



INDIANA COUNTY
CONSERVATION DISTRICT

Our Mission:

To promote sustainable agriculture and communities while protecting and wisely using the resources of Indiana County.

The South Branch of Plum Creek Needs Your Help!

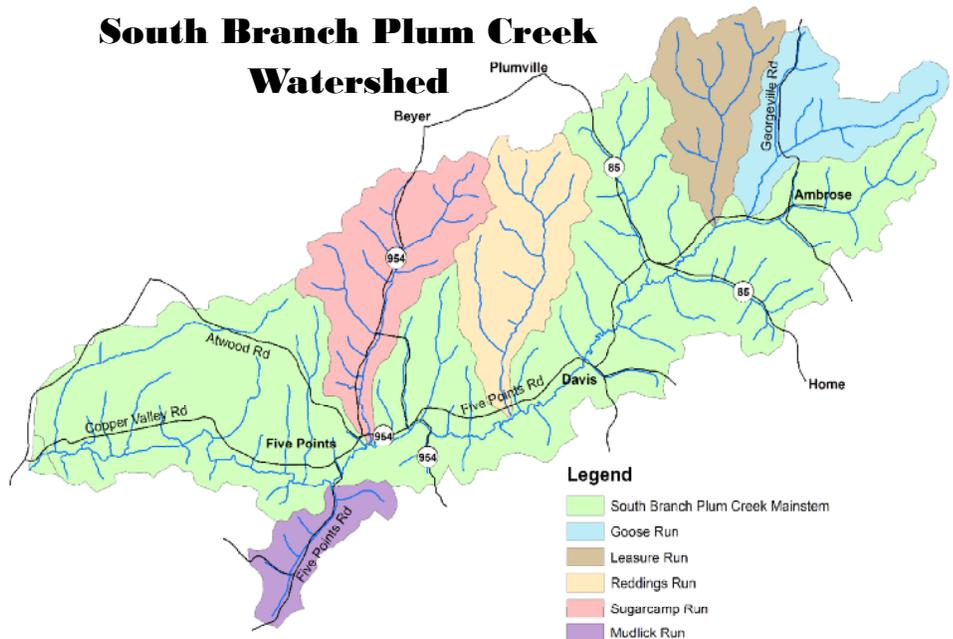
The Plum Creek Watershed has numerous uses for local residents and industry. The creek provides irrigation water for the nurseries and vegetable farms, drinking water for the dairy and cattle farms, and cooling water for the Keystone Generating station. Plum Creek is formed at the confluence of the North and South Branches near the village of Gastown. The North Branch flows through the towns of Plumville, Beyer, and Sagamore, before being dammed to form Keystone Lake where the reservoir stores cooling water to be used by the power plant during times of drought. The South Branch begins east of Ambrose flowing through agricultural lands, forests, pastures and the villages of Willet and Five Points before joining the North Branch below the Keystone Reservoir.

The installation of a sanitary sewer system for Beyer, Plumville and Sagamore has eliminated household discharges as the major source of pollutants to the North Branch. The South Branch, though not greatly impaired by nutrients, is impacted by excessive erosion and sedimentation. The sediments are negatively impacting the aquatic life found in the stream and the stream bank erosion is causing a problem for landowners along the stream.

The Indiana County Conservation District is developing a plan for reducing the amount of erosion and sedimentation in the South Branch and we will need your help as residents and landowners in implementing the plan. This publication will identify some of the sources of erosion, along with solutions you can implement as landowners.

The South Branch of Plum Creek has the potential to support wild trout, along with all the natural benefits and enjoyment that come from a high quality stream. I hope you enjoy this publication and will take part in our effort to improve the natural resources in your own backyard.

South Branch Plum Creek Watershed



Indiana County Conservation District

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Why is there too much sediment in the stream?

Most of the sediments found in the South Branch is the result of stream bank erosion. When it rains, water runs quickly off the steep, heavily grazed hillsides. With water running off the fields instead of filtering into the ground, stream levels rise quickly, increasing the velocity and the erosive forces of the stream. The lack of thick vegetation, whose root systems hold the stream bank in place, only accelerates the rate of erosion. Runoff from barnyards and cropland also contribute sediments into the South Branch. Road ditches not only provide storm water with a quick path to the stream, but they also carry sediments from the road surface. Cattle with free access to the stream quickly destroy the banks, while nutrients from their manure flow unfiltered into the stream.



Sediments clog a stream channel reducing its capacity and causing it to widen.

What do stream insects tell us about stream health?

One of the best indicators of the quality of a stream is the amount and type of insects found there. Testing the water only provides information at that moment in time. Surveying fish is not always a good indicator of stream health because fish are able to move to cleaner water to avoid pollution events. The stream insects are most affected by changes in stream health because they are completely dependent on the stream to breathe, eat, and for shelter. Even the smallest changes in the health of the stream can mean life or death for the insects that live there. Certain types of insects are very sensitive and can only live in the healthiest of streams, while others are more tolerate



Midges can tolerate low oxygen levels and nutrients from agriculture and septic systems making it an indicator of an unhealthy stream.



A kick net is used to catch bottom dwelling insects found under rocks and in stream riffles.

and can survive in less than perfect conditions. By collecting samples of the insects found in the stream, counting them, and identifying them as sensitive or tolerate, we can determine how healthy the stream is.



Mayflies (above) and stoneflies require clean water and stream bottoms not choked with sediments to survive. They are indicators of a healthy stream.

Watershed Planning for the South Branch of Plum Creek

One of the first steps in improving the South Branch of Plum Creek is documenting a strategy or plan for restoration. The Conservation District is in the process of preparing a Watershed Implementation Plan (WIP) for the South Branch. The plan will identify the problem areas, list practices to address the problem, determine the cost to implement the improvements, and make it all happen through the support of the residents in the watershed. The South Branch may not flow through your property but storm water does. How you manage your soil resources can directly affect the quantity and quality of the water leaving your property. This publication introduces you to some of the conservation practices that you can implement as landowners. We have already begun to work with South Mahoning Township to improve drainage on McMillen Road. In the near future we hope

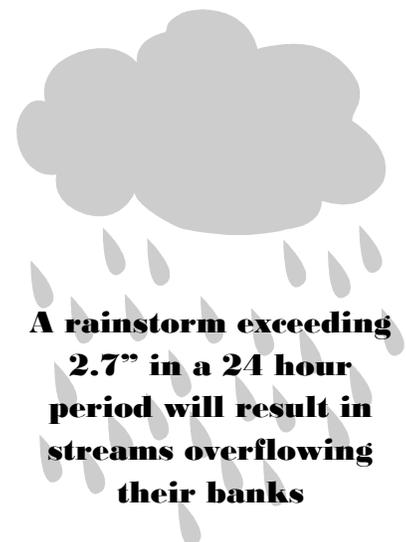
Sediment Sources in the South Branch

Source	Units	Tons/year
Cropland	1428 acres	1374
Hay/Pasture	5708 acres	1381
Animal concentration areas	37 acres	352
Forested	8426 acres	107
Unpaved roads	28 miles	234
Stream banks	105 miles	3265

to work with the agricultural community to implement restoration projects around stream corridors. We are also visiting households in the watershed to seek additional input regarding potential sediment sources. Significant changes in water quality can be simply accomplished by subtle changes in the way stream corridors and agricultural areas are maintained. The Conservation District has a cost-share program that we will utilize to complete these projects with little or no cost to the landowners. To help us in completing the WIP we ask that you complete and return the attached survey. Everyone in the watershed has a role to play in restoring the South Branch to its full potential. Completing the survey is an important first step.

Benefits of Floodplains

The floodplain is the area surrounding the stream that experiences occasional flooding when flow exceeds the banks. When floodplains are maintained in, or restored to their natural state, they provide many benefits to the landowner and the environment. These benefits include reducing the number and severity of floods, helping handle storm water runoff, and minimizing the amount of sediment and nutrients being washed into the stream. A floodplain containing natural vegetation works by slowing down and reducing the force of the water, allowing sediments to be deposited there instead of in the stream. The vegetation filters out and absorbs nutrients, organic waste, and other impurities from the runoff. The floodplain also contributes to recharging groundwater and refreshing aquifers by allowing water to infiltrate into the soil, reducing periods of low flow during dry seasons.



A rainstorm exceeding 2.7" in a 24 hour period will result in streams overflowing their banks

Everybody Doing Their Part

Let it be

There are solutions to that eroding stream bank that keeps changing the shape of your yard or the size of your crop field. Just let those areas within fifteen feet of the stream be. Allowing vegetation



Valley soils are mainly composed of silts and sand and are easily eroded if not held in place by deep rooted plants.

to grow along streams is a simple way to improve stream health and has many benefits to landowners. A corridor of plants and trees along a stream provides habitat for fish and wildlife, slows down the speed of runoff water, filters out nutrients and sediment, and allows water to soak into the soil recharging the groundwater table. This will increase the amount and quality of water available to landowners in their wells and the fertile silts deposited on your fields will help your soil structure



Well vegetated riparian areas attract wildlife and properly placed rocks protect the stream banks and provide habitat for fish.

and fertility. When shrubs replace the shallow rooted grass, their roots serve as anchors holding the stream bank in its place. Tall grasses and shrubs also hold back the stream during flood events.

Live stakes are a quick and free way to establish dogwood and willow trees. For more information about live staking, visit: [www.urbancreeks.org/Live Staking Joint Planting.pdf](http://www.urbancreeks.org/Live_Staking_Joint_Planting.pdf)

Fish Habitat Improvement Structures

The major source of excessive sediment in the South Branch is from stream bank erosion. In areas of severe bank erosion, often the only option to stabilize the banks is to physically repair and reinforce them. A very effective way to accomplish this is by installing fish habitat improvement structures (FHIS). FHIS are built using natural materials, such as rock and stone, and there are many different types that can be installed depending on stream size and type. Not only do FHIS protect



A log vein provides habitat and protects a steeply eroded stream bank.

stream banks from erosion, they also provide habitat for fish and other aquatic organisms. As all fishermen know, fish need a certain type of space, or habitat, to live and grow. FHIS provide protective cover for fish and work by directing the force of the stream flow away from the banks into the stream channel. This helps the stream return to its natural state, containing deep pools and riffles, essential components to a healthy fishery. By absorbing some of the force of the stream flow, FHIS help reduce the potential for flood damage during storms. FHIS not only reduce sediment from being stripped from the stream banks, they also allow sediment from upstream to be deposited in desirable areas and can actually help rebuild the stream banks they are protecting. For more information about fish habitat improvement structures, visit: www.fish.state.pa.us/water/streams/habitat_improve_trout.pdf

Drainage Work Begins on McMillen Road

Drainage is an essential part in maintaining dirt and gravel roads. Ground water in the road will lead to soft roads and potholes. Road ditches and the road can erode away if adequate numbers of cross pipes or large enough stream culverts are not in place. Road ditches can also carry runoff from driveways and fields quickly to the stream, adding to the potential for stream bank erosion. The Conservation District is working with South Mahoning Township providing funds and technical assistance for improving road drainage on McMillen Road. Underground drains are being installed to intercept ground water before it seeps into the road base. Additional cross pipes will distribute the storm water runoff over larger areas, catch sediments in the vegetation, and give the runoff an opportunity to soak into the water table instead of running into the stream. The township will also be installing a new limestone driving surface to control dust without the use of expensive oils.



Cross pipes are a critical element for controlling storm water and maintaining a good road surface.

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Controlling Driveway Erosion

Private lanes, if not properly maintained, can also contribute sediments to the South Branch. Maintaining a crown and diverting water to a grass lined road ditch is one way of controlling erosion. If it's hard to maintain a crown, diagonal bumps composed of fine limestone will divert surface water off the road. Don't want the bumps? A mine belt secured to a wood beam buried into the road will direct surface water off the road but yield under the weight of a vehicle.



Recycled mine belts can be used to divert water, helping to reduce erosion and ruts.

A mine belt secured to a wood beam buried into the road will direct surface water off the road but yield under the weight of a vehicle.

Dry Ponds Help Control Surface Drainage

Easy to install and inexpensive, dry ponds can collect and convey small and periodic surface flows through pastures and fields. A depression/small pond placed at the discharge collects the water. A slotted riser pipe connected to inexpensive four or six inch corrugated pipe then carries the water through the field where it outlets close to the stream corridor. The slotted riser keeps large debris out of the pipe and a one-way flap at the outlet prevents animals from crawling up the pipe.

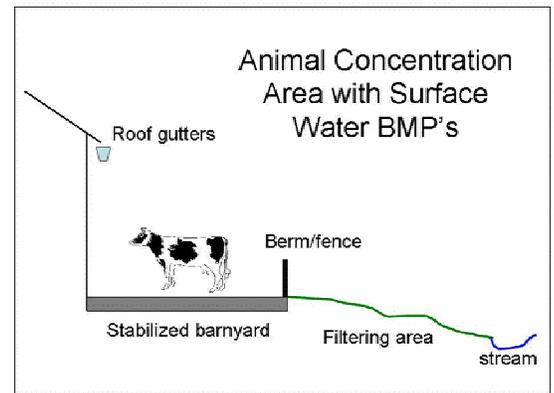


Riser should be constructed with schedule 40 pipe. A 1" hole placed in elbow and covered with stone will keep the pond drained.



Reducing Barnyard (Animal Concentration Area) Impacts

The alternatives for stabilizing barnyards can vary in simplicity, expense and technical expertise. Yet, the goals of these best management practices are the same, direct clean rainwater and snow melt away from the barnyard and keep any runoff from the barnyard from directly entering the stream. Barn roofs can incorporate gutters to collect and carry water away. This water can be directed to a cistern or water trough, but ultimately the water should outlet directly to a watercourse or an area where the animals would not have access. Water that was in contact with the barnyard should be handled differently since it is now contaminated with nutrients and sediment. Establishing a vegetative filtering area down slope of the barnyard is the simplest way of treating the polluted runoff. At a minimum, the filtering area should equal the cross slope width of the barnyard. During dry conditions the filtering area can be flash grazed. When an adequate filtering area does not exist, other alternatives for dealing with the runoff need to be explored. To utilize the manure nutrients deposited on the barnyard, a stabilized surface must be established to facilitate removal of the manure. This involves the use of concrete or compacted graded stone. Curbing can be employed along the perimeter of a stabilized barnyard to contain the manure and facilitate collection. A collection pit located down slope will be needed to contain liquid slurry type manures. If large amounts of bedding are used, stacking areas can be established for storing the collected solid manure. The stacking areas should be covered/roofed to prevent leaching of manure nutrients. The Conservation District has worked with local beef farmers to incorporate feeding and manure storage under a single roofed structure.

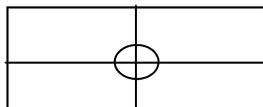


Rotational Grazing

You can eliminate worn down pastures and reduce animal loafing in one location by installing a grazing system. The animals are rotated between pasture/paddocks on an accelerated rate. The number and size of paddocks is based on animal numbers and growth rate of the forage. The short grazing periods result in better animal growth and forage of better quality and quantity.



By developing upland springs you can pipe water to troughs situated between paddocks.



Flash Grazing Along Streams

Limiting cattle from streams has many benefits for water quality, stream habitat and animal health. The Conservation District encourages total exclusion from the stream but understands farmers concerns about weeds and unwanted brush. Stream bank fencing with periodic (flash) grazing of the stream buffer will meet everyone's needs. Our watershed implementation plan is being written to provide the fence while you restrict your stream buffer grazing to short periods during dry times to control weeds.

Help improve the South Branch of Plum Creek by implementing stream bank fencing and flash grazing.



INDIANA COUNTY
CONSERVATION DISTRICT
(724) 471-4751

**Reducing Sediments in the South
Branch of Plum Creek**

The Indiana County Conservation District, along with the Pennsylvania Department of Environmental Protection, would like to implement practices that help to reduce sediments entering the South Branch of Plum Creek, restoring the stream to its full wildlife potential and a resource that residents can enjoy. Please take a few minutes to complete this survey. Information will be kept confidential. To show our appreciation, we have provided you with seedlings donated by Musser Forests, Inc., to plant along your stream corridor or wet areas on your property.

Did you review the publication on the South Branch of Plum Creek? yes no

Would you like to see the South Branch of Plum Creek support wild trout? yes no

Would you like to see more birds and additional wildlife along the stream? yes no

Would you like to limit the amount of stream flooding? yes no

What do you feel are the major sources of sediment into the South Branch of Plum Creek?
 dirt roads private drives stream bank erosion farming/cattle mining/gas wells

Would you permit the township to work on your property if necessary to make drainage improvements on the road system? yes no

What practices would you be willing to implement on your own?

- stop mowing or plowing within 15' of the stream
- plant shrubs to stabilize the stream bank
- keep cattle out of the stream
- control driveway erosion with storm water diversions
- fish habitat/stream bank erosion control structures with Conservation District help

Would you be willing to talk with the Conservation District about implementing conservation practices on your property if all that was required is your approval and willingness to maintain the conservation practices for a certain time period? yes no maybe

Will you plant the seedling we provided? yes no

Your Comments:

Name _____ Phone # _____

Address: _____

Please fold the survey, secure with tape and place in the mail.

fold

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