

Updated 9/2003

**Watershed Restoration Action Strategy (WRAS)
State Water Plan Subbasin 08C
Clearfield Creek Watershed
(West Branch Susquehanna River)
Clearfield and Cambria Counties**

Introduction

The 612-square mile subbasin 08C includes Clearfield Creek and the West Branch of the Susquehanna River from the confluence of Clearfield Creek downstream to the confluence of Moshannon Creek. A total of 703 streams flow for 1032 miles through the subbasin. The subbasin is included in **HUC Area 2050201**, Upper West Branch Susquehanna River, a Category I, FY99/2000 Priority watershed in the Unified Watershed Assessment.

Geology/Soils

The entire basin is located in the Uplands and Valleys of Mixed Use (69b) section of the Central Appalachians Ecoregion. Coal, sandstone, clay, and limestone of the Pottsville, Allegheny and Conemaugh Groups underlie the basin. The most valuable coals are those of the Allegheny Group. Clays associated with the coals were also mined for refractory use.

The topography is rolling plateaus with steep, narrow V-shaped stream valleys. Slopes vary from 3 to 80%. Soils in the area are derived from the brown shale, sandstone and clays sand and are moderate to highly erodible.

Land Use

Much of the subbasin is rural and mostly forested with scattered boroughs and villages. Forests comprise over 50% of the subbasin. The subbasin is one of the most extensively surface mined areas in Pennsylvania for coals and clay. Underground coal mining was also extensive.

Much of the region was settled because of the hundreds of surface and deep mines that were in operation in the subbasin. The main population centers are in 6 boroughs. With the closing of most of the mines, population has been decreasing and is expected to continue to decrease well into the 21st century. Only 33,300 people resided in the subbasin in 1990; the population is projected to decrease slightly to 32,000 by the year 2040.

Natural/Recreational Resources:

Portions of Moshannon State Forest and State Game Lands 34 are located in the northern edge of the subbasin. Prince Gallitzin State Park is located in northern Cambria County. This park includes the 1,600-acre Glendale Lake, which is a high use recreational area for boating and fishing. The lake has largemouth bass, northern pike, muskellunge and panfish.

PA Fish and Boat Commission

- The PA Fish and Boat Commission stocked the West Branch in Clearfield County with trout in 1999, the first time in many years. Stocking had been stopped due to poor water quality from abandoned mine drainage.
- The entire 2.2-mile length of Sandy Run is managed as Class brook trout A waters, which is the highest biomass category for Pennsylvania trout streams.

Chapter 93 Exceptional Value (EV) and High Quality (HQ) Streams:

EV: None

HQ:

- Little Muddy Run, source to Janesville Sportsman Dam
- Little Clearfield Creek
- Lick Run
- Trout Run

Water Quality Impairment

The major source of pollution in the subbasin is acidic water from abandoned deep mines; surface mine discharges also contribute to degradation. Malfunctioning on-lot and public septic systems are a secondary source of pollution. Most of the boroughs still have individual on-lot septic systems. Agricultural operations and industrial facilities are limited and are not a major concern.

Water quality in Clearfield Creek is fair in the headwaters, but becomes degraded by acid mine drainage and is considered of very poor quality at its confluence with the West Branch. The creek has elevated concentrations of iron, manganese, aluminum, and dissolved solids; the pH is around 6.0. Because of its high volume, Clearfield Creek has considerable impact on the West Branch. Brubaker Run is the first significant contributor of AMD to Clearfield Creek. Muddy Run and the Shoff Mine blowout upstream of Madera are other high contributors of AMD to Clearfield Creek. Other tributaries contributing AMD are Japling Run, Lost Run, Pine Run, Krebs Run, Long Run, Roaring Run, and an unnamed tributary.

Agriculture nonpoint source pollution is limited in the subbasin. Only 412 farms were operating in Subbasins 08B, C and D in 1997. No high intensity operations are present. No pesticide problems have been documented. Farmland security programs are active in both Clearfield and Cambria Counties. The water quality of Little Clearfield Creek is generally good; however, elevated sulfate and fecal coliforms have been measured in some locations.

Monitoring/Evaluation

The Susquehanna River Basin Commission (SRBC) assessed 43% of the subbasin under the Department's unassessed waters program in 1999. Out of 445 miles assessed, 295 or 66% were considered impaired.

DEP biologists use a modification of U.S. Environmental Protection Agency's (U.S. EPA) Rapid Bioassessment Protocol II (RBP-II) as the primary mechanism to assess Pennsylvania's unassessed waters. This method requires selecting stream sites that would reflect impacts from surrounding land uses that are representative of the stream segment being assessed. The biologist selects as many sites as necessary to establish an accurate assessment for a stream segment. The length of the stream segment assessed can vary between sites. Several factors are used to determine site location and how long a segment can be, including distinct changes in stream characteristics, surface geology, riparian land use, and the pollutant causing impairment. A biological assessment is conducted at each site, using the modified RBP II method. Biological surveys include kick screen sampling of benthic macroinvertebrates, which are identified to family in the field, and habitat surveys.

The West Branch Assessment prepared by the Clearfield County Conservation District summarized water quality conditions in the upper West Branch watershed. The Hawk Run District Mining Office has collected many water quality samples associated with AMD discharges and active permits in the subbasin.

Unsuitable for Mining:

- Powell Run upstream of the Blandburg water supply reservoir was declared unsuitable for mining due to high potential for acid mine drainage.
- Little Muddy Run upstream of the Janesville Sportsman Dam was declared unsuitable for mining.

Future threats to water quality

Threats to water quality from mining should decrease as the mines continue to close and the population declines. Water quality should improve from the remediation of mine discharges and the installation of better on-lot septic systems or connections of villages and boroughs to sewage treatment plants.

Restoration Initiatives

Pennsylvania Growing Greener Grants:

- (FY 2003)
 - \$12,855 to Clearfield Creek Watershed Association for design and permitting of a passive treatment system to address two discharges to Little Laurel Run.
 - \$20,000 to Clearfield County Solid Waste Authority for illegal dumpsite remediation at Site #7.
 - \$27,975 to Graham Township for assessment of the Upper Alder Run Watershed.
 - \$5,000 to Grampian Borough to stabilize 800 feet of eroding stream banks along Kratzer Run.
 - \$52,000 to Morris Township for the design of a passive treatment system to treat acid mine drainage on Emigh Run.
- \$67,314 (FY2001) to the Clearfield County Conservation District for the phase II assessment of Clearfield Creek watershed.
- \$60,000 (FY2000) to the Cambria County Conservation District for a preliminary water quality assessment of the Clearfield Creek watershed, a priority watershed in need of study because of numerous sources of abandoned mine drainage. This project will gather additional information on pollution sources, underground mine hydrology, stream channel and riparian zones characteristics, and aquatic life needed to complete a restoration plan.

US EPA Clean Water Act Section 319 Grants:

- \$100,000 (FY1999 & 2000) grant to Central Counties Concerned Citizens for passive treatment of AMD discharges to Hubler Run, a tributary of Alder Creek.

DEP Bureau of Mining and Reclamation:

- Forcey Coal Co. remined a 28-acre site and reclaimed 19.5 acres of abandoned surface and deep mines and eliminate 1,400 feet of abandoned highwall. Reclamation will improve water quality in Muddy Run.
- Sky Haven Coal Co remined a 74-acre abandoned mine site which will improve the water quality of Lick Run through addition of alkaline flyash (1998).
- Sky Haven Coal Co remined 22.8 acres of abandoned mine lands. The water quality of Surveyor Run will be improved through mixing of overburden with limestone strata (1998).
- Junior Coal Contracting Inc. remined 13 abandoned mine acres and improve the water quality of Shimmel Run (1998).

DEP Bureau of Abandoned Mine Reclamation:

- A \$1.5 million, ¾ mile subsurface drain was installed to intercept acid mine drainage from the abandoned Westport Mining site in 1993. The drain diverts polluted water from Little Muddy Run, which now supports a trout stocked fishery after an 11-year absence.

DEP Stormwater Management Act 167 Plans:

- Clearfield County completed a Phase I stormwater management study.

Public 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.

Citizen/Conservation Groups:

- Little Clearfield Creek Watershed Association has started an assessment and restoration plan to address the AMD problems in the watershed.
- West Branch Susquehanna Rescue has conducted clean up and public awareness days.
- Allegheny Mountain Chapter Trout Unlimited
- West Branch Susquehanna River Watershed Association
- Central Counties Concerned Citizens has received a 319 for construction of a SAPS on an AMD discharge to Hubler Run.
- Hubler Run Watershed Association is preparing an assessment and restoration plan for Hubler Run. Constructed began in fall 1999 on two Vertical Flow Reactor treatment systems in the watershed.

Funding Needs

The West Branch Assessment listed 18 discharges in the Clearfield Creek watershed and estimated costs for remediation to be \$5.8 million dollars. The most expensive remediation project was the Shoff mine at Madera, which was projected to cost \$400,000 for design of a "complex" treatment facility and \$3.5 million for construction.

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. However, existing programs that address nonpoint source issues in the watershed will continue to move forward.

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 grant funds beyond FY2000.

References/Sources of information

- State Water Plan, Subbasin 8, Upper West Branch Susquehanna River. Department of Environmental Protection, June 1979
- USGS Topographic Maps
- 319 project proposals and summaries
- DEP: Watershed Notebooks, Unified Assessment Document, and information from 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
- West Branch Susquehanna River Nonpoint Source Assessment. Clearfield County Conservation District. 1999.

Streams in Subbasin 08C: 303d/305b Listings

Stream	Stream Code	Drainage area square miles	Miles Impaired	Miles Attained	Causes/Sources/Comments
2-West Branch Susquehanna River	18668		36.72, main stem; 1.93, 2 UNTs		Metals & pH from AMD; Thermal modifications from Industrial point source
3-Clearfield Creek	26107	393	67.05 main stem; 3.63, 4 UNTs	5.49 main stem; 11.69, 8 UNTs	Metals from AMD; pH from AMD, in part
4-Bradley Run	26561	6.82	1.87	0.77	Metals from AMD
4-Beaverdam Run at Ashville	26534	10.4		0.86	
4-Swartz Run & one UNT	26521	5.40		1.67	
4-Little Laurel Run	26516	3.20	3.8 main stem; 0.48, one UNT		Metals & pH from AMD
4-Indian Run & 3 UNTs	26511			3.41	
4-Laurel Run near Dysart	26501	6.34		1.56	
4-Brubaker Run	26489	3.82	3.42 main stem; 3.81, 6 UNTs		Metals & pH from AMD
4-Sandy Run & 3 UNTs	26473	2.83		5.3	<i>Class A brook trout</i>
4-Powell Run	26467	7.76	6.52 main stem; 1.69, 2 UNTs		Metals & pH from AMD <i>Unsuitable for mining</i>
4-Beaverdam Run at Beaver Valley & 6 UNTs	26371	49.1		9.0	
5-Killbuck Run & 2 UNTs	26443	7.23		6.48	
6-Little Killbuck Run & 6 UNTs	26444	3.93		7.66	
5-Wyerbough Run & 3 UNTs	26434	2.83		4.02	
5-Slate Lick Run	26377	16.3			
6-Burgoon Run	26396	7.25			
5-Dutch Run & one UNT	26373	4.60		3.19	
6-Kibler Run	26374	1.31	0.3		Suspended solids from "Other"
4-Turner Run	26360	5.60			

4-Blain Run & 3 UNTs	26355	3.58		5.09	
4- North Witmer Run	26314	30.8		4.51	
5-Hunter Run & 2 UNTs	26338	1.65		2.93	
5-Holes Run	26334	3.46		0.54	
5-Comfort Run & one UNT	26330	3.53		4.66	
6-McDonald Run & one UNT	26331	0.82		1.72	
5-Raccoon Run	26329	0.52		1.07	
5-Hockenberry Run	26323	5.69		1.0	
5-South Witmer Run & 2 UNTs	26315	9.95		1.98	
4-Pine Run at Irvona	26305	2.38			
4-“Dotts Hollow”	26302	1.44			
4-Cofinan Run	26296	3.63			
4-Blue Run	26293	1.03	1.35		Metals from AMD
4-Porter Run	26287	2.84			
4- Muddy Run	26241	35.3	12.02, main stem; 14.26, 21 UNTs		Metals & pH from AMD
5-Curtis Run	26275	1.57	1.7 main stem; 1.09, 2 UNTs		
5-Little Muddy Run	26246	14.5	5.07, main stem; 4.58, 4 UNTs	3.74 main stem; 3.86, 9 UNTs	Low pH from AMD <i>HQ-CWF and Unsuitable for mining, upper basin</i>
6-East Branch Little Muddy Run	26250	1.70	1.92 min stem; 0.46, one UNT		Low pH from AMD
4-Banian Run	26242	2.01	2.29		Metals & pH from AMD
4-Japling Run	26238	3.15			
4-Pine Run at Belsena	26233	3.93			
4-Lost Run	26224	3.16			
4-Upper Morgan Run	26213	12.0	1.31 main stem; 0.25, one UNT		Metals & pH from AMD
5-North Branch Upper Morgan Run	26216	5.34	4.11 main stem; 1.72, 2 UNTs		Metals from AMD
6-Wolf Run	26217	1.29	1.64		Metals & pH from AMD
4-Potts Run	26195	15.4	2.73		Metals from AMD
4-Dunlap Run	26194	2.47		2.82	
4-Lytle Run	26192	1.60			

4-Cherry Run	26190	0.80		1.12	
4-Sanborne Run	26184	4.0	3.35, main stem; 1.89, 2 UNTs		Metals & pH from AMD
4-Camp Hope Run	26183	1.81			
4-Morgan Run	26174	14.6	2.13		Metals & pH from AMD
4-Little Clearfield Creek & one UNT	26118	44.5		12.21	<i>HQ-CWF</i>
5-Gazzam Run	26155	10.2		0.72	<i>HQ-CWF</i>
6-Stony Run	26170	5.32			<i>HQ-CWF</i>
6-Green Run	26164	2.32			<i>HQ-CWF</i>
6-McNeel Run	26158	2.56		0.45	<i>HQ-CWF</i>
5-Campbell Run	26154	13.2	0.17		<i>HQ-CWF</i>
5-Watts Creek	26144	6.58			<i>HQ-CWF</i>
5-Carson Run	26137	1.54			<i>HQ-CWF</i>
5-Wallace Run	26121	2.20			<i>HQ-CWF</i>
5-Laurel Run at Dimeling	26119	1.65	0.7		Metals from AMD <i>HQ-CWF</i>
4-Long Run	26116	3.75	4.61		Metals & pH from AMD
4-Roaring Run	26108	11.8	7.79		Metals & pH from AMD
5-Forcey Run	26112	1.69			
5-Valley Fork Run	26110	2.40	2.54 main stem; 0.71, one UNT		Metals & pH from AMD
5-Jake Run	26109	1.49	1.64		
3-Abes Run	26105	1.69			
3-Lick Run	26082	27.5	2.47 main stem	8.92 main stem; 8.94, 10 UNTs	Low pH from AMD <i>HQ-CWF</i>
4-Stone Run & 3 UNTs	26090	7.06		7.92	<i>HQ-CWF</i>
4-Fork Run	26088	3.16	2.7	0.95	Metals from AMD <i>HQ-CWF</i>
4-Jerry Run	26084	1.48			<i>HQ-CWF</i>
4-Flegals Run	26083	1.24	1.92		<i>HQ-CWF</i>
3-Trout Run & one UNT	26041	41.8		3.68	<i>HQ-CWF</i>
4-Alex Branch	26070	3.77			<i>HQ-CWF</i>
4-Roberts Run	26066	4.12			<i>HQ-CWF</i>
4-Dixon Run	26064	1.51			<i>HQ-CWF</i>
4-Coldstream Run	26057	6.70			<i>HQ-CWF</i>
4-Crooked Run	26055	3.53			<i>HQ-CWF</i>
4-Pine Run & 2 UNTs	26052	2.03		3.74	<i>HQ-CWF</i>
4-Little Trout Run	26042	8.87	2.3 main stem	0.6 main stem; 0.67, one UNT	<i>HQ-CWF</i>
5-Stump Lick Run	26045	3.24			<i>HQ-CWF</i>
3-Millstone Run	26035	6.38	0.87		Metals & pH from AMD

4-Sulphur Run	26037	2.42	1.27		Metals & pH from AMD
3-Surveyor Run	26030	6.01	4.28		Metals & pH from AMD
4-Little Surveyor Run	26031	1.44	1.99		Metals & pH from AMD
3-Bear Run	26029	1.08			
3-Bald Hill Run	26028	2.68	2.83		Metals & pH from AMD
3-Moravian Run	26011	18.5	7.75 main stem; 1.46, one UNT		Metals & pH from AMD
4-Dale Run	26016	2.26			
3-Deer Creek	26978	23.6	4.03 main stem; 6.34, 5 UNTs	1.16 main stem	
4-Little Deer Creek	25997	4.26			
4-Buck Run	25982	3.91			
3-Big Run	25971	3.09	1.1		pH from AMD
3-Willholm Run	25970	1.24			
3-Sandy Creek	25948	17.3	4.06 main stem; 3.38, 5 UNTs	1.39 main stem	Metals & pH from AMD
4-Big Sandy Run	25967	2.91			
5-Little Sandy Run	25968	1.04			
3-Alder Run	25924	24.0	11.84 main stem; 1.03, 2 UNTs		Metals & pH from AMD
4-Flat Run	25941	1.64	1.99		Metals & pH from AMD
4-Hubler Run	25938	1.04			
4-Mons Run	25935	1.95	2.34 main stem; 1.22, 2 UNTs		Metals & pH from AMD
4-Browns Run	25927	6.20	4.01 main stem; 3.41, 3 UNTs		Metals & pH from AMD
4-Kettle Spring Run	25926	1.06			
3-Rolling Stone Run	25922	1.73	2.5 main stem; 0.74, one UNT		Metals & pH from AMD
3-Mowry Run	25921	1.01	1.33		Metals & pH from AMD
3-Basin Run	25917	5.21	0.67		Metals & pH from AMD
3-Rock Run	25916	2.26	2.18		Metals & pH from AMD
3-Potter Run	25914	1.49			
3-Rupley Run	25912	0.91			

The assessment under the unassessed waters program has not been completed. Total miles impaired will likely change after the stream has been assessed.

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. Susquehanna River=1.

UNT= Unnamed tributary, AG= agriculture, DO= dissolved oxygen, AMD=Abandoned Mine Drainage

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