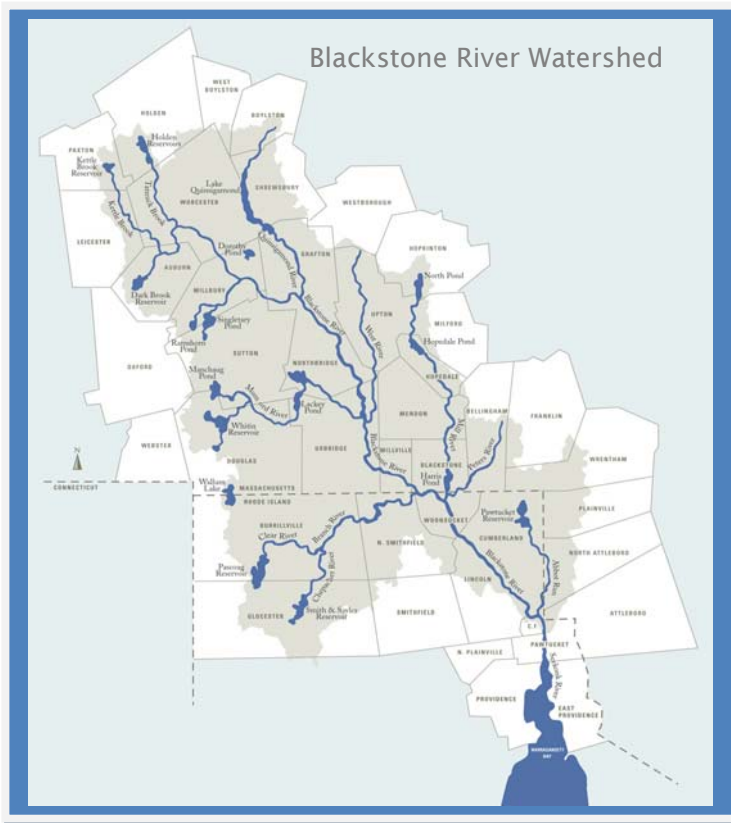


# A Small Farm Owner's Guide to Protecting Water Quality in the Blackstone Valley



*A Cleaner Blackstone River Begins in Your Own Fields!*



If you live within the shaded area, you live in the Blackstone watershed.

**SMALL FARMS**, although almost becoming an endangered species, are the essence of the Blackstone Valley landscape. Sustaining and maintaining them is a goal of every community in the Valley. And there are important farming practices that can help improve water quality throughout our waterways.

**THE BLACKSTONE VALLEY** is, in fact, a watershed, a drainage basin that includes all the land over which rain and snowmelt flow to the Blackstone River. Reducing polluted runoff, or nonpoint source pollution, in the watershed is the major goal of the Blackstone River Coalition. We're working with small farm owners, horse owners, homeowners, business owners, developers and local decision makers to all do their part in reducing stormwater impacts – it's called the "Tackling Stormwater in the Blackstone River Watershed" initiative. Together, we can all help reach the goal of a fishable and swimmable Blackstone River by 2015.

**IF YOU OWN A SMALL FARM**, this publication will show you how you can play a part in protecting and cleaning up the Blackstone Valley's

waterways. You will learn a few simple best management practices (BMPs) specifically designed for small farm owners. Armed with this new information, you can join the thousands of citizens, businesses, and communities working together for a cleaner Blackstone River.

**AGRICULTURAL ACTIVITIES** that cause polluted runoff include poorly located or managed animal feeding operations; overgrazing; plowing too often or at the wrong time; and improper, excessive, or poorly timed application of pesticides, irrigation water, and fertilizer.

**POLLUTANTS** that result from farming include **sediment, nutrients, pesticides**, pathogens, metals, and salts. Impacts from agricultural activities on surface water and ground water can be minimized by using management practices that are adapted to local conditions. Many practices designed to reduce pollution also increase productivity and save farmers money in the long run.

# Best Management Practices for Small Farms

## Sedimentation

The most prevalent source of agricultural water pollution is soil that is washed off fields and pastures. Rainwater carries soil particles (sediment) and dumps them into nearby lakes or streams. Too much sediment can cloud the water, reducing the amount of sunlight that reaches aquatic plants, and raising water temperature thus reducing oxygen. It can also clog the gills of fish or smother fish larvae.



In addition, other pollutants like fertilizers, pesticides, and heavy metals are often attached to the soil particles and wash into the water bodies, causing algal blooms and depleted oxygen, which is deadly to most aquatic life. Farmers can reduce erosion and sedimentation by 20 to 90 percent by applying management practices that control the volume and flow rate of runoff water, keep the soil in place, and reduce soil transport.

### Best Management Practices to Reduce Erosion:

- ◆ **Reseed bare ground, rills and gullies** - bare areas should be leveled and smoothed as best as possible before seeding. The best time to reseed is either late winter/early spring or late summer. Tall fescue is a good seed choice.
- ◆ **Crop Residue Management**, also called conservation tillage, leaves last year's crop residue on the surface before and during planting operations to reduce erosion. The residue is left on the surface by reducing tillage operations and turning the soil less.
- ◆ **Contour Farming** - tilling and planting around the hill with nearly level rows - creates hundreds of small ridges on a hillside. These ridges slow water flow and increase infiltration to reduce erosion.
- ◆ **Stripcropping and crop rotations** ensure crops are changed year by year in a planned sequence. Crop rotation and stripcropping are common practices on sloping soils because of their potential for soil saving. Stripcropping saves soil because half the slope is in soil-conserving legumes or grasses most of the time.
- ◆ **Grass and tree planting** are among the best soil conservation practices because of the excellent ground cover the plants provide.
- ◆ **Contour buffer strips** - strips of grass in a contoured field - help trap sediment and nutrients. Similar to stripcropping, but with narrow, permanent grass strips.

Resources: <http://www.wi.nrcs.usda.gov/programs>



### What Is Nonpoint Source Pollution?

- Nonpoint source (NPS) pollution, unlike pollution from point sources such as industrial and sewage treatment plants, comes from many diffuse sources.
- Polluted runoff is caused by rainfall or snowmelt moving over and through the ground.
- As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them in rivers, streams, lakes, ponds, wetlands, coastal waters, and even our underground sources of drinking water.

# Best Management Practices for Small Farms

## Nutrients

Farmers apply nutrients such as phosphorus, nitrogen, and potassium in the form of chemical fertilizers, manure, and sludge. They may also grow legumes and leave crop residues to enhance production.

When these sources exceed plant needs, or are applied just before it rains, nutrients can wash into aquatic ecosystems. There they can cause algae blooms, which can ruin swimming and boating opportunities, create foul taste and odor in drinking water, and kill fish by removing oxygen from the water. High concentrations of nitrate in drinking water can cause methemoglobinemia, a potentially fatal disease in infants, also known as blue baby syndrome. To combat nutrient losses, farmers can implement nutrient management plans that help maintain high yields and save money on fertilizers.

### Best Management Practices for Managing Nutrients

- ◆ Know what you have - sample and test your soils regularly.
- ◆ Know what you are applying - have your manure, compost, or other material analyzed for nutrient content. Manure is a valuable source of organic matter and nutrients for gardens and crops. Manure should be applied to crops, pastures, and gardens based on plant nutrient needs. Applying too much of it, especially at the wrong time of year, can increase pollution risks.
- ◆ Know and understand the nutrient content of chemical fertilizer.
- ◆ Know how much you're applying- calibrate your fertilizer spreader.
- ◆ Use the recommended amounts for the crop you want to grow - follow soil test recommendations.
- ◆ Minimize erosion and runoff - nutrients may leave in solution or attached to sediment.
- ◆ Maintain buffer areas - their purpose is to filter nutrients and sediment from runoff.



## Pesticides

Insecticides, herbicides, and fungicides are used to kill agricultural pests. These chemicals can enter and contaminate water through direct application, runoff, and atmospheric deposition. They can poison fish and wildlife, contaminate food sources, and destroy the habitat that animals use for protective cover.

To reduce contamination from pesticides, farmers should use Integrated Pest Management (IPM) techniques based on the specific soils, climate, pest history, and crop conditions for a particular field. IPM encourages natural barriers and limits pesticide use and manages necessary applications to minimize pesticide movement from the field.

### Basics of Pest Management:

- ◆ Grow healthy, well-adapted crops - they are less easily affected by pests.
- ◆ Maintain healthy soils - they are alive with beneficial organisms.
- ◆ Encourage diversity of plants and animals - be in tune with nature.
- ◆ Monitor insect, disease, and weed populations - apply timely control techniques.
- ◆ Learn the common pests and control techniques.
- ◆ Consider organic crop production techniques, with no synthetic fertilizers or pesticides.
- ◆ If you use pesticides, read and follow label instructions carefully, try spot applications, and always calibrate your sprayer.

Continue →

# Best Management Practices for Small Farms

## Pesticides *continued*

### Best Management Practices:

- ◆ Conservation crop rotations break pest cycles.
- ◆ Cover crops and mulches smother weeds by shading.
- ◆ Scouting keeps you informed about the presence and population of pests.
- ◆ Proper timing of tillage operations is essential for effective mechanical weed control.
- ◆ Narrow plant spacing can out-compete weeds.
- ◆ Careful timing of planting dates can confound some pests.
- ◆ Buffers and cover crops harbor beneficial insects.
- ◆ Install bat houses.



There are many government programs available to help farmers design and pay for management approaches to prevent and control nonpoint source pollution. For example, over 40 percent of section 319 Clean Water Act grants have been used to control NPS pollution from working farms and ranches. See <http://www.epa.gov/OWOW/NPS/cwact.html>.

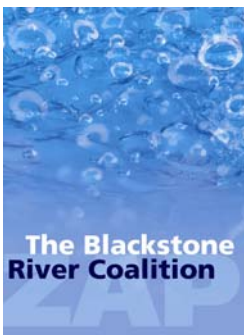
Also, many programs funded by the U.S. Department of Agriculture and by states provide cost-share, technical assistance, and economic incentives to implement NPS pollution management practices. See Natural Resources Conservation Service's websites: <http://nrcs.usda.gov>, <http://nricd.org> and <http://www.ma.nrcs.usda.gov/news/publications.html>.

Another excellent resource is University of Rhode Island's Cooperative Extension Service: [http://www.uri.edu/ce/healthylandscapes/livestock/index\\_livestock.html](http://www.uri.edu/ce/healthylandscapes/livestock/index_livestock.html).

## The Blackstone River Watershed

The Blackstone and its tributaries define our landscapes, yet their beauty hides the fact that beneath the surface, those streams and rivers are not entirely well. Runoff from farms, pastures, lawns, roads, and parking lots, can carry soil, bacteria, nutrients, pesticides, oil, and metals into streams, making them unhealthy places for critters like fish and aquatic insects to live. High bacterial levels can make it unsafe for humans to swim.

But there is good news...we know the prescription for the Blackstone's health, and it starts with us. By each of us developing simple, water-friendly lifestyle practices right at home we can make a huge difference!



This publication is adapted from the Natural Resources Conservation Service's (NRCS) publication entitled "**Small Scale Small Field Conservation**".

**The Blackstone River Coalition** is a partnership of numerous organizations working to restore the Blackstone River and improve the health of its watershed. For more information contact BRC Coordinator Peter Coffin at 508-753-6087 or [peter.coffin@zaptheblackstone.org](mailto:peter.coffin@zaptheblackstone.org).

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