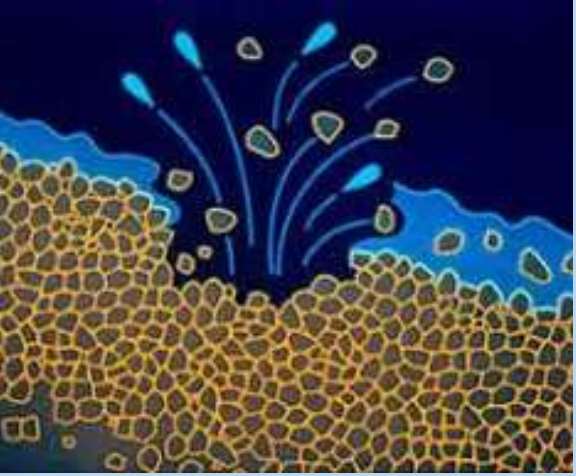


Prevention of Nonpoint Source Pollution Using Cover Crops



- *Financial and other support for this project is provided by the Pennsylvania Association of Conservation Districts, Inc. through a grant from the Pennsylvania Department of Environmental Protection under Section 319 of the Clean Water Act, administered by the U.S. Environmental Protection Agency*



Nonpoint Source Pollution

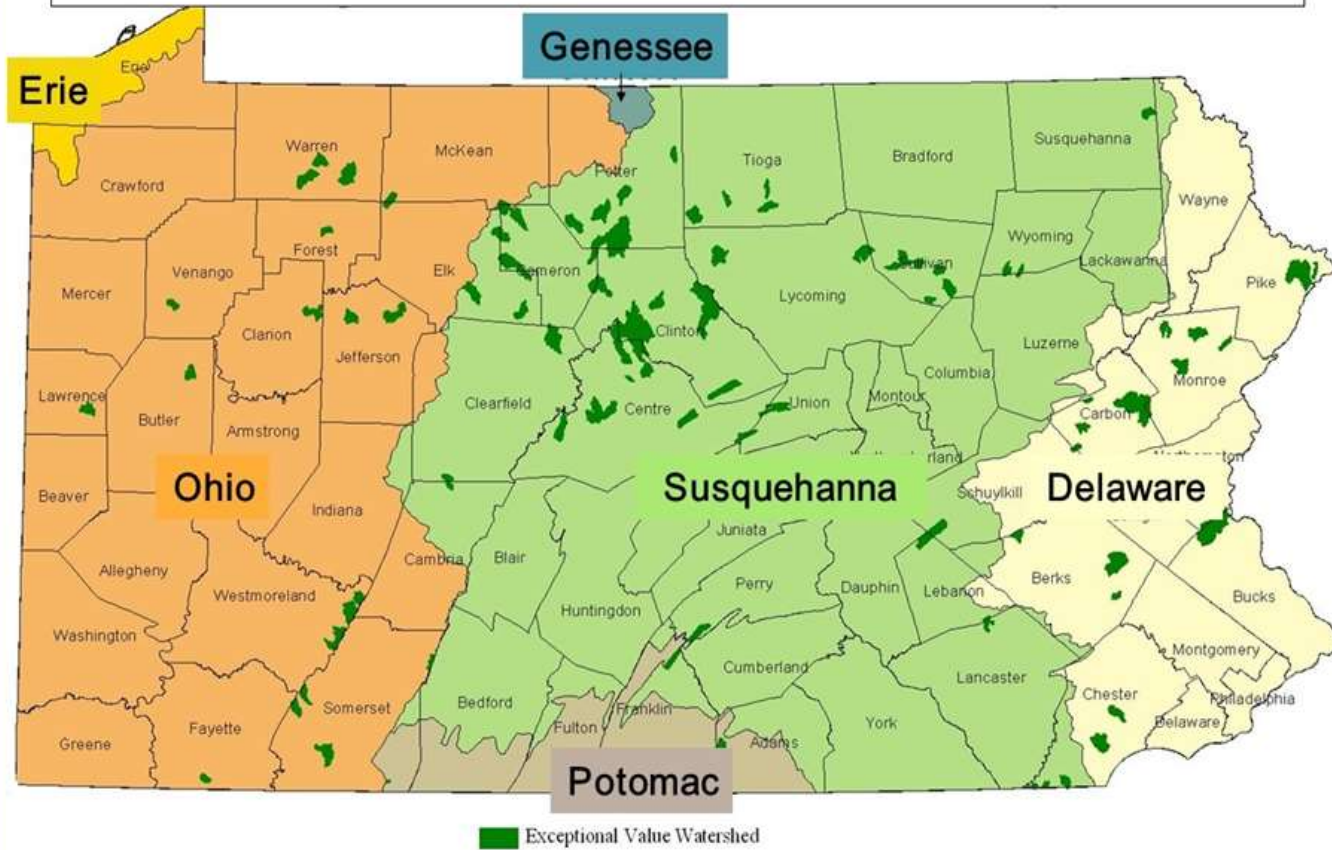
- Cannot be pinpointed on a single source; as rain & snowmelt move through & over the ground, it can pick up contaminants & move it downstream.
- Fertilizers, Manure, Sediment, Pesticides

Watershed: Area of land where all of the water drains to the same place



Watersheds

Six Major Watershed Basins in Pennsylvania



http://www.dep.state.pa.us/dep/deputate/water/mgt/Wqp/WQStandards/antideg/streams_ev.jpg




Impacts of Nonpoint Source Pollution





- **Sediment:** clouds water; stifling fish larvae, suffocating fish by clogging gills, prevents sunlight from reaching aquatic vegetation.
- **Nutrients:** excess algae growth; depleting oxygen content in water, livestock nitrate toxicity, methemoglobinemia in infants/unborn children
- **Pesticides:** poison organisms, contaminate food, eradicate protective vegetative cover.
- **Pathogens:** cause illnesses to livestock & humans

Prevention of Nonpoint Source Pollution Using Cover Crops

-  **Soil Erosion:** impact of raindrops on a soil's surface is minimized as the above ground vegetation serves as a protective barrier & slows runoff velocity while the roots help hold the soil together




Prevention of Nonpoint Source Pollution Using Cover Crops

-  **Water Infiltration**,  **Soil Compaction** : Channels created in the soil after deep-rooted cover crop species decompose will break up compacted soil & facilitate water infiltration



Prevention of Nonpoint Source Pollution Using Cover Crops

-  **Organic Matter** : Cover crop decomposition increases organic matter. Organic material is rich in nutrients and acts as a sponge; holding water for plant uptake



Prevention of Nonpoint Source Pollution Using Cover Crops

- **Improve Nutrient Availability:** Cover crops take in nutrients from the soil and prevent nitrates from leaching. Once the biomass breaks down, nutrients are available to the next crop. In addition, rhizobia bacteria within the soil are able to convert atmospheric nitrogen into a usable form for plant uptake through nodules on the roots of legume cover crops



Photo credits

- <https://water.usgs.gov/edu> (sediment in water, aerial)
- Slideplayer.com (soil runoff illustration)
- <https://extension.psu.edu>, Emilee Swackhamer (oats cover crop)
- Digg.com (US watershed map)
- www.geology.com (major rivers map)
- www.dep.state.pa.us (6 major watershed basins of pa)
- <http://www.kidsgeo.com/geology-for-kids/0076-drainage-basins-watersheds.php> (watershed illustration)