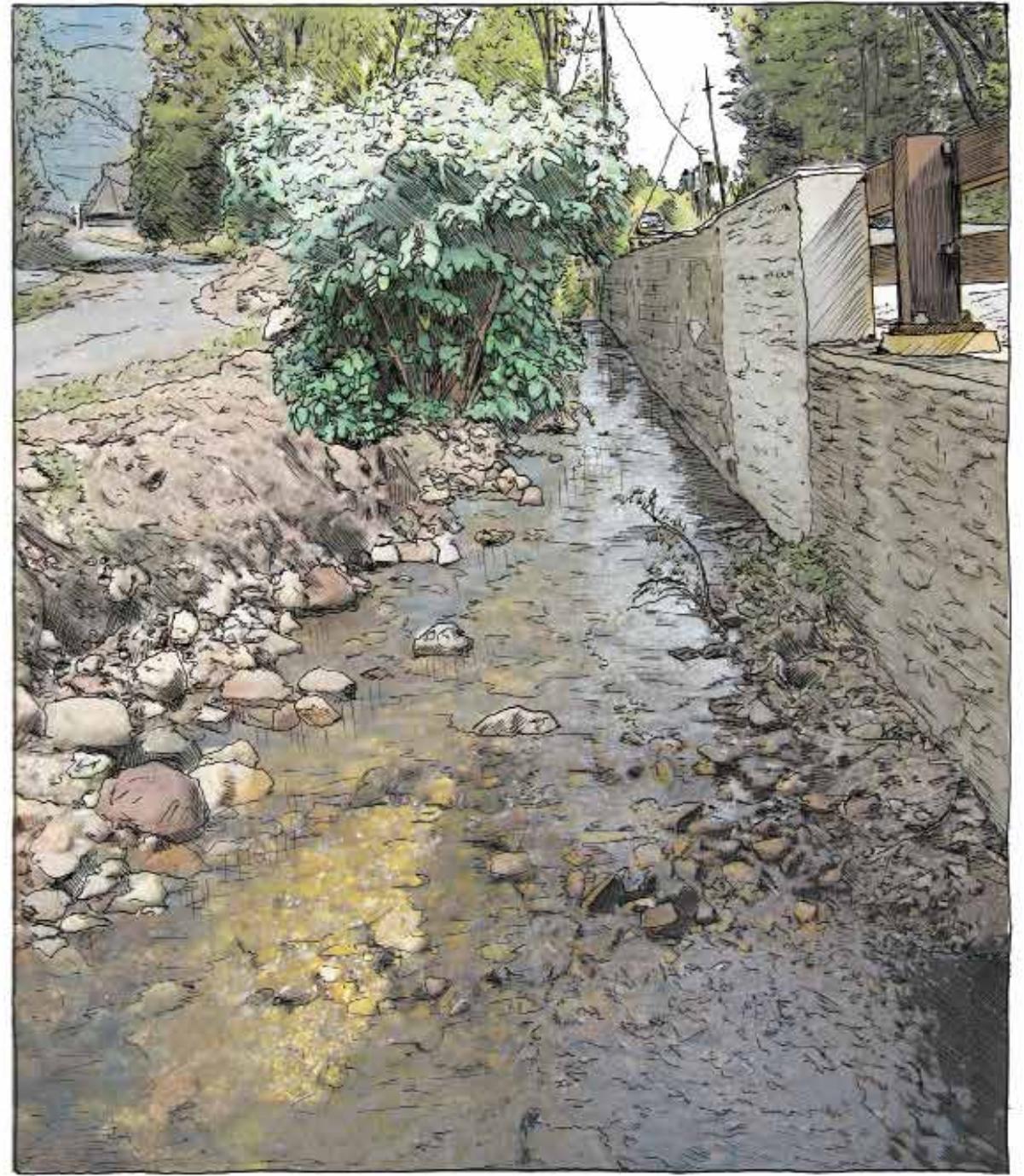


Fully Buffered



UNBuffered

FIGURE 18: Healthy Stream vs. Unhealthy Stream

Over 50% of the water that enters Lake George comes from streams. Stream health is directly related to the environmental health of Lake George. A fully vegetated buffer along a stream is one of the best ways to protect stream health. The trees and vegetation alongside a stream help protect stream health and stabilize the stream against erosion and flooding.

Create or Expand a Stream Buffer

Stream buffers are a vital component in controlling erosion and preventing pollution from entering Lake George.

More than 50% of the water that enters Lake George comes from streams. It is essential that these unique water resources, both large and small, are protected to improve and preserve the water quality of the lake. A natural buffer along a stream bank, like a shoreline buffer by a lake, is a simple and highly effective way to protect a stream from chemical pollutants and unhealthy levels of nutrients and erosion.

A stream buffer is a forested strip of land on both sides of a stream composed of trees, shrubs, herbaceous and woody stemmed groundcover plants and duff. Figure 18 illustrates the importance of buffers to stream health. Stream buffers protect property from erosion and flooding by stabilizing the stream bank and containing floodwaters within the stream corridor and buffer area. Stream buffers are beautiful and virtually maintenance free when populated with native plant species. A fully functioning buffer has numerous environmental benefits that not only protect Lake George, but also the entire watershed. These benefits include the following:

Removing nutrients: Stream buffers significantly clean and reduce storm-water before it reaches a stream by infiltrating and treating the runoff. The roots of trees, shrubs and ground cover plants draw up excess nutrients much more effectively than the shallow roots of a compacted grass lawn.

Trapping sediment: The complexity and uneven terrain of a buffer acts as a trap to prevent sediment from entering streams that feed into the lake. Sediment can impede the gills of fish, harm other aquatic organisms and limit habitat for in-stream spawning. Unmanaged sediment also creates deltas. In Lake George, substantial deltas have formed at the outflows of some streams. The lake has been listed by New York State since 2002 as an impaired water body due to sediment.

One important study found that sediment loading is controlled by streams with fully functioning buffers. Stream channels where stream buffers, fallen trees and natural debris have been removed experience a 500% increase in the export of both fine and coarse sediment and decayed matter. Fallen trees within the stream channel are important for maintaining and creating debris dams, which create habitat for fish and aquatic organisms.

KEY MESSAGES:

1. More than 50% of all water that enters Lake George comes from streams.
2. By protecting the water quality of streams, we protect the water quality of Lake George.
3. A natural buffer along a stream bank is a simple and highly effective way to protect a stream from chemical pollutants and unhealthy levels of nutrients.
4. Stream buffers protect property from erosion and flooding by stabilizing the stream bank and containing floodwaters within the stream corridor and buffer area.
5. Streams are complex ecosystems that require fully functional buffers for environmental health.



1 Rocks provide habitat and prevent streambed erosion.

2 Pools are deep and still, which create refuge for fish.

3 Riffles are shallow and turbulent, and provide habitat, food and oxygenation.

4 Runs are swift with a smooth surface, which provide a transitional habitat.

5 Overhanging vegetation provides protection to fish and habitat.

6 Tree canopy shades the stream and maintains healthy water temperature.

7 Fallen trees create debris dams, slow down the water current, trap sediment and create habitat.

8 Tree roots stabilize the stream banks and prevent erosion.

FIGURE 19: Streams are Highly Complex Ecosystems

This illustration shows the complexity of streams and the importance of buffers for protecting stream health.

Streams without buffers are 30 times more likely to be damaged by erosion than streams with fully vegetated buffers.

Stabilizing stream banks: The deep roots of trees stabilize stream banks. Stable stream banks are less likely to erode and provide important habitat for aquatic wildlife. Stream bends without a vegetated buffer are five times more likely to experience erosion than those with fully functional buffers. Major bank erosion is 30 times more prevalent on streams without buffers than on streams with buffers.

Minimizing flow fluctuations: During rainstorms and rapid ice and snowmelt, the complexity and permeability of a natural forested buffer allow the water to percolate into the ground and enter a stream slowly. Impervious structures or surfaces, such as pavement, compacted grass lawns and rooftops, allow water to rush overland unimpeded, delivering high levels of sediment to downstream locations and contributing substantially to stream bank erosion. A buffer blocks and slows runoff from entering the streams.

Regulating water temperature: A buffer's tree canopy regulates temperature by shading the water, which protects fish, other aquatic organisms and downstream water quality. Streams exposed to direct sunlight without a protective buffer fluctuate in temperature, which can limit habitat diversity and harm wildlife, particularly cold-water fish such as trout. Lack of stream shading also creates greater opportunities for algae growth. Many streams around Lake George have been negatively impacted because they are not protected by a buffer. When that happens, it's difficult and may be expensive to restore lost or damaged stream habitat.

Providing habitat: In addition to the plants and tree canopy, the rocks, boulders and fallen trees within the buffer zone provide habitat to a wide range of wildlife, from fish and amphibians to birds and small mammals.

Protecting natural flood plains: Buffers should include the stream's natural flood plain. Flood plains provide room for streams to spill over during storm events. Flood plains also are unique environments utilized by a variety of plants and animals.

The importance of a fully functional stream buffer cannot be overstated. Streams directly influence the water quality of Lake George. Improvement in stream health through the creation of vegetated stream buffers is one of the most important lake stewardship activities a landowner can undertake. 💧

