Updated 9/2003

Watershed Restoration Action Strategy (WRAS)
State Water Plan Subbasin 18E
Stonycreek River and Little Conemaugh River Watersheds
Somerset and Cambria Counties

Introduction

Subbasin 18E consists of Stonycreek River and Little Conemaugh River watersheds, part of the Allegheny River basin. The total drainage area is approximately 658 square miles and contains 1049 streams flowing for a total of 1209 stream miles. Stonycreek River is 43.4 miles long and drains 467 square miles or approximately 71% of the subbasin. The average slope is 38 feet per mile. Stonycreek River meets the Little Conemaugh River in the City of Johnstown to form the Conemaugh River, which becomes the Kiskeminetas River in its lower reaches. The Little Conemaugh River is 29.2 miles long and drains 190 square miles or about 29% of the watershed. The average slope is 53 feet per mile. Six watersheds within the subbasin have drainage areas over 30 square miles: South Fork Little Conemaugh River, North Branch Little Conemaugh River, Bens Creek, Shade Creek, Paint Creek, and Quemahoning Creek. The subbasin is part of **HUC Area 5010007**, Conemaugh River, a Category I, FY99/2000 Priority watershed in the Unified Watershed Assessment.

Geology/Topography/Soils:

The subbasin is an area of high relief, steep mountains and deep river gorges. The subbasin originates on the Allegheny Front, the western edge of the Appalachian Mountains and the divide between the Susquehanna River and Ohio River basins, at elevations over 2,900 feet. The entire subbasin is within the Central Appalachians Ecoregion. This ecoregion is divided into two parts, the Forested Hills and Mountains (69a) that is restricted to the ridge tops at the eastern and western edges of the basin and the Uplands and Valleys of Mixed Land Use (69b) in the remainder of the subbasin. Both parts contain sedimentary rocks consisting of sequences of sandstone, shale, clay, limestone and coal. Mineable coals or clays underlie the entire subbasin.

The Forested Hill and Mountains section (69a) has rugged folded ridges and hills and includes the anticlinal mountains Laurel Hill and Chestnut Ridge, two of the major topographic features in the subbasin. All the major streams and rivers have high gradients through much of their lengths and are deeply incised into gorges as they flow through the mountains. The high gradients and constrictions through gorges subject the streams to extreme flooding. The city of Johnstown, where several rivers converge in gorges, has experienced extreme flooding several times in the past century after the wash out of dams. The steep slopes and stony soils limit agricultural use in this section of the subbasin.

The topography of Uplands and Valleys of Mixed Land Use (69b) section is less rugged and consists of rounded hills and low ridges on upland plateaus. More of the land in 69b is in agricultural production or used as pasture than in 69a. Most of the flatter land suitable for agriculture is in the Quemahoning Creek and upper Stonycreek River watersheds.

The majority of the coal mining in the basin has been in the Allegheny Group coals, which were both surface and deep mined. Some of the highest volume deep mine discharges in the PA bituminous region are within this basin. Several of the deep mine discharges have maximum flows of over one thousand gallons per minute and contribute significant loadings of acid and iron to the watershed. The water quality of drainage from surface mines varies depending on presence or absence of limestone strata above the coal. Clay, sandstone, and limestone deposits were also mined or quarried. The Pottsville Group also contains mineable coals and valuable high-alumina clays. This group is found on ridge tops and slopes at the edges of the watershed. The Mauch Chunk and the Burgoon Sandstone Formations are present in the ridge tops and slopes of the Allegheny Mountain and Laurel Hill.

Land Use:
The subbasin encompasses all or a part of 55 townships and boroughs and most of the City of Johnstown. Coal mining in the subbasin dates back to the 1700's. The first commercial coal production in the Little Conemaugh River basin dates back to 1825. The cross Pennsylvania Canal and the Allegheny Portage Railroad which opened in 1834 allowed transport of goods over the Allegheny Mountain and helped make the region a major manufacturing area. Steel making became an important industry in Johnstown, which became the world's leading producer of rails by the 1880's. The population of the basin has been declining for the past 50 years, especially since the decline of the rail and steel industries. The population was 137,500 in 1990 and is expected to continue to decline to 126,000 by 2040.

Abandoned mine lands, mine dumps, spoil and coal refuse piles cover a significant amount of the subbasin. Active surface and deep mining is widespread in the watershed, although coal mining is not as important an industry as it was up through the mid-1970's. Clear Run a tributary of Indian Lake in the Stonycreek portion of subbasin has had some of the largest surface mines and the largest drag line in Pennsylvania. Mining began in the mid-1980 south of US Route 30 and continues today on the north side of US 30.

Approximately 23 % of the Little Conemaugh River and Stonycreek River watersheds are in agricultural production, including pasturelands. Half of this area, or 12% of the entire watershed area, is active cropland; approximately 47% is forested. Urban uses comprise the smallest percent of the watershed, only 3% of total land use. The remaining 27% of the watershed has been used for surface mining, public recreational use, and open spaces. The majority of the agricultural lands lie within Somerset County; most of the farmable lands are in the Stonycreek River basin with only about 25% of them in the Little Conemaugh drainage. Most of the farmland in Stonycreek River watershed is in Somerset County, where the upper 9 miles flow through plateau pastureland with limited forested cover. The upper Quemahoming Creek watershed also flows mainly through open, low relief pasture or cropland.

Natural/Recreational Resources:
The Kiski-Conemaugh River was named river of the year for 2000 by DCNR. The river was selected to highlight the regional success in cleaning up the river and because of the renewed interest in its scenic and recreational potential. The Stonycreek River, one of the major tributaries of the Kiski-Conemaugh River system, is an important recreational resource for the northern Somerset-southern Cambria County region. The river flows through two steep-sided gorges that are popular for white water canoeing. Stonycreek River has 5 miles of mostly Class 2 and a little Class 3 rapids from Hooversville to Benson. The next 5 miles through Stonycreek canyon has 20 Class 3 and 4 rapids, with several high flow Class 5 rapids. The PA Fish and Boat Commission stocks the upper reaches of Stonycreek with trout. The trout stocked fishery ends at the confluence of the AMD-degraded Oven Run.

Shade Creek was once an excellent cold water fishery as its tributary Clear Shade Creek still is today. Despite the poor quality water, the Dark Shade Creek portion is still a preferred canoeing and kayaking stream, with its last 2 miles follow a very tortuous and steep course rated as Class 4 and 5 rapids. The last 3 miles of Clear Shade Creek from Windber Reservoir to its mouth offer Class 4 whitewater. Shade Creek has 11 miles of Class 3 water.

PA Fish and Boat Commission
Class A (highest biomass category) Trout Streams:
- Allwine Creek (tributary to North Fork Bens Creek), rainbow trout (1.9 miles)
- Beaverdam Run at Cainbrook, from pond outflow near village of Daley downstream to SR1018, brown trout (3.2 miles)

- Bens Creek at Oil City (tributary to Little Conemaugh River), from headwaters downstream 2.7 miles to Portage Water Authority reservoir, brook and brown trout (2.7 miles)
- Higgins Run, from coal tipple at River Mile 1.37 downstream to the mouth, brown trout (1.4 miles)
- South Fork Little Conemaugh River, headwaters downstream to Beaverdale Reservoir, brook trout (2.0 miles)
- Unnamed tributary to Beaverdam Creek, (Quemahoning Creek watershed) brown trout (1.8 miles)

DEP Chapter 93 Designated Exceptional Value (EV) and High Quality Streams:
EV:
- Bens Creek at Oil City, basin, source to unnamed tributary (UNT) 46100 at River Mile 1.20; and basin from UNT 46100 to UNT 46099 at river mile 0.74
- South Fork Little Conemaugh River, basin source to Beaverdale Reservoir Dam; and main stem Beaverdale Reservoir Dam to UNT 45928
- Clear Shade Creek, basin source to Windber Reservoir
- Piney Run, basin source to T-816 (tributary to Clear Shade Creek)
- North Fork Bens Creek, main stem and UNTs source to Johnstown Reservoir
- Allwine Creek, basin (tributary to North Fork Bens Creek
- Riffle Run, basin (tributary to North Fork Bens Creek)
- South Fork Bens Creek, basin, headwaters down to Conemaugh Township Reservoir
- Mill Creek, basin, source to SR0271 bridge

HQ:
- Noels Creek, basin, SR0271 to mouth
- Unnamed tributaries to South Fork Little Conemaugh River, source to Beaverdam Reservoir Dam to UNT 45028
- Bottle Run, basin
- Unnamed tributary (45928) to South Fork Little Conemaugh River
- South Fork Little Conemaugh River, basin UNT45928 to SR0869 Bridge
- Beaverdam Run at Beaverdale, basin
- Saltlick Run, basin
- Beaverdam Creek at Stoystown, basin
- Spruce Run basin
- Beaverdam Creek at Boswell, basin
- Roaring Run, basin source to Boswell Municipal Authority Dam
- Clear Shade Creek, main stem and unnamed tributaries, downstream of Windber Reservoir
- Piney Run, basin, T-816 to mouth
- South Fork Bens Creek, downstream of reservoir
- North Fork Bens Creek, main stem downstream of reservoir to confluence with South Fork
- Dalton Run basin
- Mill Creek, SR0271 to mouth

Water Supplies:
Much of the groundwater is contaminated by mine drainage. Clean water for use as individual on-lot water supply 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. Clear Shade Creek was spared the pollution from mining suffered by other streams because of the location of the Windber Water Authority reservoir 2 miles upstream of its mouth, which was built in 1907. The largest reservoir is the 12-million gallon, 900-acre Quemahoning Reservoir that was used as a water supply for Bethlehem Mines. Despite mine discharges upstream, the reservoir supports a sport fishery. This lake was never open to public fishing when it was under Bethlehem Mines

ownership, but will soon be purchased by the Southern Alleghenies Conservancy and turned over to local authorities for public recreation. The Conemaugh Township (Johnstown Water Authority) reservoir is located on the South Fork of Bens Creek.

Water Quality Impairment

Stonycreek River and Little Conemaugh River basins have been severely degraded by discharges from abandoned underground coal mines. Most of the deep mines were placed upslope into the hills so that water could drain out of the mines by gravity. Shafts were also constructed to get to coals that did not reach the surface. Many mines were interconnected. When the water became too much to pump out or drain, boreholes were drilled to relieve water pressure. These boreholes discharge some of the highest volume of acid mine drainage to the basin. Deep mines were abandoned when it was no longer economical to mine or when the coals had been depleted. These abandoned deep mines and boreholes are the major sources of pollution to the subbasin. Coal refuse piles also contribute to stream degradation. Discharges from gas well production and storage and disposal of brines has resulted in degraded surface and groundwater in some areas.

Stonycreek River has 3 large subwatersheds, Shade Creek, Quemahoning Creek, and Paint Creek, which have the majority of the large deep mine discharges. Wells Creek watershed has mine discharges that also affect Stonycreek River. The quality of Stonycreek River is relatively good from its headwaters downstream to the confluence of Oven Run and Pokeytown Run, about 5.5 miles downstream of Wells Creek. Oven Run watershed contains 10 identified AMD discharges. The pH of Stonycreek drops from 6.5 upstream to less than 5.0 downstream of Oven Run. Pokeytown Run, which enters Stonycreek River ½ mile downstream of Oven Run has an additional 6 discharges. The pH of these two tributaries is around 3.1.

A NRCS PL-566 program plan to improve water quality in Oven Run and Pokeytown Run was developed through use of passive treatment systems, grading and vegetating unreclaimed surface mines, and removing coal refuse piles. Costs for remediation of 6 sites in these two basins was estimated at $5 million in 1993. Funding sources were from the NRCS, EPA 319 grants, OSM, and DEP's Bureau of Abandoned Mine Reclamation. Completion of treatment at all six sites in the two basins is expected to restore 7 miles of Stonycreek. Only one site remains to be constructed.

Quemahoning Creek has 20 identified coal mine discharges ranging from less than one gallon per minute to over 800 gpm. The pH of these discharges varies from 2.8 to 6.9. Quemahoning Creek, despite its numerous acid discharges, contributes alkaline water to Stonycreek River. Remediation of AMD discharges is underway in Quemahoning Creek watershed.

Shade Creek, which has more than 40 identified discharges, including the largest discharge in the Stonycreek River basin, the acidic deep mine discharge at Central City, will remain the major contributor of acid mine drainage to the Stonycreek River watershed after the remediation of Oven Run and Pokeytown Run. Discharges in this watershed range from less than one gpm to 2250 gpm, with pH ranging from 3.0 to 6.8. The Central City discharge contributes 1700 lb/day of iron, 6750 lb/day of acidity, 29,700 lb/day sulfate, and 486 lb/day aluminum.

Paint Creek watershed, which is only ½ the size of Quemahoning Creek and Shade Creek watersheds, has 46 identified discharges, which range from less than one gpm to 1400 gpm. Paint Creek enters Stonycreek River 4.3 miles downstream of Shade Creek.

Another large subwatershed, Bens Creek, adds clean water and improves the water quality of Stonycreek River. Bens Creek enters Stonycreek near Johnstown, about 5 miles above its confluence with the Little Conemaugh River. Bens Creek has faired better than other tributaries to Stonycreek. The upper North

Fork watershed is forested and has a Class A brook trout fishery and a water supply reservoir. The South Fork of Bens Creek has good water quality and native trout populations from its headwaters down to Thomas Mills where several deep mine discharges enter. The smaller discharges have low pH and high acidity; however, the major AMD source has circumneutral pH and low iron. The creek bed is covered with iron precipitate downstream of the discharges but has a limited macroinvertebrate population and is stocked with trout from about 2 miles downstream of the discharges.

The Little Conemaugh River, whose watershed flows through the southern half of Cambria County, can be divided into major sections, the South Fork, North Fork, and upper main stem. All three sections are severely degraded by acid mine drainage which eliminates most aquatic life. The main stem is degraded from the Borough of Portage downstream to its confluence with Stonycreek River. All the groundwater in the Little Conemaugh River basin is associated with coals; therefore, very few natural springs or usable water supply wells are unaffected by acid mine drainage. The Hughes borehole is the main contributor of acid mine drainage to the upper Little Conemaugh River basin. This 800 to 3000 gpm discharge contributes an average of 8,300 pounds of pollutants to the river. Additional discharges from boreholes in or near the Borough of Portage contribute up to 6000 gpm of additional pollutants. The Miller shaft discharges 4000 gpm of acidic water to the Little Conemaugh River. The St. Michael discharge along Topper Run contributes over 15 tons of pollutants per day or over 29% of the pollution in the entire Little Conemaugh River basin. The Sulfur Creek borehole, the second largest discharge in the basin, contributes 5 tons of pollutants per day.

The South Fork of the Little Conemaugh River is degraded from the Borough of Beaverdale downstream to its mouth. Upstream of Beaverdale, the South Fork has excellent water quality, is used as a water supply, and supports a Class A native brook trout fishery. Impairment is due to coal refuse piles and discharges of acid mine drainage with high concentrations of iron and aluminum from surface and deep mines. The affected areas are Beaverdale, Allendale, Dunlo, St. Michael, and South Fork. The water quality of the North Branch has been relatively unaffected by mining; however, some stream dewatering has occurred in the headwaters of the North Fork watershed from underground longwall mining. The North Branch has a varied aquatic community and is stocked with trout by the PA Fish and Boat Commission.

Restoration initiatives are planned for Saltlick Run, a tributary of the Little Conemaugh River. The creek flows for 5 miles through wooded terrain and is accessible only by foot. The creek flows into a Johnstown Water Authority-owned reservoir at Mineral Point. The reservoir has not been used as a public water supply since 1995. Saltlick Creek and its tributary Little Saltlick Creek support populations of native brook trout. The watershed is degraded by 6 abandoned mine discharges which are diverted around the reservoir and part of the creek. If funding can be secured, the treatment and restoration is planned for completion by the end of 2002.

Agricultural sources of impairment are also evident in parts of the Stonycreek/Little Conemaugh River basin. The most affected areas are the Somerset County portion of the Stonycreek River watershed where agricultural production is greatest. Roaring Run, North Branch Quemahoning Creek, Quemahoning Creek, Beaverdam Creek, and upper Stonycreek River, which cover approximately 104,000 acres, are affected by agricultural nonpoint source pollution. This portion of the subbasin is an area of rolling hill country with livestock farms including dairy, beef, and sheep. Livestock access to streams, barnyards close to watercourses, and crop cultivation on steep slopes are the major pollution sources. Approximately 12,000 acres in Cambria County in the Laurel Run, Settlemeyer Run, and Noels Creek watersheds are high priority areas for nutrient management and BMP implementation.

Many watersheds in Ecoregion 69a that originate on Laurel Hill and contain mainly Pottsville Group sandstone have very low buffering capacity and are subject to acid precipitation. These streams are either

seasonal acidic in the late winter-spring, or are acidic year-round. Researchers at Penn State University have studied the effects of acid precipitation on several of these streams.

Underground mining by the longwall mining method, where large blocks of coal are removed without retaining support pillars, occurred in deep mines around Ebensburg from the late 1970's to early 1990's. Some streams above the mines, including Roaring Run near Ebensburg, Howells Run, and the upper reaches of the North Fork Little Conemaugh River, have experienced seasonal water depletion or dewatering as a result of the longwall mining. Stream dewatering has changed the aquatic invertebrate communities and has eliminated most of the fish in the most severely affected streams.

Monitoring/Evaluation:
The assessment by DEP biologists under the Unassessed Waters Program has not been completed. Individual monitoring and evaluation of pollution causes projects have been started or completed by watershed associations and conservation districts.

Future threats to water quality
Increased threats to water quality associated with urbanization should not be a significant factor here except on a localized level around existing urban areas and highways. Construction of public sewage lines through subbasin should improve stream water quality in areas now affected wildcat and leaky on-lot septic systems.

The major threat to water quality has historically been discharges from abandoned coal mines. Deep mines underlie a majority of the basin. Many of the smaller surface mine discharges are being cleaned up with the relatively recent development of passive treatment systems; therefore, water quality is expected to improve in the mined areas. The coal industry has been declining; many deep mines are being closed; operators are going out of business. Future threats to water quality from mining will likely decrease; however, mine abandonment and cessation of pumping and treating of discharges by the current responsible owners may become an issue to deal with in the future.

Restoration Initiatives
Pennsylvania Growing Greener Grants:
- $213,595 (FY 2003) to Jennerstown Borough and Jenner Township in combination with Office of Surface Mining funds will construct a treatment system, mitigate wetlands and re-vegetate Beaverdam Creek with native riparian species.
- $150,940 (FY 2003) to Shade Creek Watershed Association to construct a passive treatment system for abandoned mine discharges along Laurel Run.
- $27,086 (FY 2003) to Somerset Conservation District to design and permit a passive treatment system for six abandoned mine discharges along Coal Run.
- $11,000 (FY 2003) to Windber Borough to reduce surface water and shallow groundwater infiltration around the Jandy Refuse Pile.
- $3,317 (FY2002) to Somerset County Conservation District for organization of the Wells Creek Watershed Association.
- $60,000 (FY2002) to Windber Borough for assessment and development of a restoration plan for Paint Creek watershed.
- $46,080 (FY2002) to Cambria County Conservation and Recreation Authority for Phase II restoration of the Little Conemaugh River.
- $34,586 (FY2001) to AMD & Art, Inc. for alkalinity generation for treatment of abandoned mine discharges in the Dark Shade headwaters.

- $85,550 (FY2001) to Somerset Conservation District for a proposal for the development of operation and maintenance procedures to ensure the continued success of passive treatment technologies used in treatment of abandoned mine discharges.
- Southern Alleghenies Conservancy (FY2001):
    - $195,000 for construction a passive treatment system for an abandoned mine discharge to Wells Creek.
    - $17,382 for design of a passive treatment system for the abandoned Adams Deep Mine discharge.
- $444,800 (FY2000) to Somerset County Conservation District to construct a passive abandoned (AMD) mine drainage treatment system at Oven Run Site A, the final project of six projects in the Oven Run Watershed Restoration Plan. Site A will restore 20 acres of abandoned surface mine land and passively treat a 300 gallon per minute AMD discharge
- $3,275 (2000) to the Paint Creek Regional Watershed Association for startup of a watershed group for the 9.98 square mile Paint Creek Watershed. An educational brochure to increase awareness and gain support will also be developed.
- $146,000 (1999) to Conemaugh Township to passively treat the Rock Tunnel discharge with oxidation, precipitation of iron and manganese, reconfiguring stream flow, and planting vegetation. The enhancement will remove an estimated 20 tons of iron, 4.5 tons of aluminum and 0.5 tons of manganese per year.
- $225,000 (1999) to Somerset County Conservation District to cost-share best management practices for landowners to reduce sediment and nutrient runoff within the Stonycreek River watershed.
- $30,000 (1999) to Somerset County CD to continue the Quemahoning Creek restoration project.
- $7,000 (1999) to the Wells Creek Watershed Association to design a treatment facility for an abandoned mine discharge to Wells Creek.
- 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:

- $224,495 (FY2003) to Southern Alleghenies Conservancy and Wells Creek Watershed Association for construction of a passive treatment system for the Adams Deep mine discharge #7.
- $82,403 (FY2003) to Southern Alleghenies Conservancy and Wells Creek Watershed Association for construction of a passive treatment system for the Wells Deep mine discharge #6.
- $156,742 (FY2003) to the Somerset County Conservation District for agricultural best management practices in areas identified as priority areas of Stonycreek River watershed.
- $12,500 (FY1999) to the Southern Alleghenies Conservancy for an assessment and to develop management plan for AMD discharges in the Quemahoning Creek watershed.
- $129,500 (1995) and $265,500 (1998) to Somerset Conservation District (CD) for land reclamation and constriction of a passive treatment system on Pokeytown Run (Oven Run site F). Additional funding for both sites was received from NRCS. Treatment consisted of vertical flow wetlands, coal refuse removal, regrading and planting.
- $265,500 (1994) to Somerset CD for passive treatment of an acid discharge on Oven Run site D. Treatment consisted of a series of vertical flow wetlands and settling basins.
- $142,430 (1994) to Cambria County Recreation Authority for passive treatment of a surface and a deep mine discharge and regrading and planting of a coal refuse pile on Bear Rocks Run, a tributary of Little Conemaugh River.

US EPA Clean Water Act Section 205j Grants:

- 1992-94. Assessment of Non-Point Pollution in the Stonycreek and Little Conemaugh River Watersheds, an assessment of agricultural impacts.

Pennsylvania Watershed Restoration Assistance Program (WRAP):

- $30,500 (1998) to Cambria County Recreation Authority for an assessment and restoration plan for AMD pollution in South Fork Little Conemaugh River

- $24,000 (1999) to Somerset CD to restore a one-mile section of Quemahoning Creek corridor to reduce erosion and to counteract effects of abandoned mine drainage. A steep embankment parallel to the Boswell Lions/Jacyees Recreational Park will also be part of the project. The community will play a major role in the construction and completion of the project.

DEP Bureau of Abandoned Mine Reclamation (BAMR):

- $738,000 to seal and divert deep mine openings at Oven Run Site C, to reclaim 56 surface acres, and backfill a 4700-foot highwall. Deep mine discharges are the source of pollutants to Site B. Casselman Enterprises was the contractor. Majority of funding through Office of Surface Mining (OSM) Appalachian Clean Streams Initiative.
- $951,954 from the 10% set-aside program and the Appalachian Clean Streams Initiative for passive treatment at Oven Run Site B (Koontztown). Two vertical flow wetlands systems were under construction in summer 1999. These vertical flow wetlands were the largest built so far in the state.
- $744,221 for refuse removal and fly ash addition to an AMD site in Little Paint Creek.
- Quemahoning Creek- aerobic wetlands passive treatment of AMD site. Additional funding from OSM Appalachian Clean Streams Initiative

U.S EPA Clean Water Act 104b3 through DEP Bureau of Mining and Reclamation (BMR):

- $53,682 to Cambria County Conservation and Recreation Authority in FY97 for a demonstration treatment system on the Sulphur Creek Borehole. SAPS and Pyrolucite passive treatment system.

Western PA Coalition for Abandoned Mine Reclamation (WPCAMR):

- Miller Run (Cottagetown site) $70,000 Passive treatment with SAPS, additional funding through RAMP.

DCNR Rivers Conservation Grant

- $9,000 (2000) to the Southern Alleghenies Conservancy to assess the damage caused by and the location of noxious weeds in the Little Conemaugh River watershed.
- $188,00 (1996) to the Conemaugh Valley Conservancy to develop a rivers conservation plan for the Kiski-Conemaugh River system. The report contains a ten-year action plan for restoration and protection of the Kiski-Conemaugh River basin. The final report is available at http://www.surfshop.net/users/mccombie.

Agricultural NPS Remediation

- Nutrient Management program for the Cambria and Somerset County Conservation Districts (FY94 through FY97 grants). Funding under the Nutrient Management technician project was made available for implementing needed BMP's. Nutrient Management planning continues with the Nutrient Management Act (Act 6) funds through the PA Dept of Agriculture and the PA DEP.

Water/Sewer Projects:

- PENNVEST:
  - $115,815 to Portage Township to construct sanitary sewers in the Village of Sonman and to conduct a feasibility study to provide water distribution improvements to Twin Lakes Road and Cherry Bottom area (1996).
  - Borough of Cresson: $636,500 loan and $250,000 grant through to the to replace 15,600 feet of water distribution lines. Also, a $531,500 loan to replace 15,000 feet of sanitary sewer mains (1995).
  - $152,320 to Cambria Township to continue construction of a potable water system extension to the Village of Tripoli and 25 residences and 4 businesses that currently have poor water quality. Also will conduct a feasibility study to water distribution improvements in the Village of Revloc (1995).
  - $4,073,563 loan to the Greater Johnstown Water Authority to replace 10 miles of old water lines throughout the city of Johnstown and surrounding municipalities (1998).
  - $365,850 loan to Windber Borough to eliminate backup of sewage into basements during wet weather and replacing collection lines (1998).
- Community Development Block Grants:

- $350,000 to Summerhill Township to replace and upgrade the public water system serving 18 families in the village of Onnalinda (1997).
- $523,764 to Cambria County for sanitary sewer and water supply improvements in Lily, Tunnelhill, and Vintondale Borough and Blacklick Township.

- Forest Hills Sewer Project will hook up all the communities along the South Fork by 2000 and eliminate discharges of raw sewage.

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.

Citizen/Conservation Groups

- The Stonycreek-Conemaugh River Improvement Project (SCRIP) has been very active in securing funding for remediation of the basin. They published public information handouts on the major streams in the basin and have a regular newsletter. More information can be found at http://www.ctcnet.net/scrip.
- 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. Two official co-Chief Riverkeepers will keep track of activities in the subbasin. More information can be found at http://www.surfshop.net/users/mccombie.
- Many sportsmen's organizations throughout the basin are teaming with local conservation groups to help with restoration of mine drainage-affected streams.
- The Mountain Laurel Chapter of Trout Unlimited has assisted in the remediation of abandoned mine lands in the basin.
- The Conemaugh Valley Conservancy
- Little Conemaugh River Watershed Association, formed in 2000, will focus on abandoned mine drainage in the watershed and strive to promote appreciation environmental issues through environmental education and monitoring.
- Shade Creek Watershed Association, formed in 2000, is assisting the Somerset Conservation district in developing a watershed restoration plan. A student intern from University of Pittsburgh at Johnstown conducted a macroinvertebrate study. They have formed a group of volunteers called the "Krick Keepers" to continue the monitoring.
- Paint Creek Regional Watershed Association, formed in 2000, have as their goal to restore Paint Creek and Little Paint Creek, described as a goldmine of nature, to their former uses for outdoor recreation. They creeks are degraded by abandoned mine drainage.
- Wells Creek Watershed Association (new, 2001)
- Lambert Run Watershed Association (new, 2001)
- Shade Creek Watershed Association (SCWA) in partnership with the Dark Shade Brownfields Project has initiated a watershed assessment of Shade Creek basin. Volunteers monitor all priority AMD discharges as well as instream sites throughout the basin. Chemical samples are analyzed by the DEP laboratory. They also helped prepare a restoration plan for Shade Creek.

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 NRCS, the Somerset 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

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 TMDLs are developed for the watershed. Remediation of the top priority discharges one Shade Creek including the Central City discharges will cost millions of dollars. At least five million dollars has been spent to remediate the 6 sites in the Oven Run/Pokeytown Run complex. Existing programs that address nonpoint source issues in the watershed will continue to move forward until the TMDL is completed.

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

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. 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 Somerset County Conservation District, U.S. Office of Surface Mining Appalachian Clean Streams Initiative, and SCRIP. Citizen volunteers under the direction of the Kiski-Conemaugh Stream Team and the Alliance for Aquatic Resource Monitoring (ALLARM) are monitoring the success of remediation efforts. The following areas need attention.

AMD

Little Conemaugh River: (See http://www.ctcnet.net/scrip for more information and photographs of discharge sites and remediation efforts already underway.)

Top 10 discharges to Little Conemaugh River (ranked by % loading)

1. Berwind Mine at St. Michael, 29.2 %, high aluminum
2. Sulphur Creek, 10.7%

3. Trout Run, 13.41%
4. Ehrenfeld, 11.9%
5. Portage Sewage Treatment Plant, 9.72%
6. Hughes Borehole, 7.8%
7. Beaverdale, 6.33%
8. South Fork Borough, 2.37%
9. Allendale 2.34%
10. Kokomo, 1.4%

Upper Little Conemaugh River Watershed (Cresson Borough to South Fork Borough:
The AMD study by Cambria County CD located 197 discharge sites on the Little Conemaugh River. Only 7 sites account for 94% of the AMD load. Of these, 14 exceed 500 gpm during at least part of the year. Deep mine openings and boreholes accounted for all significant sources of AMD. Seven discharges were responsible for over 73% of the pollution load. The sites can be grouped by location:

- Kokomo Run the first tributary with significant AMD was slated for remediation under the RAMP program. Three discharges are located in the watershed. Since the RAMP program is no longer active, a new funding source will be needed.
- Bear Rock Run is the 2nd tributary with AMD. This watershed had been used as water supplies for the Borough of Lily and the Highland Sewer and Water Authority until regulation changes caused the surface supplies to be abandoned. Discharges from an abandoned clay mine associated with the "A" coal and several surface mines had been piped around the reservoirs. A passive treatment system installed with 319 funds has raised the pH from 5.5 to 6.1 and significantly reduced the iron load. Several smaller affected areas are being addressed which should complete the remediation of this watershed.
- Bens Creek enters the river just upstream of the Hughes borehole. Bens Creek is designated as a high quality stream and supports a Class A brook and brown trout fishery in its upper 2.7 miles. The last 1.5 miles of stream receives AMD discharges from surface and deep mines but these are not significant enough to kill the stream. Coal refuse piles border the last ½ mile of stream. Water quality is still relatively good at its mouth and supports minnows. Remediation is still needed to improve water quality and increase the diversity macroinvertebrates and fish in the lower end.
- The Hughes Borehole, with flows ranging up to 3500 gpm, is upstream-most major discharge. Pollution loads have ranged up to nearly 9000 pounds per day and include elevated aluminum and manganese. The borehole is less than 50 feet from the riverbank near the village of Jamestown. Treatment of this discharge will be a challenge because of the high flow and metals loading. AMD and Art is studying treatment options.
- Three discharges are located several miles downstream of the Hughes Borehole near the Portage Sewage Plant. They are located within 200 feet of each other and contribute a total load of 9592 pounds per day of pollution.
- Trout Run suffers from numerous small and large discharges that degrade its water quality and the water quality of the Little Conemaugh River. The Miller Shaft is located along the banks of Trout Run on the southern border of Portage Borough. Two discharges from this site lie within 25 feet of each other. TR-13, the main shaft, discharges over 3300 gpm and a total pollution load of over 6000 lbs per day. TR-14 has a flow of nearly 400 gpm and contributes a load of close to 1500 lbs per day. TR-35 has a maximum flow of 250 gpm and maximum load of 2000 pounds per day.
- An unnamed tributary that enters Little Conemaugh River near the Borough of Wilmore has 3 discharges contributing a combined daily pollution load of 242 lbs per day. Several drift mines discharge within the Borough of Ehrenfield. An acid mine drainage treatment plant operated by Beth Energy Corp is located in the Borough of Ehrenfield.

South Fork Little Conemaugh River:

High flow discharges are not easily treated passively with the current technology. Treatment at some sites would be difficult because of an inadequate amount land available for treatment. A study completed in 1999 recommended the following pollution sources and restoration needs.

- Beaverdale area: 3 major mine discharges and refuse piles adjacent to the creek. All sites owned by Cooney Brothers, who would like to purchase refuse piles for use in cogeneration plants for production of electricity. Use of refuse at cogen plants would significantly reduce treatment costs.
  - Beaverdale community park: 3.5 pH, 500 gpm discharge from a flooded mine entrance, several feet of iron pct build up, low Al.
  - Discharge from high up in the refuse pile: 3.0 pH, high Al, low Fe, pile must be removed prior to treatment
  - Bubbler: south bank of creek, pH 2.0, high concentrations of Fe and Al, high fluctuations in flow: 200 to over 1000 gpm
- Allendale: mine shaft discharge and refuse pile, flows from 350 to 2000 gpm, with high iron. Two smaller discharges have little effect on water quality and are a low priority for remediation.
- Dunlo (Sulphur Creek): Large borehole discharge; entire watershed was surface mined. The 1000 gpm Sulphur Creek borehole discharge has very low pH and high iron and aluminum that eliminate all aquatic life. Surface mines in headwaters must also be remediated to achieve water quality improvements. The upper watershed has land available for treatment, including several ponds once used for soda-ash treatment at an active mine site.
- St Michael: Remnants of Maryland #1 Mine and Coal Preparation Plant, deep mine discharge adjacent to Topper Run degrade lower Topper Run. Flow averages 3100 gpm with high iron. These discharges are the largest in the Little Conemaugh River basin and account for 29% of the pollution to the river. The maximum flow was measured at over 5000 gpm and maximum loadings calculated at over 31,000 pounds per day. The largest of the three discharges is from a 12-foot wide concrete mine shaft. A large coal refuse pile also degrades water quality. Topper Run is a native brook trout stream upstream of these discharges.
- South Fork: Discharge and coal refuse piles in the railroad yards of Conrail in the borough. Seeps from the base of the refuse pile flow into wetlands. This area is under an active permit for remining and will not require funds for remediation.

Potential remediation:

- The South Fork watershed has been proposed as a pilot area to demonstrate recovery of aluminum from mine water for use in manufacturing and industry. Money received from sale of the aluminum would offset the costs of treatment. Grants have been applied for from the Federal Energy Technology Center in Morgantown, WV, through Congressman John Murtha. Seven discharges in the upper Conemaugh basin are potential sources of aluminum for the pilot project.
- The Cambria County Recreation Authority and Paul Rizzo associates is working on funding for construction of an AMD treatment system and an associated pump storage facility for the Maryland #1 mine discharge in St. Michael. The treatment would consist of an anoxic limestone drain, sedimentation ponds and constructed wetlands.
- Two large refuse piles at the old Berwind mine are owned by InterPower cogeneration plant in northern Cambria County. Senate Coal Co. is removing the refuse material for use at the power plant.

Topper Run Project:

The Cambria County Conservation District (CCCD) in cooperation with the Cambria County Conservation and Recreation Authority (CCCRA) has started extensive monitoring on Topper run in an effort to develop a treatment strategy for the massive Topper Run discharge, which has one the worst metals loading in western PA. The CCCRA received a $20,000 grant from the PA DCNR as part of a larger initiative in the Kiski-Conemaugh River basin. The county authorities are also donating $20,000 in staff time and services towards the project. The CCCD will measure flows and collect and send water

samples to the DEP lab for analysis. Additional funding for a hydrologic study of the mine pool is being pursued through Congressman John Murtha.

Lower Little Conemaugh River:

- The Little Conemaugh River Gorge, which was the path of the 1889 Johnstown Flood, has numerous small discharges along its banks that may be overflow breakouts of the Maryland #1 Mine at St. Michael. Discharges near the Staple Bend Railroad Tunnel also combine as a significant source of AMD loading
- Saltlick Run watershed has been used as a public water supply for 80 years. Two deep mine discharges, SL-02 and SL-03, above the reservoir midway up the watershed, are piped around the reservoir. Bethlehem Mines has a treatment facility in the watershed which mixes powered lime in a large clarifyer.
- Clapboard Run has a small surface mine discharge and two deep mine discharges that could be easily treated with passive technology.

Stonycreek River:

- Top 10 discharges to Stonycreek River:
  1. Site 16 Dark Shade Creek, pH 3.3, flow 2250 gpm
  2. Site 19 Dark Shade Creek, pH 5.1, flow 1780 gpm
  3. Site 81 Paint Creek, pH 4.8, flow 1400 gpm
  4. Site 95 Stonycreek downstream of Shade Creek, pH 4.6, flow981 gpm
  5. Site 4 Pokeytown Run, pH 2.8, flow 348 gpm (Oven Run "F"- remediation 1999)
  6. Site 125 Paint Creek, pH 2.4, flow 225 gpm
  7. Site 22 Wells Creek, pH 3.0, flow 224 gpm
  8. Site 3 Oven Run, pH 2.8, flow 155 gpm (Oven Run "B" remediation underway in 1999)
  9. Site 110 Solomon Run, lower Stonycreek, Geistown area, pH 4.5, flow 449 gpm
  10. Site 208 Quemahoning Creek, pH 6.2, flow 374 gpm

The major obstacles for remediation of the entire Stonycreek River are the two large deep mine discharges which flow into Shade Creek at Central City and two large discharges to Paint Creek. The power of remediation of one small watershed can be seen with the success of the Oven Run remediation project. The completion of all but one of the discharges sites has added considerable alkalinity to the River and some fish are returning to the river system 25 miles downstream at Johnstown. This shows that treatment of additional sites has the potential to restore many more fish species and aquatic invertebrates to the watershed.

Watersheds and AMD contributions:

Shade Creek:

Settlement in the watershed began in 1745 and the first coal mine was opened in 1820. Lumbering was the major industry in the area for many years. Large-scale coal mining did not begin until the early 1900's when the village of Central City was planned and constructed to house mine workers. World war II fueled major expansion of the mines. The largest mine in the area, the Reitz No. 4, shut down in 1957; the last coal mine closed in the early 1960's. The legacy of the mines lives on through over 40 discharges in the watershed, including two large acidic discharges at Central City.

Shade Creek flows through a largely uninhabited, roadless, forested riparian corridor for several miles from the confluence of Clear Shade and Dark Shade Creeks. An old railroad right of way follows this corridor. The two worst discharges discharge to Dark Shade Creek in Central City and account for the majority of the pollution to Shade Creek. The Site #16 deep mine discharge has an average flow of over 2000 gpm of 3.3 pH water and high concentrations of acidity, sulfate, iron, manganese, and aluminum.

Site # 19 has flow greater than 1700 gpm, with a pH of 5.5 and high levels of all three metals. A third discharge of lesser flow, site #14 also contributes a substantial amount of acid and aluminum. Shade Creek enters Stonycreek 7 miles downstream of Oven Run and causes depressed pH and elevated metals concentrations.

A Shade Creek Restoration Plan was developed in 2001 through the Dark Shade Brownfields EPA Demonstration Pilot Project, the Shade Creek Watershed Association, and the Somerset Conservation District. The plan addresses remediation of the five top discharges in the watershed.

Shade Creek Top priorities:

1. Site #16 (Reitz #4 mine): Site #16 carries the highest aluminum load into the Stony Creek watershed. Treatment of site #16 has been under investigation since the mid-1900's. Because of the high flow volume and high concentrations of aluminum, treatment would require a huge amount of space. Space available for treatment is limited. The owner of the property is negotiating with Alumex Minerals Corp. for their purchase of the site. Alumex is proposing to construct a metals resource recover system at the site.
2. Site #19, which enters Little Shade Creek above the Central City sewage treatment plant. A possible treatment option is combined treatment of the AMD and sewage discharges. Both sites are being promoted as industrial water supplies for the development of local industries or for off-site industrial use. The best option for treatment of these discharges is a cooperative effort between the public and private sector. Metals recovered could also be used at this site.
3. Site #14. The plan states that this discharge is a good candidate for passive treatment even though the high flow volume is over 800 gpm. The surrounding Reitz #2 abandoned mine site has enough space for development of a SAPS system. DEP BAMR, NRCS and the Dark Shade Brownfields Development Project have received support of the landowners and are pursuing treatment options. Even though this site has a lesser impact on water quality of Dark Shade Creek, treatment of this discharge is expected to have a significant improvement in the watershed by adding alkalinity. Since the site is in a highly visual location along PA Route 160, treatment would help to generate the interest of the local communities in AMD treatment and in improving the quality of life in the area.
4. Site # 27 on Coal Run: Amerikohl Coal Co constructed a passive treatment system consisting of a SAPS and collection and settling ponds with bond reclamation funds. The system has failed and needs to be repaired.
5. Site #38 on Coal Run. A remining operation is being considered for this deep mine discharge. A passive treatment system may have to be constructed to pre- treat the water.

Other Shade Creek Sites/Issues:

- Numerous coal refuse piles are located in the watershed. The piles should be assessed for volume and energy values to see if they have a potential for use in cogen plants. The areas could then be covered with fly ash and be revegetated.
- Acidic mountain streams: Many streams flowing west of the Allegheny Front are acidic through a combination of natural conditions and acid precipitation. Limestone sand addition is being considered to add alkalinity to the watershed. The Shade Creek Watershed Association received a Growing Greener grant for addition granulated limestone addition to these acid precipitation impacted streams to bring up the pH, add alkalinity to the headwaters of Dark Shade Creek and help restore fisheries. The first stream to be addressed is Shingle Run, will receive. Other stream slated for limestone addition include Beaverdam Run, Berkebile Run, and Panther Run.
- Laurel Run: Two discharges, the Sand Plant Road and Reitz # 1 abandoned deep mines, and coal refuse piles. Potential remediation is for passive treatment systems and limestone channels.
- Miller Run: Many abandoned mine discharges. Many discharges are alkaline; therefore, Miller Run has a relatively high diversity of macroinvertebrates, the pH is near neutral and metals concentrations

are low. A coal refuse pile treatment site is located at the headwaters. The piles should be removed to eliminate the need for active treatment.

- Little Dark Shade Creek: high acidity and aluminum, passive treatment alone is not considered feasible. Metals recovery and/or combination with sewage treatment are the best options.

Wells Creek:
Nine discharges. Four have pH less than 4.0 and one has pH of 4.4. All flows are less than 300 gpm. Wells Creek enters Stonycreek River upstream of Oven Run. Two discharges within 900 feet of each other significantly affect the water quality of Wells Creek and decrease the pH from 7.2 to 3.9. These two discharges are ranked 7th and 28th overall for the Stonycreek River basin.

Oven Run and Pokeytown Run:
These are upper most contributors of significant AMD to Stonycreek River. Remediation of the six Oven Run/Pokeytown Run sites will cost $5 million and should be completed by 2002.

Quemahoning (Que) Creek: 20 discharges. Discharges range from alkaline with high iron to acidic with high iron, manganese, and aluminum. The study underway in the Que Creek watershed will prioritize discharges for treatment and determine AMD remediation needed. The villages of Quecreek and Acosta contribute raw sewage to Que Creek watershed. Installation of sewer lines began in 2000 should alleviate most of the sewage problems.

- The first mine discharge to reach Que Creek is the one identified as #208, which is net alkaline with high iron and eliminates some of the aquatic life. Little surface area is available for treatment where the discharge appears; it may have to be piped elsewhere for treatment.
- Hoffman Run has mine discharges that affect Que Creek and further reduce the diversity of aquatic life.
- The North Branch has one deep mine discharge affecting the watershed.
- The Jenners AMD treatment site was built with a variety of funds. This alkaline, high iron artesian discharge is treated by running the water through ponds to settle out the iron. The flow has increased since the system was built and iron is not removed efficiently.
- A diked wetlands near Boswell will be modified to allow an efficient removal of iron and to reroute a clean tributary around the wetland into Que Creek.

Paint Creek:
46 discharges: 17 have pH less than 3.0 and 19 have pH less than 4.0. One discharge has a flow of 1400 gpm and high concentrations of acidity, sulfate, iron, manganese, and aluminum. Since Paint Creek enters Stonycreek River far down in the watershed, its major discharges will likely be addressed after remediation of the Central City discharges.

Agriculture
The 205(j)(5) funded assessment of nonpoint pollution in Little Conemaugh and Stoneycreek Rivers watersheds completed in 1994 evaluated the effects of agriculture in the subbasin. Water quality monitoring and stream corridor evaluations were conducted. Agricultural land use makes up about 36% of Stoneycreek River basin. The watershed had 465 farms averaging 214 acres in 1994. Little Conemaugh River watershed had 175 farms averaging 142 acres in 1994. Most of the farms are livestock and cash grain operations with both dairy and beef cattle. Beef cattle are more common than dairy farms, especially in the Little Conemaugh River watershed. The largest farms, however, are dairy farms. The highest numbers of dairy and beef cattle were in Quemahoning Creek and main stem and upper Stoneycreek River. Hogs and sheep are also reared in the subbasin. The largest crop acreage is in alfalfa, followed by corn, small grain and corn silage. Agricultural related impairment in Stonycreek River watershed mainly involve excess nitrogen and heavy sediment loading during storm runoff events. Many

of these problems are associated with spreading of livestock waste, livestock access to streams and livestock-holding areas close to streams.

Water quality monitoring indicated little or no impact from phosphorus and that dissolved oxygen (DO) levels greatly exceeded required levels at most sites. Elevated nitrate levels were the main indicators of agricultural nonpoint source (NPS) pollution. The following sites had indications of NPS pollution from agriculture:

- Laurel Run (at Cresio), elevated nitrates downstream of an unnamed tributary. Unstable streambanks, soil erosion and siltation were observed in the middle reaches of the watershed.
- Noels Creek, elevated nitrates and sol erosion and siltation downstream of an unnamed tributary near Galley Road.
- Mud Run stream bottom was extremely silted. Stream flow was turbid even during normal flow levels indicating soil erosion problems. The worst site was at an unnamed tributary at PA 160.
- Otto Run showed minimal siltation overall except at one site above the confluence with Sulphur Creek) which was severely eroded by livestock access to the creek.
- Roaring Run (at Boswell), low DO at one site; however, this site is swampy with low gradient. The watershed is heavily farmed, but showed little indication of pollution. The extensive intact riparian buffers were believed to be protecting the watershed from agricultural runoff; however, two sites, at PA 985 and above confluence with Flat Run near Fisher Road (T-742) were impacted by cattle access.
- North Branch Que Creek, one heavily farmed unnamed tributary (at intersection with Walnutdale Road) had elevated nitrate levels. Heavy siltation was noted at 3 sites.
- Que Creek main stem, over half of the sites sampled had elevated nitrates. One unnamed tributary that was farmed on both sides of the creek and had corn fields lining the stream was in need of BMPs. Siltation was thick in many locations and algae blooms were observed.
- Upper Stonycreek River was heavily silted and in need of soil conservation practices. Stream flow was turbid during normal flow periods.

The study prioritized agriculture areas needing assistance. Funds were subsequently provided for technical and financial assistance to farmers in priority watersheds within the Little Conemaugh/Stonycreek River basins. The highest priority areas were identified in Cambria County as Laurel Run (at Cresio) and Noels Creek, and in Somerset County as Roaring Run (at Boswell), North Branch Quemahoning Creek, Quemahoning Creek, Beaverdam Creek, and upper Stonycreek River. The implementation costs for agricultural BMPs in these eight high priority watersheds was estimated at $3.3 million. Remediation in medium priority watersheds was estimated at one million dollars.

Conservation and nutrient management planning are needed to help correct nutrient and erosion problems from farms. Recommended agricultural BMPs include animal waste storage facilities, streambank protection, pasture management, strip cropping, conservation tillage, cover crops, rotational grazing, and barnyard improvements. Somerset Conservation District recommended that a cost share program (25% match by landowner) should be developed to design and install BMPs to address the most serious pollution problems.

The Cambria and Somerset Conservation Districts are focusing efforts on manure handling in priority watersheds, through spreading of manure on pastures. They are using larger grant money for construction of manure storage and management systems, surface water controls, stream fencing, and general management plans to minimize erosion. Smaller grant money has been used to grazing or pasture management and stabilization, including stabilization of livestock “alleyways” which were causing erosion.

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

Restoration Successes

As a result of remediation efforts throughout the Oven Run/Pokeytown Run watershed, aquatic life is returning to portions of Stonycreek River where none has existed for many, many years, including the Conemaugh River, 25 miles downstream at Johnstown. Canoe paddlers have reported seeing fish in the river. Fish have been spotted as far downstream as Johnstown, near the confluence with the Conemaugh River. Trout, suckers, minnows, catfish, and panfish are moving in from tributaries. The restoration efforts in the watershed have received recognition as a national model for the new federal Clean Water Initiative; however, recovery of Stonycreek will be limited until the large discharges in Shade Creek watershed are treated. Recovery of Little Conemaugh River has not been as successful because of the large, high volume discharges in that portion of the watershed.

Stonycreek River has become a managed fishery. Stonycreek River was stocked with smallmouth bass fingerlings in September 2001 through the efforts of SCRIP and other local associations. Over 2,400 fingerlings were purchased and planted at four locations in the river, including at Haynes Street and Moxham-Ferndale bridges in the lower river in southern Johnstown. The PA Fish and Boat Commission has scheduled to begin their smallmouth bass stocking in 2002. Water quality improvements documented by SCRIP Riverkeepers, especially those showing net alkaline conditions in the river all year, indicated that fish would now be able to survive a grow in the river. The continuing radiation efforts have made these improvements and the stocking possible. The improved water quality in the lower reaches in Johnstown are also aided by the inflow of the clean tributary, Bens Creek.

SCRIP is pursuing a method to treat the large AMD discharges in the subbasin. They and submitted a White Paper to DEP encouraging development of new and different approaches to treatment of these high volume discharges. Hart Industries is investigating a process to combine gas well brine and AMD in a treatment plant that could discharge water meeting all effluent criteria.

A treatment system constructed on Lambert Run has allowed trout to move into the stream from Stonycreek River up to Lambert Falls. The first ever stocking of trout above the falls occurred in spring 2000, further documenting stream recovery.

References/Sources of information

- State Water Plan, Subbasin 18, Lower Allegheny River. Department of Environmental Protection, July 1982
- USGS Topographic Maps
- 319 project proposals and summaries
- DEP: Watershed Notebooks, Unified 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
- The USGS Water Resources Investigation 96-4133: Effects of Coal Mine Discharges on the Quality of the Stonycreek River and its Tributaries, Somerset and Cambria Counties, Pennsylvania. 1996.
- Cambria County Conservation District and SCRIP: Report on the Water Quality and Acid Mine Drainage in the Little Conemaugh River Watershed, Cambria County, Pennsylvania; funded by PA Clean Water Fund. 1995.
- Fact sheets on Little Conemaugh River, Stonycreek River and tributaries prepared by SCRIP.
- The Kiski River Basin, by Brad Clemenson, 20 page pamphlet, 1996.
- PL-566 funded (NRCS) study on remediation of abandoned mine drainage in Oven Run
- Assessment of Non-Point Pollution in the Stonycreek and Little Conemaugh River Watersheds, an assessment of agricultural impacts. 1994.
- Study of stream dewatering in Roaring Run, Cambria County, DEP Bureau of Mining and Reclamation, 1989-1990.
- PA Fish and Boat Commission 1997 fisheries investigations
- South Fork Branch of the Little Conemaugh River, Cambria Conservation District, Draft WRAP Assessment
- SCRIP Newsletters

Streams in Subbasin 18E: 303d/305b Listings

Stream	**Stream Code**	**Drainage area square miles**	**Miles Impaired**	**Miles Attained**	**Causes/Sources/ *Comments***
5-***Little Conemaugh River**	45815	190	1.31		AMD-Metals
6-Bear Rock Run	46113	7.27			
7-"Christie Hollow"	46117	1.29			
7-Burgoon Run	46115	2.16			
6-Bens Creek at Oil City	46098	8.01	0.73 Main stem; 0.88; 1 UNT	4.07 Main stem; 7.15; 7 UNTs	AMD-Metals *EV upper basin except for UNT 46100;* *Class A brook & brown trout, upper 2.7 miles*
7-"Dividing Hollow" & 2 UNTs	46104	1.25			*EV*
6-Noels Creek	46077	6.71			*HQ-CWF*
6-Spring Run	46070	2.83	2.84		AMD-Metals
6-Trout Run	46052	9.94			
7-Kane Run	46051	3.26			
6-North Branch Little Conemaugh River & 2 UNTs	45971	31.0		8.23	
7-Howells Run	45996	14.2			
8-Roaring Run near Ebensburg	46001	2.81			Seasonal stream dewatering after creek undermined
6-Laurel Run at Summerhill	45946	5.72			
6-**South Fork Little Conemaugh River** & 9 UNTs	45848	64.0	0.79	6.05 Main stem; 9.07, 9 UNTs	AMD-Metals *EV & HQ-CWF, portions of the upper basin and UNTs* *Class A brook trout upper 2 miles*
7-Bear Wallow Run	45939	0.48		0.9	*EV*
7-"Coon Hollow" and 3 UNTs	45935			3.04	*EV*
7-"Bottle Run"					*HQ-CWF*
7-Rachel Run	45933	1.04		1.82	
7-Beaverdam Run at Beaverdale	45917	8.17			*HQ-CWF*
8-Big Cedar Run	45919	2.97			*HQ-CWF*
7-Otto Run	45901	9.87			
8-*Sulphur Creek	45902	4.41	2.06		AMD-Metals
7-Laurel Run at Cresio	45883	9.79			
7-Sandy Run	45851	9.04			
6-Bear Run	45845	1.33			

6-Saltlick Run	45830	11.9			*HQ-CWF*
7-Little Saltlick Run	45833	2.31			*HQ-CWF*
6-Clapboard Run	45819	4.36			
5-***Stonycreek River**	45084	467	8.88 Main stem; 5.93, 4 UNTs	2.80	AMD-Metals, pH; AG-Nutrients, suspended solids
6-Reitz Creek	45804	2.62	4.45		AMD-Low pH, metals AG-Nutrients & suspended solids
6-Glades Creek	45777	10.2	3.88		AMD-Metals
7-"Sandy Hollow"	45781	3.63			
6-Rhoades Creek	45737	26.1	1.00		AMD-Metals & pH
7-Calendars Run	45766	14.3			
7-Clear Run	45757	5.98	1.36		AMD-Metals
7-Boone Run	45742	9.69	1.72		AMD-Metals, other organics
6-Schrock Run	45729	4.05			
6-Buck Run	45722	3.05	2.38		AG-Nutrients
6-Lamberts Run	45710	3.77	3.08		AMD-Metals
6-*Wells Creek	45675	17.3	1.38		AMD-Metals
6-Beaverdam Creek at Stoystown	45634	18.6			*HQ-CWF*
7-South Fork Beaverdam Creek	45653	4.87			*HQ-CWF*
6-Oven Run	45621	7.29	1.86		AMD-Metals *AMD remediation underway*
6-"Pokeytown Run"					*AMD remediation underway*
6-Fallen Timber Run	45604	2.48	0.86		AMD-Metals
6-**Quemahoning Creek**	45371	98.2	12.43 Main stem 4.32 Main stem & 1 UNT 1.43		AMD-Metals, Small residential runoff-siltation, on-site waste water-nutrients AG-nutrients, siltation Upstream impoundment-flow alterations, organic enrichment/low DO
7-Hoffman Run & 2 UNTs	45546	1.43	2.91		AMD-Metals, Removal of vegetation-habitat alterations, siltation
7-North Branch Quemahoning Creek	45497	24.6			
8-Horner Run	45540	3.99			
8-Beam Run	45524	3.03			

8-Spruce Run	45522	3.36			*HQ-CWF*
8-Beaverdam Run near Gray	45499	5.47			
7-Beaverdam Creek at Boswell	45456	9.49			*HQ-CWF*
8-Card Machine Run	45475	3.22			*HQ-CWF*
8-Pickings Run	45466	2.52			*HQ-CWF*
7-Roaring Run at Boswell	45428	12.1			*HQ-CWF, upper basin*
8-Flat Run	45443	2.27			
7-Twomile Run	45417	5.52			
7-Higgins Run	45404	5.81			
6-**Shade Creek** & one UNT	45270	96.7	10.72		AMD-Metals & pH
7-Dark Shade Creek & 2 UNTs	45330	36.4	6.92		AMD-Metals & pH
8-Coal Run	45359	2.12			
8-Little Dark Shade Creek	45344	4.51			
8-Laurel Run at Cairnbrook	45335	10.0			
9-Beaverdam Run near Cainbrook	45336	7.33			*Class A brown trout, Daley to SR1018*
8-Miller Run	45331	6.46			
7-Clear Shade Creek & 20 UNTs	45293	31.4		31.16	*EV, source to Windber Reservoir, lower basin is HQ-CWF*
8-Cub Run & 4 UNTs	45310	3.36		5.19	*EV*
8-Piney Run & 9 UNTs	45295	9.28		15.11	*EV, source to T-816, lower basin is HQ-CWF*
7-Hinson Run	45291	2.39			
7-Roaring Fork	45279	12.6			
8-Sandy Run	45281	2.14			
7-Spruce Run	45273	2.39			
6-Kaufman Run	45266	1.98	4.3		AMD-Metals
6-**Paint Creek** & 4 UNTs	45223	36.8	9.37		AMD-Metals & pH
7-Babcock Creek & one UNT	45260	4.42	4.78		AMD-pH & metals
7-Seese Run	45249	7.36			
8-Weaver Run	45250	2.47			
7-Little Paint Creek	45227	12.4			
6-“Moonshine Hollow”	45204	1.12			
7-“Soap Hollow”	45210	3.62			

6-**Bens Creek**, at Bens Creek	45101	49.5			
7-North Fork Bens Creek	45181	13.0			*EV down to Johnstown reservoir, lower HQ-CWF*
8-Riffle Run	45191	3.33			*EV*
8-Allwine Creek	45187	2.37			*EV, Class A rainbow trout*
7-South Fork Bens Creek	45132	20.2			*EV, down to Conemaugh Twp Reservoir, lower basin is HQ-CWF*
8-North Branch South Fork Bens Creek	45170	2.45			*HQ-CWF*
7-Dalton Run	45124	4.95			*HQ-CWF*
7-Mill Creek & 9 UNTs	45102	7.35		10.44	*HQ-CWF*
8-Little Mill Creek & 2 UNTs	45110	1.90		3.39	*HQ-CWF*
7-Sams Run	45098	2.73			
7-Solomon Run	45090	8.47			
8-Falls Run	45093	1.78			
7-Cherry Run	45086	2.19			
8-Cheney Run	45087	1.47			

The assessment has not been completed for this subbasin. *The impaired or attained miles for these streams are based mostly on older 303d/305b lists. Other information is based on the 2000 list.

Total miles listed as impaired or attained include unnamed tributaries (UNTs) where indicated.

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, Conemaugh River=4.

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

AG= Agriculture, AMD= Abandoned Mine Drainage