

# 5. Erosion and Sedimentation

## *Soil + Water = Pollution!*

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*“The history of every nation is eventually written in the way it cares for its soil.”*

- Franklin D. Roosevelt

You may be surprised to learn that soil – yes, good old dirt – is a major cause of water pollution in Pennsylvania. The good news is much can be done to prevent soil or “sediment” pollution of the Commonwealth’s streams, rivers, lakes and wetlands. This section will explain how sediment pollution is created, applicable state and federal regulations and what Pike County residents can do to help reduce this pollution problem.

### **Wind and Water Move Mountains**

**Erosion and sedimentation** are naturally occurring processes. Erosion is the wearing away of bedrock and soil layers by wind and water. Sedimentation occurs when rock and soil particles or “**sediments**” are carried by wind and water and deposited at another location – frequently a stream, river, pond or wetland (collectively referred to as “surface waters”). In Pike County’s developing watersheds, the primary source of increasing levels of erosion and sedimentation is residential and commercial land development that removes growing vegetation and leaf litter from forest floors, exposing bare soil to the erosive forces of stormwater runoff (Chapter 4).

### **Fish and Muddy Waters**

The impacts of sediment pollution include:

- Loss of fish and other aquatic life.
- Accelerated rates of aquatic plant growth in lakes and streams, spurred by the release of excess nutrients, including nitrogen and phosphorus.
- Increased frequency and intensity of flooding as sediment clogs waterways.
- Pollution of public water supplies and, as a result, increased treatment costs.

### **Knowing Your BMPs**

Any person proposing or conducting an **earth disturbance activity**

– defined as “A construction or other human activity which disturbs the surface of the land...” – in Pennsylvania is required by state regulations to develop, implement and maintain **Best Management Practices (BMPs)** to minimize the potential for erosion and sedimentation from project sites. Examples of BMPs utilized on Pike County earth disturbance sites include:

- Minimizing the area of disturbance created by a project
- Maintaining existing vegetation, including vegetated streamside “buffers”
- Installing silt fence and sediment traps
- Seeding and mulching disturbed areas as a project proceeds

It is important to remember that the most cost effective BMP for controlling erosion and sedimentation is to minimize the areas of earth disturbance on a project site. In other words, clear only the area needed to successfully complete a project and keep existing vegetation in place on the remainder of a site.

### **A Plan of Action**

Developing and following an **Erosion and Sediment Control Plan (E&S Plan)** is a highly effective way to minimize soil erosion from land development sites. State regulations require that an E&S Plan be in writing and available at a project site during all stages of earth distur-



*Silt Fence: A BMP used commonly in Pike County to control soil sediment on earth disturbance sites*

bance activity whenever the potential exists for the discharge of soil sediment to surface waters designated as either High Quality (HQ) or Exceptional Value (EV), which includes almost all of Pike County.

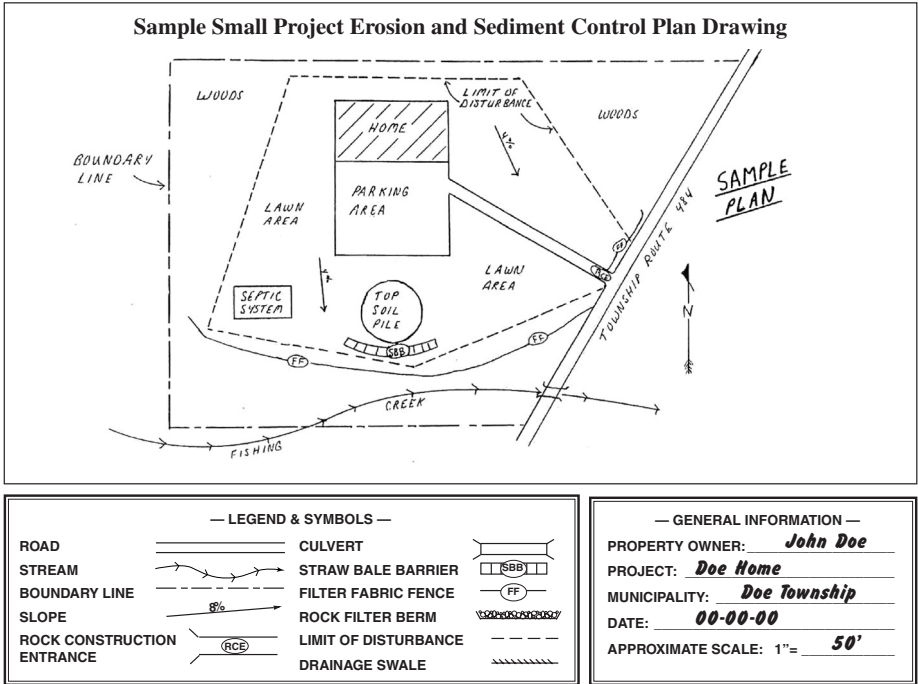
Among other requirements, an E&S Plan must include:

- Existing topographic features
- Soil types and locations
- Description of BMPs to be used
- Plan drawings
- A maintenance program for BMPs
- Description of the earth disturbance activity

In Pike County, whether it is a larger project, such as a residential subdivision or a smaller project for the homeowner including adding an addition, building a deck or shed or installing an in-ground pool or a drive-

way, an E&S Plan is required.

Resources available at the Pike County Conservation District to assist with the development of an E&S plan include *Erosion and Sediment Control Guidelines for Small Projects* and, for larger more complex projects, the PA DEP's *Erosion and Sediment Pollution Control Program Manual*. Check your local yellow pages for engineers or other consultants that develop E&S Plans. Conservation District staff are also available to answer questions and provide assistance.



*Sample drawing of an Erosion and Sedimentation Control Plan*

An E&S Plan is only effective in controlling soil sediment runoff when developed in advance and properly implemented through the life of a project. It is important that the person(s) responsible for an earth disturbance site have access to the E&S Plan for that site so that they have the following information:

- BMPs required for each different phase of a project
- Equipment and materials required to install structural BMPs as they are needed
- A BMP maintenance plan
- Areas on a site that must be avoided during construction

In addition to being required by state environmental regulations, creating and implementing an E&S Plan is an effective way to keep soil on land development sites and out of the HQ and EV surface waters of Pike County's Special Protection Watersheds. Prior to starting any earth disturbance activity, check with your local municipality (Appendix B): local ordinances and permit requirements may apply.

In addition, an NPDES or National Pollution Discharge Elimination System permit may also be required for projects that involve over one acre of earth disturbance over the life of a project (See Chapter 10 for more information on NPDES permits). Contact the Pike County Conservation District for assistance in determining whether or not a project will require an NPDES permit.

### Summary

Soil provides for life by supporting agriculture that provides food and by supporting forests that filter air and water, absorb green house gases and produce oxygen. But soil carried in stormwater, from sites where land development is occurring, into streams, lakes and wetlands, creates a serious pollution problem. Soil sediment can kill aquatic life by smothering spawning and nesting areas and clogging gills of fish and aquatic insects.

Pollutants attached to soil particles worsen the impacts of soil sedimentation. Excess levels of nutrients can spur excess growth of aquatic plants. The build-up of soil sediments in streams can lead to flooding and increased treatment costs for public water supplies.

It is the responsibility of any person undertaking an earth disturbance activity in Pennsylvania to implement and maintain Best Management Practices (BMPs) to minimize erosion and sedimentation from a project site.

In addition, when earth disturbance creates the potential for the discharge of soil sediment to surface waters designated as either High Quality (HQ) or Exceptional Value (EV) – which includes almost all of Pike County – a written Erosion and Sedimentation Control Plan must be developed and implemented.

Failure to implement an E&S Plan can result not only in pollution of surface waters, but is also a violation of state regulations. Properly implementing an E&S Plan, including maintaining Best Management Practices on a project site, assists in protecting Pike County's surface water resources.

**It is the responsibility of any person undertaking an earth disturbance activity to implement and maintain Best Management Practices to minimize erosion and sedimentation from a project site.**

## **Action Steps for Controlling Erosion and Sedimentation**

- ☞ Plan for erosion control before beginning a project.
- ☞ Have and implement an Erosion and Sedimentation Control Plan for projects with earth disturbance. Not only will this control sediment pollution, having a written plan is also required by state law in Pike County's Special Protection Watersheds.
- ☞ Maintain Best Management Practices as a project proceeds.
- ☞ Contact your local conservation district to report a project site that is causing sediment pollution of a stream, river, lake or wetland.

## **Resources for More Information**

Non-point Education for Municipal Officials, University of Connecticut:  
<http://nemo.uconn.edu>

PA DEP, Permitting Information:

[www.dep.state.pa.us/dep/efacts/generalpermitslisting.htm](http://www.dep.state.pa.us/dep/efacts/generalpermitslisting.htm)

Pike County Conservation District: [www.pikeconservation.org](http://www.pikeconservation.org). Good source for technical information on obtaining permits for development activities. Downloadable forms available.