Watershed Restoration Action Strategy (WRAS)
State Water Plan Subbasin 07F
(West) Conewago Creek Watershed
York and Adams Counties

Introduction

The 510 square mile Subbasin 07F consists of the West Conewago Creek watershed in York and Adams Counties, which enters the west side of the Susquehanna River at York Haven. Major tributaries include Bermudian Creek, South Branch Conewago Creek, Little Conewago Creek, and Opossum Creek. A total of 903 streams flow for 1104 miles through the subbasin. The subbasin is included in **HUC Area 2050306**, Lower Susquehanna River a Category I, FY99/2000 Priority watershed in the Unified Watershed Assessment.

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Geology/Soils

The geology of the subbasin is complex. The majority of the watershed is in the Northern Piedmont Ecoregion. The Triassic Lowlands (64a) consisting of sandstone, red shale, and siltstone of the Gettysburg and New Oxford Formations are interspersed throughout the watershed with the Diabase and Conglomerate Uplands (64b) consisting of Triassic/Jurassic diabase and argillite. 64a is an area of low rolling terrain with broad valleys and isolated hills. The soils derived from these rocks are generally less fertile than those derived from Piedmont limestone rocks but are more fertile than those derived from Piedmont igneous and metamorphic rocks. The sandstone and shale of the Gettysburg and New Oxford Formations are poorly cemented and have good porosity and permeability. These soils generally have moderate to high infiltration rates and yield a good supply of groundwater. The red Triassic sandstone is quarried for use as brick and stone building blocks.

The hills of Ecoregion 64b are composed of resistant diabase or conglomerate and are usually wooded, rocky and steep. Diabase is a fine-grained very impervious igneous rock that serves as a barrier to groundwater movement. The diabase intruded the Triassic sandstone as a series of linear sills and dikes. These intrusions heated the base rock and altered them into harder, denser, and less porous rock. Water yields for wells can be poor in this section except where fractures are encountered. Soils have slow infiltration rates. The many boulder fields limit agriculture and residential development. Much of the extensive diabase area is forested; the Conewago Mountains in the lower watershed is an example. Some agriculture occurs in the less rocky portions of the ecoregion. Diabase is quarried for use in building blocks and for bridges.

A portion of the Piedmont Limestone/Dolomite Lowlands (64d) is located southeast of McSherrystown in the southwestern end of the subbasin. This area has limestone rocks of the Conestoga Formation.

The Piedmont Uplands (64c) extend from Hanover/McSherrystown up through West York. This highly folded and faulted area contains Cambrian Age quartzite, schist, marble, and shale. A

small area of Marburg Schist is located south of Hanover. Quarries processing crushed stone and aggregates of marble, quartzite and shale operate in the subbasin.

The northwestern portion of the watershed near the village of Gardners is in the Blue Ridge Mountains Ecoregion, Northern Igneous Ridges Section (66a). This is an area of ancient metamorphosed Precambrian metabalsalt, metarhyolite and greenstone schist on the southern flank of Piney Mountain characterized by well-dissected ridges separated by high gaps and coves. Elevations are much higher than the adjacent Triassic Lowlands. Most of this land is in agricultural production for orchards and fruit farms. The southern exposures provide a long growing season and the rich sandy soils provide good drainage. Upper Conewago Creek has a high gradient and very rocky substrate where it passes through an outcrop of metarhyolite. This area known as the "narrows" is a well-known trout fishing area. Greenstone and metabasalt is currently quarried and crushed for use on roofing shingles. Copper and asbestos veins are present through the greenstone and metabasalt. Copper mining took place in this area in the late 1800's and early 1900's.

Land Use

The subbasin is largely in agricultural use. Orchards predominate in the northern Adams County region, which is the top apple growing and processing area in Pennsylvania. Urbanized areas are located around Hanover, McSherrystown, and West York. Woodlands are located at the northern edge of the watershed around the upper reaches of Conewago Creek at South Mountain, on the hilly, rocky diabase terrain east and west of Pinchot State Park, and in the Pigeon Hills northeast of Hanover. The subbasin population was 119,118 in 1990 and is projected to increase to 158,971 by the year 2040. Residential and commercial development is spreading along PA Route 74 into the subbasin from west of York City.

Natural/Recreational Resources:

Gifford Pinchot State Park and its 340-acre lake on lower Conewago Creek in northern York County is a high use recreational area with camping, picnicking, fishing, boating, swimming, hiking, and hunting. The underlying diabase rock creates a variety of wildlife habitats in its hilly, rocky terrain.

Water Supplies:

Hanover Borough has water supply impoundments on Long Arm Creek and the Shepard-Meyers Reservoir in the headwaters of the South Branch. Both reservoirs are at the southern tip of the subbasin near the Maryland State line.

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

EV: None

HQ:

- West Conewago Creek source to Pleasant Dale Creek

Water Quality Impairment
Pinchot Lake is on the 303d list for lakes as impaired by organic enrichment/low DO from agriculture, urban runoff/storm sewers. Musser Run, the only subbasin stream currently on the 303d list, is impaired by suspended solids from agriculture and other sources.

Monitoring/Evaluation
A study of Pinchot State Park Lake was conducted under US EPA Clean Lakes Program. The subbasin has not been evaluated under the DEP unassessed waters program.

Future threats to water quality
Urbanization and the ensuing stormwater runoff and on-lot and municipal sewage discharges should continue to be a significant problem in the subbasin.

Restoration Initiatives
Pennsylvania Growing Greener Grants:
- York County Conservation District (FY2001):
  - $32,410 for organizing and forming the Watershed Alliance of York County.
  - $25,256 for a preliminary assessment of the Conewago Creek watershed.
- $35,000 (FY2000) to the Adams County Conservation District to reduce nonpoint source pollution from a dairy farm in the Markel Run watershed through installation of best management practices, including a 265,000 gallon manure storage facility, a 6600 square foot barnyard runoff control area, 2200 square foot stacking area and install 1000 feet of streambank fencing. The landowner has agreed to allow tours of the farm for non-agricultural and agricultural groups to view examples of these agricultural best management practices.
- $17,611 (1999) to Adams County Trout Unlimited for an assessment of upper Conewago Creek. A comprehensive watershed restoration plan will be developed and education and outreach activities will be held.
- $55,000 (1999) to the Izaak Walton League for best management practices to reduce shoreline erosion in Pinchot Lake. Install will help reduce sedimentation to the lake.
- $63,000 (1999) to the Watershed Alliance of Adams County to develop a watershed inventory and trend assessment to enhance community education and awareness. Selected sites on Conewago Creek will be protected and restored.

US EPA Clean Water Act Section 319 Grants:
- $90,000 (FY99) to York County Conservation District for the Pinchot Lake watershed improvement project for implementation of agriculture and gravel road BMPs recommended in the Pinchot Lake Clean Lakes study.
- $130,000 (FY99) to PA Department of Conservation and Natural Resource (DCNR) for the Pinchot Lake watershed improvement project for implementation of BMPs recommended in the Pinchot Lake Clean Lakes study.
- $38,820 (FY98) to the Adams County Conservation District for streambank restoration of a portion of upper Conewago Creek in the narrows section.

WREN grants for local water source protection:
- Conewago Creek Study in Adams County to develop an educational program to protect public water supplies.

Coldwater Heritage Partnership Grant:

- $5,000 to the Adams County Trout Unlimited for a preliminary watershed assessment of Conewago Creek (1999).

Orphan Dam Removal Program:

- DEP and PA Fish and Boat Commission plan to remove the deteriorating Detter Mill dam in Wellsville. No current owner could be located to make the necessary repairs and install a fish ladder for shad.

Sewage Facility Planning Grants:

- Grant in 1995-96 to Dover Township.

PENNVEST:

- $718,209 loan to Abbottstown-Paradise Township Joint Sewer Authority to extend sanitary sewers to the existing Homestead Acres Subdivision.

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

- Watershed Alliance of Adams County and the Adams County Trout Unlimited are interested in the protection and restoration of Conewago Creek in Adams County.
- The Pinchot Park Task force, which is dedicated to clean up of Pinchot State Park, meets regularly.

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. 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 7, Lower Susquehanna River. Department of Environmental Protection, February 1980
- 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

Streams in Subbasin 07F: 303d/305b Listings

Stream	Stream code	Drainage area square miles	Miles Impaired	Miles Attained	Causes/Sources/ *Comments*
2-**(West) Conewago Creek**	08303	515		1.34	*HQ-CWF upper basin*
3-Pleasant Dale Creek	09157	2.94			*HQ-CWF*
3-Opossum Creek	09057	33.8		2.47	
4-Quaker Run	09074	6.76			
4-Beaverdam Creek	08990	7.24			
3-Swift Run	08936	13.6			
4-Brush Run	08947	3.33			
3-**South Branch Conewago Creek**	08813	73.5		4.69	
4-Long Arm Creek	08912	5.63		3.18	
4-Indian Run	08910	1.83			
4-Plum Creek	08881	8.99			
3-Pine Run	08789	6.67		1.14	
3-Markel Run	08774	6.77			
3-Beaver Creek	08760	17.6			
3-Davidsburg Run	08743	7.80			
3-**Bermudian Creek**	08596	110			
4-Latimore Creek	08686	21.3		1.2	
4-North Branch Bermudian Creek	08640	31.5			
5-Wolf Run	08646	2.91			
4-Mud Run	08622	12.6			
4-Doe Run	08609	4.99			
4-Red Run	08599	7.78			
3-Beaver Creek	08519	23.3			
4-North Branch Beaver Creek	08545	3.63			
4-Stony Run	08520	4.65			
3-Laurel Run	08507	4.21			
3-Bennett Run	08458	14.3			
3-**Little Conewago Creek**	08309	65.4		1.96	
4-Paradise Creek	08431	7.12			
4-Honey Run	08427	3.59			
4-Fox Run	08387	14.2			
3-Musser Run	08305	1.36	2.71		Suspended solids from AG and other

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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.

The basin has not been assessed under the DEP unassessed waters project. Total miles impaired will likely change after the stream is assessed. Assessment is scheduled for after 1999.