



Inside This Issue: *Living with our Streams*

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Local streams can be a thing of beauty. They provide habitat for a variety of flora and fauna. They assist in recharging our drinking water tables and help refill some area reservoirs. However, when streams are out of balance they can cause much damage and heartache for landowners living near them. It is important that people understand that a certain balance is required to keep streams within their banks. Changes to stream dynamics may occur by natural occurrences, but can sometimes be caused by human interferences. Sometimes these changes are subtle, and sometimes they are quite drastic. It is critical that folks realize that

changes made to a section of stream can result in changes above and below the work site. Having an understanding of basic hydrology is where the Soil and Water Conservation District's Stream Program can be a great asset to area landowners. This booklet will provide local residents with a reference source to use when considering future stream projects, as well as to help identify places they can go for technical guidance in dealing with stream issues. Streams can be a nuisance at times, but they are an essential part of our local environment that provide functions and value to everyone.



Above: A local stable stream environment.

Below: Mass stream bank failure on a local stream.



Obtaining Permits for Work in or Near a Stream



Repairing bank disturbances shown here requires a permit from DEC and/or Army Corps.

Before starting any major project within a stream, you should consider discussing permit requirements with your local SWCD before any type of excavation or bank disturbance occurs. Permits from the appropriate agencies ensure the safest way to preserve stream health, and protect neighbors upstream and downstream. A stream disturbance permit is required for disturbance of the bed or banks of streams. A stream may have a classification of C, C(I), C(TS), (A), (AA), or (B) (disturbance may be temporary or permanent in nature). Some possible examples of activities that will require a permit are placement of a structure over/across a stream (i.e. bridge), placement of fill for bank stabilization

(i.e Rip-Rap), or excavation of gravel material for a construction activity. The Soil and Water District can help you identify what the stream classification is for your particular stream and what type of permit may be required. Application forms may be acquired from the DEC website: <https://www.dec.ny.gov/permits/6042.html> Permits are provided free of charge to landowners or local governments. The SWCD can assist landowners with filling out permit applications and related questions. For questions about stream disturbance permits contact Pete Nichols at (518)823-4535.

Stream Programs



Finished product of the restoration project in the vicinity of the Conesville firehouse.

During Tropical Storm Irene several streams had eroded their banks and changed their course. The Manor Kill is just one example of this. Where the Manor Kill runs behind the Conesville Firehouse had changed its course so severely that it was now a threat to a neighboring property downstream and would result in the loss of public property as well as impacting water quality. The Manor Kill is tributary to the Schoharie Reservoir, a drinking water supply source to the New York City water system. In 2015, a restoration project to remedy the issue was proposed by the Schoharie Co. SWCD, in partnership with the NYCDEP,

which involved the restoration of 1,500 linear feet of stream channel. This involved the relocation of 650 feet of stream back to its former position prior to the flood. The main goal of the project was to raise the channel and reconnect it with its floodplain and replace the material that had been lost due to scour and erosion during the 2011 flood. The project also required an approximately 1.6 acre riparian zone be established along the channel which included willows, assorted trees and shrubs, and seeding with native riparian and wetland seed mixes. This project also included the addition of a walking path and two fishing access points.

Conservation Practices

Stream Stewardship in an important role for those that have a stream on their property. The stream begins well before your property and it flows far beyond it, but one way or another we all live downstream. While the property owner owns the land that forms the stream channel, the water is considered a “public good” and is therefore owned by the state. Individuals may use the water as long as it does not infringe on others.

A few simple suggestions to being a good stream steward would be:

1. Avoid dumping brush, leaves, and any debris in or along streams as oftentimes this can inhibit the growth of soil stabilizing vegetation that can prevent streambank erosion or it can even change the direction of flow. The extra plant material in the water can also clog culverts leading to overbank flooding.
2. Store any machinery or vehicles away from streams as they can leak oils, and other chemicals into the water.

3. Maintaining a vegetated buffer along the streambank is probably one of the easiest practices a landowner can do to maintain the health and stability of their stream.
 4. Know the floodplain laws!
 5. Keep septic systems in good working order.
 6. If your streambank requires any stability work, seek technical input on the project whether it be through NYSDEC, SWCD, or NRCS. These agencies can help determine whether or not you would need a permit, help determine which practice would be the best fit, and may even have a program that could help fund some of the project.
- Please note: tree removal along a streambed can sometimes be done without a permit, please consult with us for details.

What Healthy Buffer Zones Do:

- ◇ Stabilize streambanks
- ◇ Reduce erosion
- ◇ Provide wildlife habitat
- ◇ Reduce sediment and chemicals from rainwater runoff
- ◇ Provide shade to keep water cooler for healthy plants, animals, and less algae growth

Planting Stream Banks for Erosion Control and Habitat

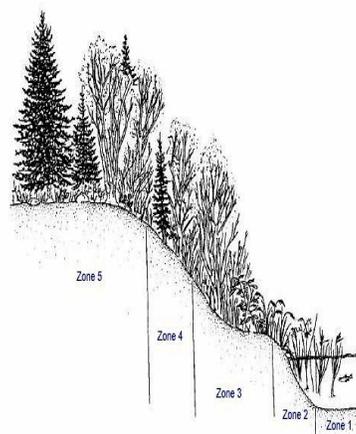
It may seem a little overwhelming when considering what types of trees and shrubs to plant on stream banks. It is not as complicated as you would think. Streamside vegetation, also known as Riparian Vegetation serves many vital functions in relation to stream health.

These benefits include:

1. Shading streams to keep them cool for cold water fish and invertebrates.
2. Controlling bank erosion.
3. Slowing high water during flood stages.
4. Limiting nutrients entering the water.
5. Assisting groundwater recharge.
6. Providing food, cover, and corridors for a variety of wildlife.

Here is a list of species that may be used to enhance your own stream banks as well as recommended locations to plant them (refer to the picture to the left:

- Zone 2:** Sedges (*Carex* sp.) *Spacing not critical, but dense planting is recommended.
- Zone 3:** Red Osier Dogwood, Arrowwood Viburnum, Willow Shrubs (*Salix* sp.) *5ft spacing recommended.
- Zone 4:** Cottonwood, River Birch, Red Maple, Sycamore *10-15ft spacing recommended.
- Zone 5:** Red Oak, Paper Birch, White Pine, Quaking Aspen *20ft spacing recommended.



Flooding

Floods are often referred to as 10, 50, 100-year floods and so on. People often think this means that major flooding events are rare and if one has happened recently, they are not likely to experience another for a long time. Unfortunately, a 100-year flood means that there is a one-in-one-hundred chance of that type of large-scale flood happening that year. With that being said, there's probability that a region could experience two large floods within three years time.

When it comes to flooding it's not just the speed and amount of water that determines the severity of it, but the type and size of streambed material and how confined the stream or river is. Even large streambed material can be scoured away and carried downstream. This is why it is important for rivers

and streams to be able to spread out onto their floodplains. When they spread out, the water slows, allowing for the nutrient-rich material to be deposited. It also lessens the force and damage of the river downstream. When they aren't allowed to spread out it creates a snowball effect, getting progressively worse as it continues downstream. It can also cause them to "down-cut" within their channel. If there is so much down-cutting that the stream is no longer able to access its floodplain, the channel becomes narrow and confined, acting as a chute, giving the stream more energy. With this much velocity and sediment scouring away, streambanks are eroded and undercut quickly. Oftentimes this leads to streambank failure. From the stream's point of view it is trying to widen and re-establish a floodplain.

Stream Gauges

A little while back the Schoharie SWCD was awarded a FEMA Hazard Mitigation grant to install three stream gauges along the Schoharie Creek: one located in Sloansville, Schoharie, and Middleburgh. This was in reaction to the flooding of 2011. These gauges have allowed for a more thorough monitoring of local stream conditions. These gauges have been paired with software called Sutronwin. This software allows for specific alarm settings which will send text alerts to Emergency Management officials when certain conditions arise. For example, if a stream's level rises quicker than 1 foot per hour an alert is sent. Or if a stream's water level has risen to a pre-

determined flood stage, an alert is sent. This can allow for quicker activation of the reverse 911 system to warn residents of a flood risk. This knowledge not only helps Schoharie County, but all communities downstream, including the Mohawk River.

The software also stores water level data for several months, which can be useful in studying flood history.

To view the real-time information, the stream gauges can be found at www.sutronwin.com. Just zoom into the Schoharie County area, click on the station and information will load on the bottom of the screen.

"Water is the life blood of this planet. Virtually every business has a water imperative: Manufacturing, agriculture, and energy production rely on a steady supply of water. And yet, it is floods and droughts that cause more U.S. societal losses than any other type of severe weather natural disaster."

-Jack Hayes, NOAA Assistant Administrator for Weather Services



Stream gauge in Middleburgh

National Weather Service & the USGS

Here in Schoharie County we are no stranger to large storm events, but are we aware that there are an online resources available to better inform us of an impending flood?

<http://water.weather.gov>

The link above will take you to the National Weather Service page where you have access to all the information collected by the USGS stream gauges. There are national weather maps, hydrographs, and even air quality maps. Hydrographs can show you predicted water levels over the course of a few days. There is also an interactive map that shows the spatial extent of possible or expected flooding in a given area. This is especially helpful when deter-

mining which course of action to take.

Another nice feature is the WaterALERT system from USGS. This allows you to sign up to receive an email or text message when a user-defined condition is met or exceeded. The user can set this up for as many sites and for whichever values they want to be notified about. There are currently USGS stream gauges located in Gilboa, North Blenheim, Breakabeen, and Burtonsville, just to name a few. They are working on installing eight additional gauges at various locations within the county.

<http://water.usgs.gov/wateralert/>



**Schoharie County Soil and Water
Conservation District**

173 South Grand Street, Suite 3
Cobleskill, NY 12043



Phone: (518) 823-4535

Fax: (518) 823-4538

We're on the web!

www.schohariesoilandwater.org



We would like to congratulate to our Middleburgh High School team, “X-tra Trendy, Eco-Friendly,” on being Schoharie County’s winning team at the 2018 Capital Region Envirothon! They then went on to represent Schoharie County at the NYS Envirothon in Geneva, NY at the end of May and placed 9th in Oral Presentations and 35th overall. Great job ladies!!