines and refuse piles. The Dixon Run #3 and Penn Hills #1 and #2 mine discharges are the largest contributors of AMD to Two Lick Creek.

Lower Yellow Creek is degraded by low pH, high aluminum and iron discharges from abandoned surface and deep mines, borehole discharges, coal refuse piles, and sludge pits. The Blacklick Creek Watershed Association developed a five-phased restoration plan for remediation of the AMD discharges to lower

Yellow Creek through a combination of passive treatment, coal refuse removal, and remining. The first phase was funded through two 319 FY99 grants.

BAMR assessed the impacts of mine drainage on the aquatic life of the North and South Branches of Blacklick Creek in 1997. They also determined the feasibility of a comprehensive AMD abatement plan for the upper Blacklick Creek watershed. They concluded that acid mine drainage impacts both watersheds. The most severe impacts to the North Branch are refuse piles adjacent to Elk Run at the village of Colver. Although the North Branch has abandoned surface mines in its headwaters, some fish and macroinvertebrates are able to live upstream of the village of Colver. The inflow of the clean water tributary Carney Run improves the water quality of the North Branch enough to allow a diverse macroinvertebrate fauna downstream. The Red Mill mine discharge, however, impacts 4.6 stream miles of the North Branch farther downstream. Several boreholes discharge mine drainage near the confluence of the North Branch and the South Branch.

The BAMR study also determined that the South Branch is severely degraded by discharges from deep mines, waste dumps, and surface mines. The first AMD discharges are in the village of Revloc at the junction of US Routes 422 and 219, where refuse piles degrade the creek. Clean up of these refuse piles would restore 4.5 miles of stream. The high volume Webster discharge and refuse piles in the Borough of Nanty Glo are the largest contributors of AMD to the South Branch. AMD discharges also enter the South Branch via every tributary from Stewart Run to the village of Vintondale. Drift mines and coal waste dumps and refuse piles lining the creek banks contribute AMD directly to the South Branch. The tributary Pergrin Run also flows through refuse piles.

DEP Bureau of Mining and Reclamation conducted an Unsuitable for Mining Study of Laurel Run (near Coopersdale) in 1990. The study resulted in Laurel Run being declared unsuitable for mining for the lower coal seams (below the Lower Kittanning coal) due to high potential for post-mining acid mine drainage which would adversely affect water quality and aquatic life. Most of streams in the watershed have low buffering capacity. Several unnamed tributaries originating on Laurel Hill had pH below 5.5 year-round and elevated aluminum concentrations from a combination of acidic geologic and soil conditions and acid precipitation. Main stem Laurel Run was seasonally impaired downstream of these tributaries by aluminum precipitate. Laurel Run was also seasonally acidic in the headwaters. Fluctuating water quality conditions reduced the aquatic macroinvertebrate and fish diversity and abundance throughout the year in Laurel Run. Since the study was completed, several small surface mine operators have removed coal from the western ridge. Mining was limited to the Upper and Lower Freeport and Upper Kittanning coals that have alkaline overburden. Little or no water quality impairment of Laurel Run has occurred as a result of the mining. One small intermittent tributary has become more alkaline since the mining began.

Future Threats To Water Quality:

The major threat to water quality has been deep mine discharges from abandoned coal mines. The quality of Blacklick Creek watershed is expected to improve as passive treatment systems are installed at mine discharges. Future threats to water quality from mining will likely be due to mine abandonment and cessation of pumping and treating of discharges by the current responsible owners. Water quality should also improve with the expanded schedule of orphaned oil and gas well plugging contracted by the Department's Bureau of Oil and Gas Management. The western suburbs of Johnstown and the expanding commercial and metropolitan area surrounding Indiana have a potential for additional stormwater runoff problems. Burrell Township officials have expressed concerns over stormwater runoff in the area surrounding Blairsville.

Restoration Initiatives

Pennsylvania Growing Greener Grants:

- Blacklick Creek Watershed Association:
  - $141,002 (FY2002) for assessment and development of a restoration plan for the Blacklick Creek watershed.
  - $43,500 (FY2001) to develop the phase II assessment and restoration plan for the Upper Two Lick Creek watershed.
  - $127,220 (FY2001) for construction of a passive treatment system to treat the phase IIB abandoned mine discharges to lower Yellow Creek.
- $250,000 (FY2000) to the Blacklick Creek Watershed Association to complete remediation of the Richards discharge on upper Two Lick Creek. Remediation was begun with in-lieu-of-penalty funds from a coal company.
- $74,550 (FY2000) to Nanty Glo Water Authority for a stabilization and drainage improvement project to eliminate erosion and sedimentation problems occurring along Scott Dam Road.
- $12,500 (FY2000) to the Blacklick Creek Watershed Association for assessment and design of a treatment system for AMD discharges to Coal Pit Run.
- $5,900 (FY2000) to the Blacklick Creek Watershed Association for assessment and design of a treatment system for AMD discharges to Bracken Run.
- $605,000 (FY2000) to the Cambria County Conservation and Recreation Authority for construction of a treatment system for the Webster discharge. This will be used a state match or the federal funding received for study, design and construction by the US Army Corps of Engineers.
- $6,630 (FY2000) to The Laurel and Hinckston Conservancy for start-up of their watershed association.
- $5,000 (FY2000) to the Aultmans Watershed Association for Restoring the Environment for the purchase of audio/video equipment and monitoring equipment to be used to inform and involve the community in projects beneficial to the 28.3-square mile Aultmans Run watershed and to help expand the membership base of the organization.
- $51,416 (FY2000) to the Aultmans Watershed Association for Restoring the Environment for an assessment of the Aultmans Run watershed and preparation of a remediation plan.
- $165,000 (FY2000) to the Cambria County Conservation and Recreation Authority for routing Pergrin Run around the Lorain Refuse Pile. Pergrin Run now flows through the refuse piles.
- $200,000 (FY1999) to the Blacklick Creek Watershed Association to continue remediation of abandoned mine drainage discharges to lower Yellow Creek.
- $787,800 (FY1999) the Blacklick Creek Watershed Association to develop and implement a restoration plan for the Two Lick Reservoir, which serves as a water supply for the Homer city electric generation facility. The current active treatment system established by a now-bankrupt coal company will be replaced with a less costly passive system.
- $40,000 (FY1999) to AMD & Art, Inc. to continue educational, interpretive and passive AMD treatment components at the Borough of Vintondale community park adjacent to the South Branch Blacklick Creek.
- $4,000 (FY1999) to the Laurel Valley Greenway for organization of their group, which will focus on restoration and protection efforts on Conemaugh River tributaries.
- The Bureau of Oil and Gas Management has received funding for expansion of their orphan oil and gas wells plugging program.

U.S. EPA Clean Water Act Section 319 Grants:

- $80,000 (FY2004) to Blacklick Creek Watershed Association for operation, maintenance and replacement on Lower Yellow Creek restoration projects 1A, 1B and 2C.
- $146,810 (FY2003) to Blacklick Creek Watershed Association for phase I (construction) of the Coal Pit Run AMD treatment project.

- $250,000 (FY2002) to the Blacklick Creek Watershed Association for construction of a passive treatment system to treat the phase IIC abandoned mine discharges to lower Yellow Creek.
- $115,000 and $96,370 (FY1999) to the Blacklick Creek Watershed Association for passive treatment of acidic, high aluminum mine discharges to lower Yellow Creek. These funds will be used for construction of Phase I of the treatment systems needed to restore lower Yellow Creek. The watershed association received a donation of limestone to use in the passive treatment system. Construction of the SAPS was begun in fall 1999. The project is located in State Game Lands #273, owned by the PA Game Commission (PGC). The PGC entered into a lease agreement with North Cambria Fuel Co. to remine and reclaim 140 acres of the Game Lands that will aid in the restoration of lower Yellow Creek. In addition to royalties, the PGC will receive an additional 300 acres to add to State Game Lands #276 in Indiana County.
- $124,000 (1995) to Cambria County Recreation Authority for passive treatment of acid mine drainage on Gray Run.

Pennsylvania Watershed Restoration Assistance Program (WRAP):

- $10,000 (FY1999) was awarded to AMD and ART, Inc. for a clarification marsh and educational park displays at the borough of Vintondale on the South Branch of Blacklick Creek. The marsh will buffer the water that emerges from a SAPS passive treatment system before it enters the mitigation wetlands at the other end of the site. The innovative community park designed by AMD and Art will combine a passive treatment facility, natural landscaping and plantings, and historical exhibits at the site of the abandoned Vintondale Colliery. Coal refuse will be removed at the site for use at one of the local electric Co-Generation plants. Additional funding amounting to $400,000 was received from OSM through the Cambria Redevelopment Authority, Heinz Endowments through the Western Pennsylvania Protection Program, and the Pennsylvania Council of the Arts. Construction was expected to start in 2000.

DCNR Rivers Conservation Grants:

- $188,000 (1996) grant to the Kiski-Conemaugh Alliance for a conservation and management plan for the Kiski-Conemaugh River watershed.

DEP Bureau of Abandoned Mine Reclamation (BAMR)10% Set-Aside Program:

- BAMR Harrisburg office will develop a rehabilitation plan and feasibility study for treatment of the Webster discharge on South Branch Blacklick Creek.

DEP Bureau of Mining and Reclamation:

Reclamation In-Lieu of Cash Payment Penalty Program/Remining:

- Funds were given to PA Fish & Boat Commission for treatment of the Richards discharge to Two Lick Creek. Construction was completed in November 1999. Vapco Engineering was the consultant designing the treatment system. The treatment system consists of a SAPS and settling pond that treats half of the discharge. Additional funds are needed to construct a second SAPS system to treat the rest of the discharge.
- The Pennsylvania Mines Corp. completed the Wehrum reclamation project in December 1997 for a cost of $93,000, instead of paying a $45,000 fine. The project involved reclamation of 4.2 acres in Buffington Township, Indiana County, through removal of 6,405 tons of coal refuse material generated by Lackawanna Mine #3, which was in operation from 1902 to 1930. Reclamation benefited water quality in Laurel Run and eliminated an eyesore along the Ghost Town trail by removing debris and illegally dumped garbage. Coal refuse was removed and taken to the Cambria Co-Generation plant at Colver; 1000 tons of alkaline fly ash from the Co-Gen plant was returned to the site to improve soil quality. Laurel Run and an unnamed tributary were also stabilized with rip-rap. To further improve water quality in Two Lick Creek, the Coal Company constructed a mine water treatment facility capable of treating water at a rate of 5000 gpm. Cost of the treatment facility was over $550,000. Partners in this project included NORCAM, Indiana County Parks, Air Products, Blacklick Creek Watershed Association, and the Indiana County CD.

- A remining permit was issued to Laurel Land Development to reclaim 43 acres of abandoned spoil and 6,000 feet of abandoned highwall. The operation will also beneficially use substantial amounts circulating fluidized bed boiler ash as an alkaline addition agent.

U.S. Army Corps of Engineers (ACOE):

- Remediation study of the high volume Webster discharge is in the final design and planning stage; construction is scheduled to begin in 2001. DEP BAMR will be providing the local matching funds. Refuse piles in the South Branch watershed were originally scheduled to be reprocessed after 2015. Since the South Branch could not be restored until after the refuse piles were removed, the Corps has begun a new project to remove the refuse piles over the next 7 years. Clean up of the refuse piles and the Webster discharge should restore about 4.5 miles of the South Branch.
- $700,000 appropriation (10/3/00) to begin construction of the treatment system for the Webster Discharge. $20,000 in additional funds for the project from the OSM Appalachian Clean Streams Initiative.
- $200,000 (10/3/00) to begin addressing the Lorain coal refuse pile, adjacent to the Webster Discharge.

Orphan Well Plugging Fund Program:

- DEP completed the cleaning and plugging of six abandoned and orphaned gas wells in Burrell, White Armstrong, and Blacklick Townships in Indiana County. The contractor conducting the project, Benterra Corp., recently reported the completion of the project, which was given a final inspection by DEP in October 2002. One of the wells was leaking oil, brine and sulfates into Buffalo Run. The $170,000 project, located in the Conemaugh River and Blacklick Creek Watersheds, began in April 2002.

PENNVEST:

- $1.2 million loan (1999) to Nanty Glo Sanitary Sewer Authority to eliminate sewage pollution of South Branch Blacklick Creek during wet weather overflows; 5 miles of deteriorating sewer lines will be replaced and improvements will be made to the treatment plant. An additional 1.45 million was obtained from the US Army Corps of Engineers special environmental-infrastructure program and an additional $275,000 of Community Block Grant Funding from Cambria and Indiana Counties to complete the project. The project consolidated the Twin Rocks and Vintondale systems and extended service to into the villages of Belsano and Ragleyville.
- $12,701,365 to the Jackson and East Taylor Sewer Authority (1996) to construct 50 miles of collection sewers, mains, and pumping stations to transport wastewater to the city of Johnstown Sewage Treatment Plant and eliminate discharges from malfunctioning on-lot septic systems into tributaries of Hinkston Run, a public water supply watershed.
- $10,087,365 loan to the Jackson and East Taylor Sewer Authority to construct 200,000 feet of collection sewers, mains and pumping stations.

Indiana Conservation District:

The Indiana CD has actively sponsored and coordinated activities with other state and federal agencies to address nonpoint source pollution issues in the following areas:

- They assisted DEP with an investigation of flooding, erosion and other problems in Two Lick Creek watershed at Clymer Borough.
- They coordinated water quality monitoring with Americorps and EASI.
- They worked with DEP BAMR and Water Management, the PA Game Commission, and Americorps to identify and test mine drainage in Little Yellow Creek, Blacklick Creek, and Bear Run.
- They arranged for stormwater management planing between DEP BWC and White Township.
- They sponsored conservation tillage field days to demonstrate the use of cover crops and the difference in crop residue between types of plowing.
- They are involved with the Landowners Reclamation Program which allows landowners to use the remaining bonds on abandoned mine lands to help pay for surface mine reclamation.

League of Women Voters (WREN) Mini-grants:

- $3,000 to Southern Alleghenies Conservancy to develop a one-hour slide show to explain the problems and the opportunities about water quality and supply and recreation outlined in the Conemaugh Water and River Conservation and Management Plan Concept Paper.
- $2,500 to Municipal Authority of Borough of Derry to produce a brochure outlining the procedures necessary to keep their community water source free of Canada geese and to construct educational signs along the walkway by the reservoir.
- $1,382 to the Indiana County Parks to produce brochures and to install an outdoor grade sign that will inform Ghost Town Trail users about water quality issues in the Blacklick Creek watershed.

Other:

- The PA Fish and Boat Commission provided in-lieu of penalty funds to the Ken Sink Chapter of Trout Unlimited for fish habitat improvement practices in the watershed.
- The Ken Sink Chapter of TU has been adding alkaline sand to Gilhouser Run to help neutralize effects of acid precipitation.

Citizen/Conservation groups

- Blacklick Creek Watershed Association (BCWA) is active and committed to prioritizing and seeking funding for remediation of abandoned mine discharges in Blacklick Creek and Two Lick Creek watersheds. BWCA has formed partnerships with consultants, coal operators, electric producing companies, private industry, sportsmen's associations, local industrial development authorities, the PA Game Commission, professors from Indiana University of Pennsylvania, and other local, county, state and federal agencies to assist in planning the clean up of Blacklick Creek watershed. They have divided the Blacklick Creek watershed into 9 subsections, with someone assigned to each section to coordinate restoration efforts. The BCWA holds monthly technical meetings and participates in a variety of public outreach events. They have begun restoration of Yellow Creek with funding received through the 319 and Growing Greener programs.
- The Kiski-Conemaugh River Basin Alliance serves as a coordinating body in the planning and implementation of common and basin-wide projects such as the DCNR Rivers Conservation Plan and the U. S. Forest Service Forestry grants. The alliance is cooperative effort of five watershed organizations and four other environmental organizations within the basin, including the Blacklick Creek Watershed Association, the Conemaugh Valley Conservancy, the Loyalhanna Watershed Association, Roaring Run Watershed Association, and the Stoneycreek-Conemaugh River Improvement Project. More information can be found at their website http://www.surfshop.net/users/mccombie.
- The Stonycreek-Conemaugh River Improvement Project (SCRIP) has been active in securing funding for remediation. They published public information handouts on major streams and have a regular newsletter. More information and photographs of their activities can be found at their website http://www.ctcnet.net/scrip.
- AMD & ART is a nonprofit committed to remedying acid mine drainage from abandoned mines. The organization designs treatment systems as community parks that can be used for recreation and education. AMD & ART was one of the recipients of the first-ever Governor's Award for Watershed Stewardship in June. AMD & ART held a grand opening Oct. 26 for an innovative mine drainage treatment project in Vintondale, Cambria County, that was completed coupling a Growing Greener grant with other funds and a contract awarded through DEP's Reclaim PA program. The project consists of a series of passive treatment cells and wetlands to treat an abandoned deep mine discharge that is polluting the South Branch of Blacklick Creek. AMD & ART planted trees and shrubs along the treatment cells, which represent the change in color from acid mine drainage-impacted water to clean water. The treatment system is part of a project to transform the area into the Vintondale community park. For more information on AMD & ART, visit http://www.amdandart.org.
- The Stream Team: In fall 1998, AMD and Art and the Kiski-Conemaugh River Basin Alliance began sponsorship of a new educational effort to reach the community through hand-on education. A group of

volunteers made up of professionals, students, teachers, and others, is conducting aquatic monitoring at 80 sites throughout the Kiski-Conemaugh River basin. DEP BAMR is assisting with training and lab analysis. AmeriCorps members provide coordination for the project to provide residents with information on nonpoint source pollution remedies and how to take action in their communities. Members of the Stream Team include Indiana County EASI, Intermediate Units 7, 8, and 27, Latrobe Area High School, Loyalhanna Watershed Association, DEP BAMR, SCRIP Riverkeepers, and the US Forestry Service. Funding is provided through the Canaan Valley Institute, OSMRE, Americorps, and the US Forest Service.

Public Participation/Outreach

Watershed Notebooks:

DEP's website has a watershed notebook for each of its 104 State Water Plan watersheds. Each notebook provides a brief description of the watershed with supporting data and information on agency and citizen group activities. Each notebook is organized to allow networking by watershed groups and others by providing access to send and post information about projects and activities underway in the watershed. This WRAS will be posted in the watershed notebook to allow for public comment and update. The notebooks also link to the Department's Watershed Idea Exchange, an open forum to discuss watershed issues. The website is www.dep.state.pa.us. Choose Subjects/Water Management/Watershed Conservation/Watershed and Nonpoint Source Management/ Watershed Notebooks.

A variety of federal and local agencies and staff from other Department programs reviewed or provided information for this WRAS. These included DEP Bureau of Abandoned Mine Reclamation, NRCS, the Indiana and Cambria County Conservation Districts, and the DEP South West Regional Office. The public participation process has begun through distribution of this WRAS at various workshops and conferences and by the county conservation districts and DEP Regional Coordinators. Public input has been and will continue to be incorporated into expanding and fine-tuning the WRAS for direction on use of 319 grant funds beyond FY2000.

Funding Needs

Remediation of all the nonpoint source pollution problems in Subbasin 18D will likely cost many millions of dollars. The total needed dollars for addressing all nonpoint source problems in the watershed is undetermined at this time and will be so until stream assessments are completed and necessary TMDL's are developed for the watershed. TMDL's for South Branch Blacklick Creek and Elk Creek are scheduled for completion by the end of 2001.

Pennsylvania has developed a Unified Watershed Assessment to identify priority watersheds needing restoration. Pennsylvania has worked cooperatively with agencies, organizations and the public to define watershed restoration priorities. The Commonwealth initiated a public participation process for the unified assessment and procedures for setting watershed priorities. Pennsylvania's assessment process was published in the *Pennsylvania Bulletin, DEP Update* publication and World Wide Web site. It was sent to the Department's list of watershed groups, monitoring groups, and Nonpoint Source Program mailing list. Department staff engaged in a significant outreach effort, which included 23 additional events to solicit public comment. The Department received 23 written comments from a variety of agencies, conservation districts and watershed groups. Pennsylvania is committed to expanding and improving this process in the future. After development of the initial WRAS a public participation process will take place to incorporate public input into expanding and "fine tuning" the WRAS for direction on use of 319 and other grant funds beyond FY2000.

Restoration Needs:

Restoration efforts have been implemented and funded by a variety of agencies and citizens groups including DEP Bureaus of Abandoned Mine Reclamation and Watershed Conservation, NRCS, the Indiana County

Conservation District, U.S. Office of Surface Mining Appalachian Clean Streams Initiative, and the Blacklick Creek Watershed Association. Citizen volunteers under the direction of the Kiski-Conemaugh Stream Team, the Alliance for Aquatic Resource Monitoring (ALLARM), and the Environmental Alliance for Senior Involvement (EASI) are monitoring the success of remediation efforts.

The Department has not completed assessment of the subbasin under the Unassessed Waters Program. Several reports have identified abandoned mine discharge locations and areas affected by agricultural runoff. The Blacklick Creek Watershed Association prepared a list of AMD sources in Blacklick Creek watershed.

North Branch Blacklick Creek:
AMD sources:

- Colver refuse piles on Elk Creek, associated buried seeps and springs
- California Run to Elk Creek
- Mine treatment sites discharging to Elk Creek
- Red Mill Mine discharge and refuse piles
- Rexis instream boreholes from the dewatered Vintondale #6 Mine

DEP BAMR estimated that treatment or removal of 2 or 3 AMD discharges and coal refuse piles could restore much of the North Branch of Blacklick Creek. Removing the Colver refuse piles and treating the Red Mill Discharge could improve 4.6 miles of stream.

South Branch Blacklick Creek:
AMD sources:

- Nanty Glo refuse piles and Webster Discharge
- Bracken Dip refuse piles that toe into the stream
- Bracken Dip borehole discharge that frequently has aluminum precipitate
- Vintondale #3 Mine discharge and refuse piles that toe into the stream
- Vintondale #6 refuse piles along stream

The South Branch is more severely degraded than the North Branch. DEP BAMR will assist the BCWA with development of a comprehensive restoration plan. Remediation of the Revloc refuse piles would moderately restore aquatic life in 4.5 miles of the South Branch, but the remaining 8.5 miles would be difficult to restore because of severe impacts from the numerous discharges and refuse piles lining the stream banks and the large Webster Discharge. Treatment of the Webster Discharge will significantly improve water quality of the South Branch and the main stem Blacklick Creek. The Webster discharge is so acidic that the iron does not precipitate upon reaching the surface. Restoration of the South Branch Blacklick Creek is being pursued by a coalition of private, state, federal, and county agencies, including Blacklick Creek Watershed Association, AMD and Art, Cambria County Conservation District, Cambria County Conservation and Recreation Authority, Ebensburg Power, DEP BAMR, and the US Army Corps of Engineers.

Schedule for remediation of the South Branch:

- Webster Discharge passive treatment in 2001, US ACOE and BAMR. US ACOE cost estimate is $2 million.
- Removal of the Lorain refuse pile. Since removal of the Lorain coal refuse pile at Nanty Glo will take 5 to 10 years, a temporary diversion of the South Branch is planned. The creek will be diverted through pipes around the refuse piles and treated. Project will be funded by US ACOE and BAMR. Pergrin Run flows through the refuse pile and will rerouted around the pile and be restored as part of the remedation at this complex.
- Removal of coal refuse piles at village of Revloc for use at Co-Gen electric plants, by 2007

- Bethlehem #31 mine coal refuse piles will need to be removed after the refuse piles at Nanty Glo.
- Removal of Vintondale coal refuse piles and treatment of mine discharges began in 2000.

Main Stem Blacklick Creek:
AMD sources:
- Vintondale to Wehrum: multiple refuse piles (Lackawanna #3 area)
- Wehrum: refuse piles and seeps
- Wehrum Shaft discharge and swamp area, large area, iron loading
- Dilltown/ScottGlen refuse, surface mine contour strip mines and old deep mines
- Oneida surface and deep mine discharges, both sides of Blacklick Creek near PA Route 56
- Heshbon: old deep mine and refuse materials on Brushvalley Township side
- Aulds Run: deep mine collapsed seal, severe discharge
- Laurel Run (near Josephine) degraded by mines on Chestnut Ridge near anticline
- Josephine: deep mine entry on north side of stream
- Josephine: refuse piles on Palmerton area

The main stem will not be fully restored until remediation of the South Branch is completed. The main stem also receives additional mine drainage from numerous refuse piles lining its banks and several large deep mine discharges. The first piles are concentrated at the old the Lackawanna #3 mine area between Vintondale and Wehrum. A BMR reclamation project is planned for the Wehrum shaft discharge and swamp which contributes significant iron loading. Coal refuse has already been removed from the site for use at the Cambria Co-Gen Co. plant. The next area is at the village of Dilltown which has refuse piles (Scott/Glen), abandoned deep mines and unreclaimed surface mines extending for several miles along the hillsides above the creek down to the village of Hesbon. The recently closed Oneida mine and coal processing plant near the PA Route 56 crossing has untreated discharges flowing directly into Blacklick Creek. The area around Aulds Run has a collapsed deep mine seal which is leaking severely degraded water. Numerous unreclaimed surface mines are located on Chestnut Ridge above Blacklick Creek. A deep mine discharges into the creek near the village of Josephine and refuse piles are found between Josephine and Palmertown. Downstream of Josephine, the creek is impounded as part of the lake formed by the Conemaugh Dam.

Two Lick Creek:
AMD and other pollution sources:
- Penn Hill #2 deep mine discharge
- Pine Flats: deep mine discharges
- Pompey Run: refuse piles/mines
- Starford area: refuse piles, etc.
- Diamondsville: large borehole discharge
- Site 403: deep mine discharge and refuse piles
- Buck Run and upstream
- Dixon Run sources
- Sample Run sources
- Upper Allen Run: various seeps, old surface mines
- Deep mine discharge into stream below Indiana water supply dam
- Indiana sewage treatment plant: high coliform bacteria
- Risinger Shaft discharge Homer City area: high volume, iron, acidity, aluminum
- Homer City near FMC: two borehole discharges along cliffs
- Tearing Run: source upslope runs through Homer-Center High School property
- Josephine Road Senate Coal Co permit site: two borehole discharges
- Cherry Run, confluence & upstream: borehole discharge with high aluminum

Extensive abandoned deep mine workings on the Lower Kittanning and Lower Freeport coal beds honeycomb the hills along upper Two Lick Creek and its tributaries. The coal beds occur on average intervals of 50 feet within the 300 foot thick Allegheny Group, although only the Lower Kittanning and Lower Freeport coal beds attained the quality and thickness to be deep mined on a commercial scale within the Upper Two Lick watershed. Folding of the rock strata, in conjunction with down cutting by Two Lick Creek, has resulted in exposure of coal seams along the creek banks. Outcropping along the creek provided easy access to the valuable coal resources located in the adjacent hills. Voids formed by the deep mining have accumulated large volumes of groundwater within the mine workings, providing a steady supply of acid mine drainage to Two Lick Creek and its tributaries.

The most pressing problem on Two Lick Creek is continuation of the treatment of the Penn Hill #2 discharge and replacement of the current system with an on-site treatment system. In early 1999, Two Lick Creek Reservoir was threatened by the bankruptcy of Stanford Coal Co., who planned to stop pumping and treating the 1.7 million-gallon per day discharge from the Penn Hill #2 deep mine. The discharge was being pumped to a limestone slurry settling pond at the top of Chestnut Ridge and then into an old deep mine. If treatment were stopped, untreated mine drainage would flow into the reservoir and degrade the recently restored fishery. A temporary solution was worked out whereby Edison-Mission Energy, the operators of the Homer City Power Plant, would pay for treatment until a permanent solution using passive treatment could be arranged. An estimated $0.7 to 1.7 million would be needed to continue to treat the discharge during this interim period. Major costs of the current treatment system are for pumping of the discharge to the top of the mountain. Blacklick Creek Watershed Association is pursuing a permanent solution to the remediation of the discharges with passive treatment systems. A FY1999 Growing Greener Grant provided funding for the development of a replacement system.

Yellow Creek:
AMD sources:

- Mecco Mine discharges: 319 project area
- Judy #14 and borehole discharge with high aluminum
- Tide: refuse piles, stream from Chestnut Ridge Anticline area
- Lucerne: several refuse piles, deep mines, 3 boreholes, and refuse dumps

Degradation of Yellow Creek from AMD discharges begins in the lower portion of the watershed downstream of PA Route 954. Discharges have significant concentrations of aluminum and lesser concentrations of iron, sulfates, and acidity. Deep mine workings on Chestnut Ridge were relatively shallow (20 to 150 feet deep) and numerous subsidence potholes remain and act as conduits for infiltration of surface water. The deep mines were placed down dip so that water would flow naturally out of the system. This water flow into drainage ditches where they are piped under PA Route 954. Surface mining occurred from the 1950's through 1970's. The Blacklick Creek Watershed Association has divided the Yellow Creek restoration into 5 phases.

- Phase I: Uppermost portion of the AMD affected area, from PA 954 to a natural gas pipeline crossing Yellow Creek about 1000 feet downstream. Phase I was divided into two parts, both of which are SAPS treatment systems constructed in 1999 and 2000 and funded with U.S. EPA Clean water Act 319 funds.
- Phase II: The area containing an unnamed tributary (UNT) locally called the "Judy 14 Tributary". This tributary originates on hilltops east of PA 954 and enters Yellow Creek downstream of the natural gas pipeline. The UNT receives discharges from a borehole and several abandoned deep mine openings in the slopes on the hills. Phase II also includes a series of mine refuse and tailings piles on the east side of Yellow Creek. This phase will be implemented in 3 parts: phase IIB received Growing Greener funding in FY2001 and phase IIC received U.S. EPA Clean water Act 319 funds for FY2002.

- Phase III: contains an area of refuse piles on either side of Yellow Creek at the northeastern edge of the old mine village of Tide and an UNT locally called the "Tide Tributary" which enters Yellow Creek at the toe of the refuse pile nearest to Tide.
- Phase IV: is located on the north and south sides of Yellow Creek immediately downstream of Phase III consisting of a large refuse pile known as the "Lucerne Refuse Pile" and coal refuse and tailings from a cleaning plant once located on the northwestern side of the creek.
- Phase V: is located on both sides of Yellow Creek and consists of coal refuse, sludge pits, impounded water discharging from an abandoned deep mine, and several boreholes.

Conemaugh River discharges and pollution sources:
Fourteen named tributaries enter main stem Conemaugh River upstream of Blacklick Creek. Only Tubmill Creek at 54.3 square miles, McGee Run at 28 square miles, and Aultmans Run at 28.3 square miles have watersheds greater than 15 square miles. Several streams designated as high quality or exceptional value in Chapter 93, Laurel Run, Findley Run, Baldwin Creek, Shannon Run, Tubmill Creek, and Shirey Run, a tributary to McGee Run, are part of the Conemaugh River watershed. The majority of these unimpaired tributaries originate on Laurel Hill and flow through largely forested steeply sloped watersheds. Nonetheless, the main stem Conemaugh River is degraded and flows with orange iron precipitate for most of its length.

Sources of AMD to the Conemaugh River:
- Stonycreek and Little Conemaugh Rivers contribute a significant pollution load to the Conemaugh River. This area is discussed in the WRAS for 18E.
- Hinkstown Run enters the Conemaugh River about 1 mile downstream of the confluence of Stonycreek and the Little Conemaugh River in Cambria City near Johnstown. Hinkstown Run downstream of the Hinkstown Reservoir is degraded by a large area filled with slag industrial waste from Johnstown steel mills. The dam spillway exits onto this fill area, flows through the spoil for about 2 miles and then plunges over a 30-foot high waterfall back into the original stream channel. The slag pile rises 30 to 75 feet above the stream. Two discharges from the abandoned Bethlehem Lower Kittanning deep mine #77 enter Hinkstown Run on the western side. Remediation of Hinkstown Run would be difficult due to the amount of spoil to be removed and the constricted stream channel.
- St. Clair Run enters the south side of the Conemaugh River at about 1 mile downstream of Hinkstown Run. Fifty percent of the watershed is in the urbanized Johnstown suburbs. It is degraded by acid mine drainage, sewage overflows, and other urban runoff. The tributary Gray Run was the site of a passive system for treatment of a deep mine discharge. The system, part of an early 319-funded AMD passive treatment project, is undersized and is not providing much alkalinity to Gray Run.

Kiski-Conemaugh River Basin Conservation Plan:
The plan funded by DCNR presented a ten-year recommended course of action based on available resources, problems and potential solutions, and interest by local groups. The intent is to restore, maintain and enhance basin resources. Recommended program were grouped into four categories, land resources, water resources, biological resources, and recreational resources. The number one problem and restoration need, abatement of abandoned mine drainage, was given the highest priority. Stormwater management, land use planning, sewage from combined sewer overflows and poorly functioning on-lot and municipal systems, and illegal trash dumps were also identified as needing attention.

Recommended actions include the following:
- Vegetative stream buffering to protect waterways
- River keepers to keep streambanks free of trash and monitor water quality
- Land use planning especially for steep slopes, floodplains, wetlands, and stormwater and flood control

- Roads and river access to improve access to river recreational areas and for stabilization of roads that may be affecting water quality
- Watershed characterization to prioritize problem areas
- Mine drainage evaluation update
- Stormwater controls
- Biological resources including alkaline addition to streams and building sites, monitoring, and fisheries management
- Recreational resources improvement of greenways and trails
- Education and promotion

References/Sources of information

- State Water Plan, Subbasin 18, Lower Allegheny River. Department of Environmental Resources, July 1982
- USGS Topographic Maps
- 319 project proposals and summaries
- DEP: Watershed Notebooks, Unified Watershed Assessment Document, and information from files and databases.
- Map of Draft Level III and IV Ecoregions of Pennsylvania and the Blue Ridge Mountains, Ridge and Valley, and Central Appalachians of EPA Regions III
- Unsuitable for Mining Technical Study Report, Laurel Run, Cambria County, DEP Bureau of Mining and Reclamation, 1990.
- Two Lick Creek Mine Drainage Pollution Abatement Project SL-109, Operation Scarlift.
- The Kiski River Basin, by Brad Clemenson, 20 page pamphlet, 1996.
- Information from Blacklick Watershed Association
- South Branch Blacklick Creek Watershed Restoration Plan. DEP Bureau of Abandoned Mine Reclamation, Harrisburg. 2000.

Streams in Subbasin 18D: 303d/305b listings

Stream	**Stream Code**	**Drainage area square miles**	**Miles Impaired**	**Miles Attained**	**Causes/Sources of Impairment/ *Comments***
4-**Conemaugh River**	43832	1373	27.87 0.67		AMD-Metals & pH AG & urban runoff/storm sewers -Suspended solids & nutrients
5-Hinckston Run	45058	14.9			
5-St Clair Run	45046	8.06			
6-Gray Run	45052	2.18			
6-Elk Run	45048	1.99			
6-Strayer Run	45047	1.07			
5-Laurel Run near Coopersdale	45023	14.1			*HQ-CWF*
6-Red Run	45029	2.00			*HQ-CWF*
6-Wildcat Run	45024	1.97			*HQ-CWF*
5-Clark Run	45018	1.06			*HQ-CWF*
5-Findley Run	45005	9.78			*HQ-CWF*
6-Risinger Run	45010	1.13			*HQ-CWF*
5-Big Spring Run	44986	5.60			
6-Sugar Run	44987	1.39			
5-Baldwin Creek	44967	8.00			*Upper EV, lower HQ-CWF*
6-Powdermill Run	44971	2.19			*EV*
6-Poplar Run	44968	1.90			*HQ-CWF*
5-Shannon Run	44947	4.22			*HQ-CWF*
5-Richards Run	44924	8.15	0.5		AMD-Metals
6-East Branch Richards Run	44931	4.02			
6-West Branch Richards Run	44929	2.15			
5-**Tubmill Creek**	44797	54.3			*EV-Upper basin*
6-Lick Run	44901	2.75			
6-Hendricks Creek	44812	29.3			
7-“Loves Hollow”	44864	3.04			
7-Hypocrite Creek	44812	7.03			
7-Snyders Run	44815	8.00			
6-Freeman Run	44799	4.97	0.86		AMD-Metals
5-Roaring Run at Robinson	44789	3.33			
5-Toms Run	44772	5.26			

5-McGee Run	44716	28.0	1.08		Upstream impoundment-Organic enrichment/low DO from
6-Trout Run	44739	2.82		4.79	
6-Shirey Run	44732	1.85			*HQ-CWF*
6-Harbridge Run	44728	2.38	0.3		AMD-Suspended solids
6-"Tannery Hollow"	44720	1.44			
5-Stony Run	44679	13.8			
5-**Blacklick Creek**	43979	418			
6-**South Branch Blacklick Creek**	44618	47.0	1.54		AMD-Metals & pH
7-Williams Run	44648	7.62			
7-Stewart Run at Nanty Glo	44638	5.53			*HQ-CWF*
7-Coalpit Run	44626	2.96			
7-Bracken Run	44621	1.25			
6-**North Branch Blacklick Creek**	44503	68.9			
7-Wolf Run	44597	1.32			
7-Teakettle Run	44584	3.89			
7-Dutch Run	44567	8.21			
7-Stevens Run	44556	4.29			
7-Elk Creek	44523	22.7	8.37		AMD-Metals & other inorganics; Habitat alterations; habitat modification-siltation,
8-California Run	44543	3.31			
8-Hill Creek	44536	3.34			
8-Crooked Run	44533	1.93			
8-Little Elk Creek	44527	3.73			
8-Simmons Run	44524	1.29			
7-Carney Run	44512	3.58			
7-Walker Run	44511	1.03			
7-Downey Run	44508	3.01			
6-Rummel Run	44493	4.52			
6-Clarke Run	44481	2.49	3.97		AG-Nutrients & suspended solids
6-Mardis Run at Dias	44471	4.84			
6-Mardis Run at Dilltown	44465	2.96			
6-Brush Creek	44430	22.5			
7-Spruce Hollow Run	44459	1.52			
7-Little Brush Creek	44445	4.70			

6-Ramsey Run at Heshbon	44424	2.99			
6-Aulds Run	44421	1.90			
6-Laurel Run near Josephine	44410	4.09			
6-**Two Lick Creek**	44073	192	9.21		AMD-Metals & pH
7-South Branch Two Lick Creek	44364	21.9			*HQ-CWF*
8-Sides Run	44380	2.68			*HQ-CWF*
9-Repine Run	44379	6.59			*HQ-CWF*
8-Rock Run	44378	1.09			*HQ-CWF*
8-Whitaker Run	44371	2.99			*HQ-CWF*
7-North Branch Two Lick Creek	44341	10.9			
8-Pompey Run	44341	2.15			
7-Browns Run	44332	1.62			
7-Buck Run	44326	3.12			
7-Dixon Run	44298	10.7			
7-Penn Run	44276	7.60	3.93		AMD-Metals & other organics
7-Allen Run	44273	1.96			
7-Ramsey Run near Indiana	44249	4.56			
7-Stoney Run	44228	11.2	0.77		Municipal point source-organic enrichment/low DO
8-Marsh Run	44241	2.37	2.64		Urban runoff/storm sewers-Thermal modifications
8-Whites Run	44239	1.98			
8-McCarthy Run	44230	4.40	8.72		Urban runoff/storm sewers-Thermal modifications & suspended solids
7-**Yellow Creek**	44118	66.3	4.9		AMD-Metals & pH
8-Leonard Run	44214	2.14			
8-Laurel Run near Heilwood	44026	2.89			
8-Rose Run	44200	3.19			
8-Laurel Run near Penn Run	44184	5.32			
8-Little Yellow Creek	44147	17.5			*HQ-CWF*
9-Gilhouser Run	44153	2.20			*HQ-CWF*
7-Ferrier Run	44125	2.14	1.4		AMD Metals
7-Tearing Run	44112	4.50	2.19		AMD Metals
7-Cherry Run	44080	15.8			
6-Weirs Run	44049	2.10			
6-Muddy Run	44010	8.53			
6-Greys Run	43999	1.82			
6-Stewart Run near Blairsville	43980	7.54			

5-Aultmans Run	43913	28.3			
6-Reeds Run	43950	7.32	3.42		AMD Metals
7-Neal Run	43954	3.10			
6-Coal Run	43941	2.44			
7-Miller Run	43919	2.11			
5-Roaring Run near Louisville	43902	3.31	2.5		AMD Metals
5-Spruce Run	43881	6.43			*HQ-CWF*

The assessment under the DEP unassessed waters project has not been completed. Total miles impaired will likely change after completion. Many AMD affected streams in the subbasin are not on the 303d list.

Streams are listed in order from upstream to downstream. A stream with the number 2 is a tributary to a number 1 stream, 3's are tributaries to 2's, etc. Ohio River=1, Allegheny River=2, Kiskiminetas River=3

Classification in Chapter 93: HQ= high Quality, CWF= Cold Water Fishes, EV= Exceptional Value

AG= Agriculture, AMD= Abandoned Mine Drainage