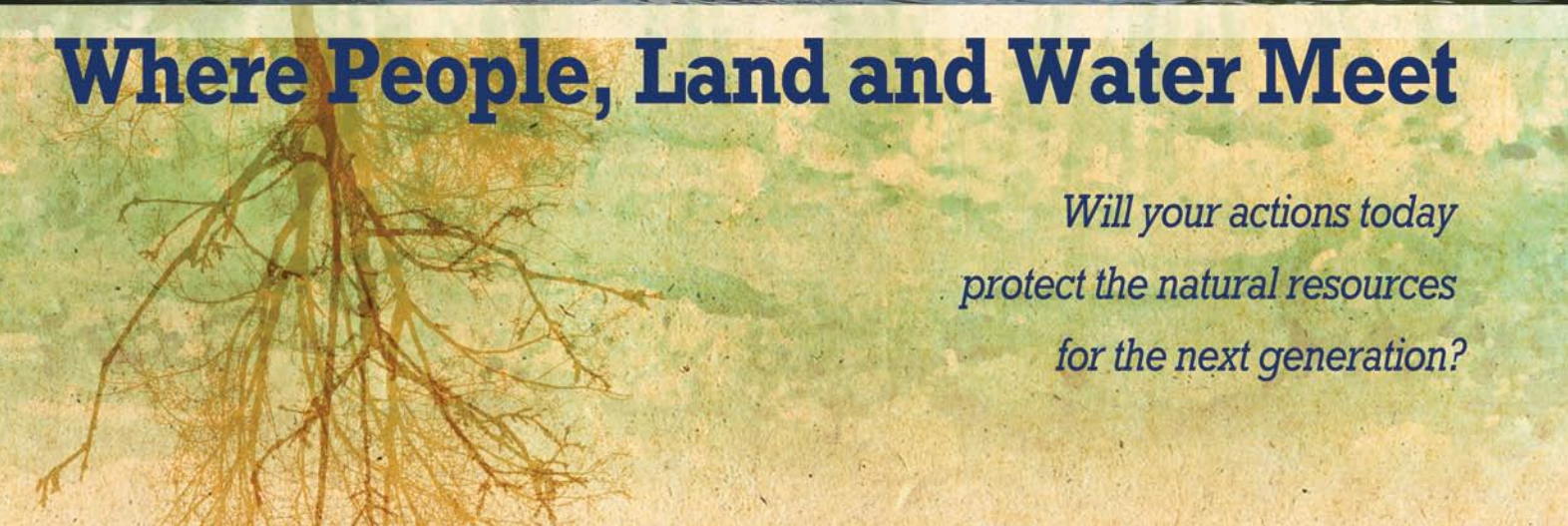


# Crawford County

**Where People, Land and Water Meet**

*Will your actions today  
protect the natural resources  
for the next generation?*



**R**esidents and visitors of Crawford County share fond memories of swimming and fishing in our lakes and streams as well as exploring our many forested trails. **Will healthy lakes, streams and forested trails be available for future generations to enjoy?**

Crawford County owes its economy and social well being to the scenic beauty of our area and our rich agricultural and environmental history. Our exceptional natural resources support the quality of life that our residents, visitors and businesses enjoy.

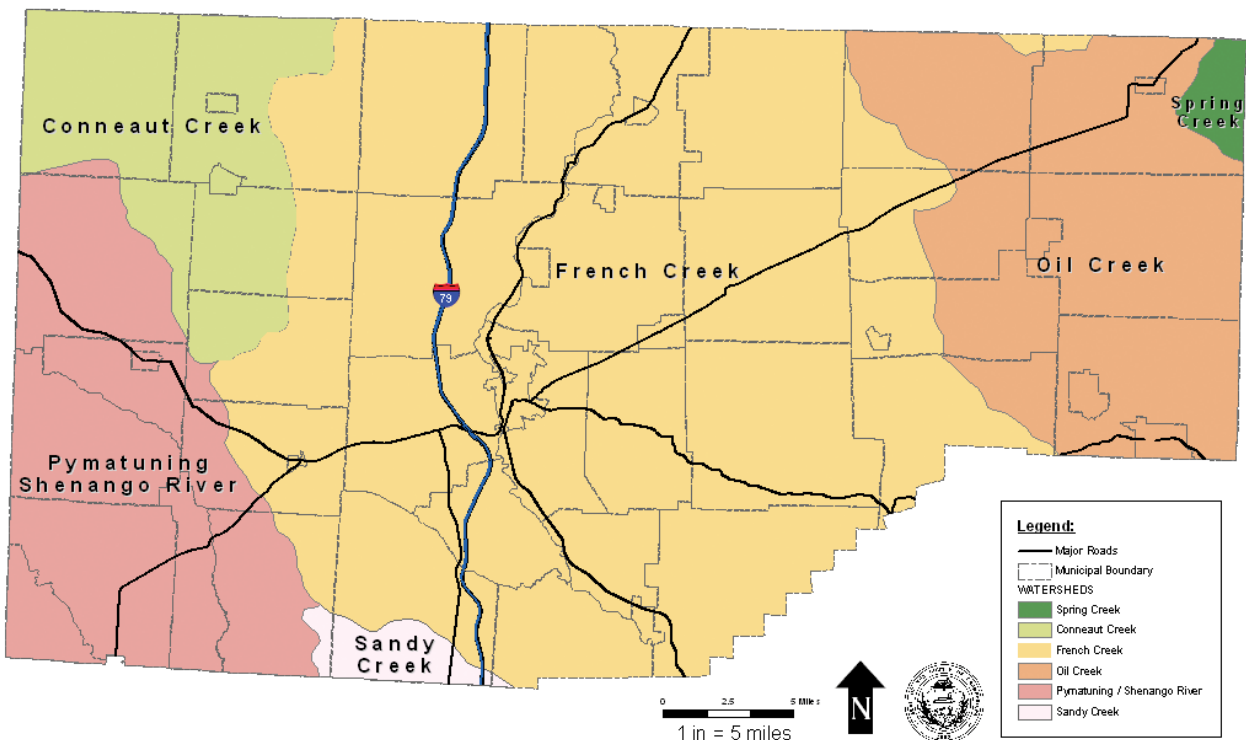
If we are to continue to enjoy this quality of life and attract new businesses and residents, it's our collective responsibility to protect and maintain these natural and economic resources in the face of changing economic times and land use patterns.

Whether you live in the city or the country...whether your home is large or small...whether you have a lot of time or money to invest or a little...there is something you can do to help protect these vital resources.

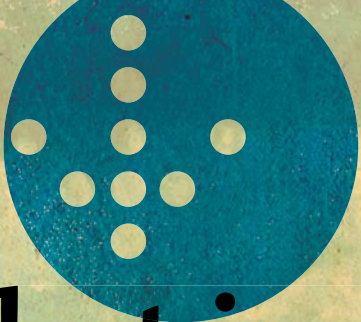


**This guide will provide you with some simple steps on what you can do in your community and around your home to protect the quality of life in Crawford County.**

### Crawford County Major Watersheds



— Look at the map above. Can you find your watershed?



By Chelsea Shuss,  
Pennsylvania  
Environmental  
Council intern

# What is a Watershed?

**J**ust as your municipality, Crawford County or the state of Pennsylvania has a boundary, so too does a watershed. A watershed, sometimes referred to as a drainage basin or catchment area, is the land area bounded by ridges, hills, mountains or other topographic features that contributes precipitation and stormwater runoff to any body of water. Any water that falls within that boundary flows to one common outlet, whether it is a stream, lake, reservoir or wetland. The entire watershed consists of all surface waters and underlying ground water within its boundaries. Larger watersheds often contain many smaller or sub-watersheds. One can perhaps envision a watershed by thinking of it like a leaf; a leaf has a main vein and many sub-veins that distribute nutrients throughout. A watershed, conversely, has small

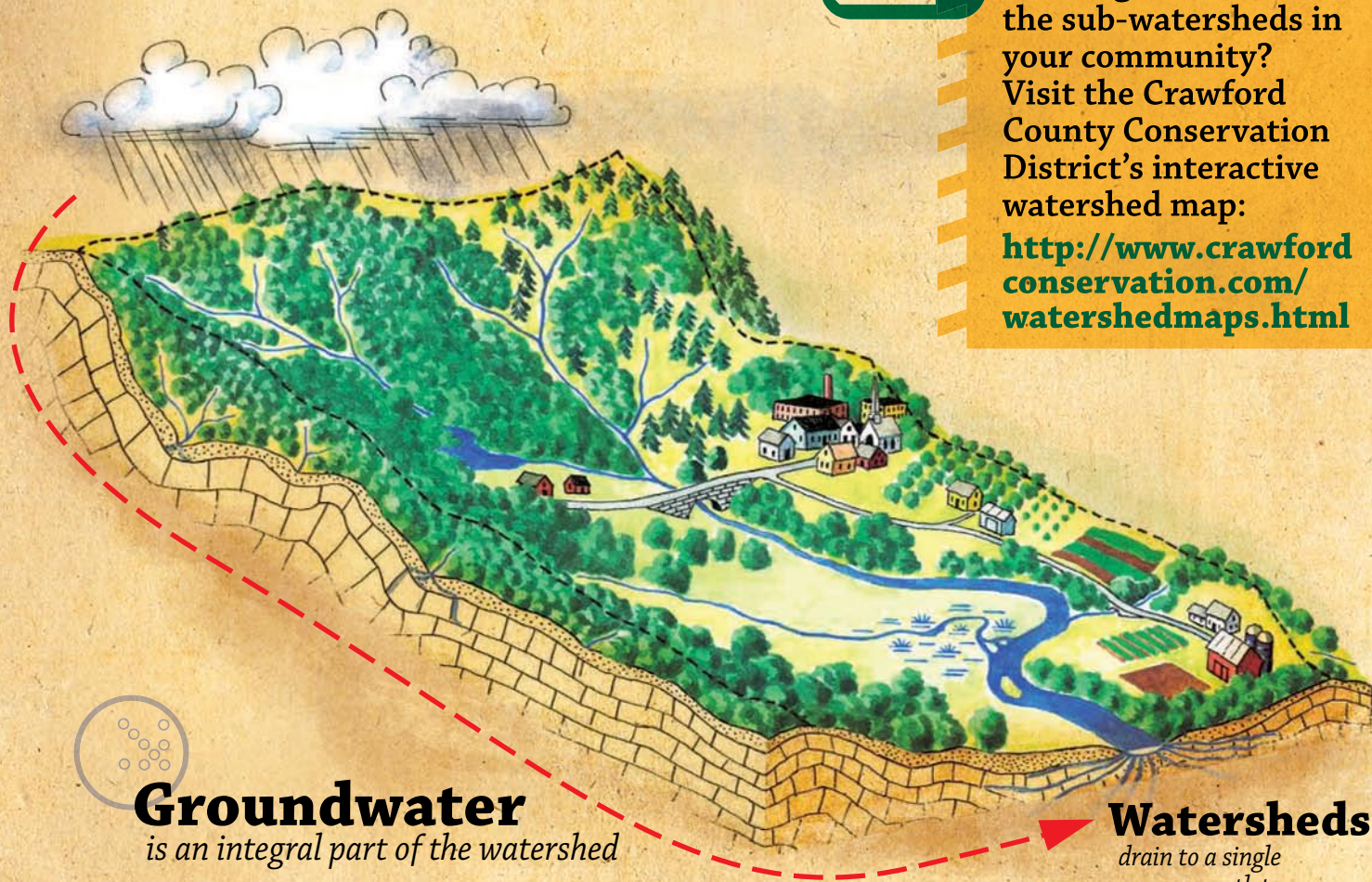
tributary streams that collect water and convey it to a larger stream or river.

If you're standing on the ground right now, just look down. You're standing in your watershed! If you were to pour a gallon of water on the ground, where would it ultimately end up? Crawford County is home to some of the richest water resources in Pennsylvania and contains portions of six major watersheds.



**INTERESTED** in learning more about the sub-watersheds in your community? Visit the Crawford County Conservation District's interactive watershed map:

<http://www.crawfordconservation.com/watershedmaps.html>



**Groundwater**  
is an integral part of the watershed

**Watersheds**  
drain to a single  
common outlet



# We all live **DOWNSTREAM**

What happens when land is changed from forests and fields to buildings and parking lots? For many Crawford County homeowners and municipal officials, increased development and improper land use planning often results in constant stormwater-related problems including:

- \* **Washed-out lawns and driveways**
- \* **Flooded Basements**
- \* **Damaged Septic Systems**
- \* **Reduced Property Values**
- \* **Conflicts between Neighbors**
- \* **Polluted swimming areas**
- \* **Damage to public and private roads**
- \* **Polluted drinking water**



## WHAT IS **STORMWATER RUNOFF** and why should we care about it?

By **Chelsea Shuss**, *Pennsylvania Environmental Council intern*

Stormwater runoff is caused when precipitation from rain or melting snow does not soak into the ground where it falls and flows over the ground. When rain hits impervious surfaces like buildings, parking lots, driveways, sidewalks, and streets, water that might have otherwise naturally soaked into the ground flows in great quantities to storm sewers, drainage ditches, retention basins or directly into local waterways. Though rain is an important part of nature's water cycle, significant stormwater runoff from impervious surfaces can cause flooding, property damage and environmental degradation.

Often, fast flowing stormwater scours the banks of drainage ditches and streams, carrying with it silt and sediments that clog streams and reduce oxygen levels in the water upon which many aquatic plants and fish depend to thrive. In addition to litter and debris such as plastic bags or cigarette butts, stormwater often picks up and carries non-point source pollutants such as insecticides, pesticides, solvents, motor oil and other automotive fluids that choke or disable aquatic life and poison aquatic ecosystems.

Unlike the sanitary sewer or septic system that cleans and treats the wastewater leaving your home, stormwater is eventually discharged directly into local waterways that serve as our drinking water sources, swimming holes and favorite fishing spots. Nationally, 13 percent of rivers, 18 percent of lakes and 32 percent of wetland estuaries are made unsafe for swimming or fishing because of stormwater, making it a leading source of water pollution.

Excessive runoff can contribute to damaging flooding and, because it doesn't recharge local groundwater supplies, may exacerbate water shortages. Stormwater damage often requires increased taxes and public spending to repair damage and properly construct and maintain storm drains and sewer systems. As increased or poorly planned development occurs and natural vegetation is decreased, the impacts of stormwater on our environment, health and pocket books only deepen.

The good news is that simple and often cost effective solutions can lessen these impacts while protecting our health and environment and saving money for ourselves and communities.



### How can you reduce stormwater runoff from your property?

- \* **Minimize impervious surfaces** (sidewalks, driveways, patios, etc.) by using mulch or stone pavers for these areas.
- \* **Plant native plants**, wherever possible, in place of lawn areas to better absorb heavy rainfalls.
- \* **Do not remove trees and other plants next to streams, lakes, and wetlands.**
- \* **Direct rain gutters onto lawn or garden areas** where more water can seep back into the ground.
- \* **Construct rain gardens and use rain barrels** to collect and recycle rooftop water runoff.
- \* **Ask local officials to adopt and enforce stormwater ordinances to manage runoff from new development.**



# Tips to Homeowners on How to Protect Our Watershed

By Arlene Rodriguez, Crawford County Planning Commission


When rains or snows melts, extra stormwater gets into our sewage collection system through direct connections or through leaky, cracked pipes. This extra volume of water overloads the sewage system pipes causing raw sewage to overflow at hundreds of locations before ever reaching the treatment plant. Untreated sewage flows into waterways, overflows from manholes and backs up into homeowners' basement.

Untreated sewage is not the only problem. Polluted stormwater runoff carries pollutants such as pet waste, oil, dirt and litter, chemicals and lawn fertilizers directly to the streams and rivers, where they can harm the water quality. Even if your home is not near a stream or river, the runoff flows down the street into a ditch or storm drain that eventually empties into a stream or lake, carrying pollutants with it.



## REDUCE THE AMOUNT OF POLLUTED RUNOFF THAT GOES INTO WATERWAYS AND SEWAGE SYSTEMS.

- Use fertilizers, herbicides and pesticides sparingly. Most lawns and plants do not need much fertilizer, if any. Test the soil to determine if needed.
- Do not fertilize before a rain storm. Fertilizer will dissolve and run directly into the storm sewer system or waterway.
- Ensure fertilizer stays on the lawn, not on pavement
- Use environmentally friendly garden products
- Mow your lawn at the proper height. Grass thrives at three inches and slows runoff.
- Do not bag grass clippings, use them as natural fertilizer
- Clean your lawnmower or fertilizer spreader on grass rather than on pavement or over a storm drain.




By following these precautions, a homeowner can help reduce the amount of pollutants into our waterways. To learn more about residential stormwater management, visit <http://www.epa.gov/nps>.



## Maintain & wash your vehicle properly.

- Check your vehicle regularly for drips and oil leaks.
- When changing your oil, use a drip pan and drop cloth to capture all solvents or oil. Use rags and dry absorbent materials such as kitty litter to clean up spills
- Recycle used motor oil at auto supply stores, car care centers or gas stations
- Never dump oil, antifreeze, transmission fluid on the ground, down a storm drain or in a road ditch
- Wash your vehicle at a commercial car wash. Most car washes reuse water several times before sending it for treatment.
- If you wash your car at home, do it on grass or gravel so the ground can filter the dirty water naturally
- Use soap sparingly and try to use phosphate free detergent. Empty the bucket of soapy water down the sink, not the pavement.



## PLANTING TREES AND OTHER VEGETATION CAN REDUCE STORMWATER RUNOFF.

- A single large tree can absorb hundreds of gallons of rainfall during a single storm.
- A city's urban tree canopy can reduce peak storm runoff by 10 to 20%

**Stormwater Fact:** One inch of rain on a 1,000 square foot roof served by a downspout results in 600 gallons of water!



# Harvesting Rainwater Means Saving MONEY!



By **Brian S. Pilarcik**,  
Crawford County  
Conservation District

What would you say if you were told that there was a place where a natural resource more precious than oil or gold falls from the sky on a regular basis? A natural resource so valuable that wars have been fought over it, and empires have risen and fallen because of it. What if you were told you could live in that area and you could keep all that you could collect for free? You would probably jump at the chance to move there! The fact is we in Crawford County have that opportunity, but most of us fail to tap into it. Clean water is one of the most precious things on earth, yet we tend to take it for granted. The rain comes and goes, and all we think about is how fast we can move it off of our property. You can tap into this treasure by harvesting rainwater! Harvesting rainwater is not a new technology, in fact it is centuries old. Rainwater is very soft water, clean, and free for the taking. The most common use is for watering plants, however uses are only limited by your imagination and creativity. Rainwater can be used to wash cars, clothes, or flush toilets. It really depends on your needs.

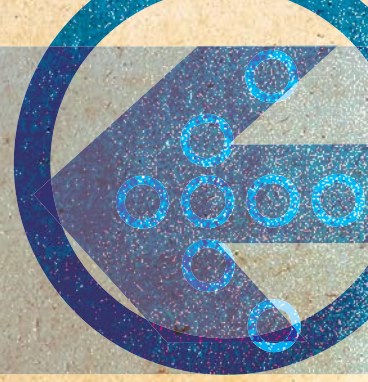
Probably the easiest way for the average homeowner to harvest rainwater is to install a rain barrel. They come in all sizes, styles, and price ranges. If you are a do it yourselfer you can build your own for less than \$50. If you are not so handy you can purchase a ready made model and have it installed professionally. A diverter unit is an easy and inexpensive way

## WHATEVER STYLE YOU CHOOSE YOU SHOULD KEEP THESE TIPS IN MIND:

- Choose a location close to the intended use for the water. If you are watering your flowers locate the barrel near your flower bed!
- Avoid using fungicides on your roof; you will be treating your garden as well as your roof.
- Secure the barrel so that it won't tip over. A 55 gallon barrel full of water can weigh as much as 450 pounds!
- A sealed barrel will keep mosquitoes from breeding. If you have an open top consider a screen or adding a small amount of vegetable oil to your barrel to foil the pesky pests.
- Do you need more water than one barrel can provide? Link multiple barrels with tubing to create extra storage capacity!

to connect a rain barrel to your downspout. When the barrel is empty it will allow rainwater to fill it, once the barrel is full the diverter will send water back into the downspout! If you don't use a diverter you will want to make sure you have an overflow on the barrel style you choose. There are wonderful resources online to help you make a wise choice.

▶ **For more information on rain barrels** contact the Crawford County Conservation District at 814-763-5269 or check out our stormwater link at [crawfordconservation.com](http://crawfordconservation.com).



# Landscaping our Backyard for CLEAN WATER

**H**ow would you like to help keep Crawford County's water clean for future generations, help prevent flooding, and get a beautifully landscaped yard at the same time? You can, and it is not as hard as you think! The answer is to install a rain garden! A rain garden is similar to a traditional flower garden, but it has been altered to help filter and absorb water. When installed correctly your rain garden will look just like a traditional flower bed but will function in many more ways. First, choose a location that you can easily direct roof, sidewalk, or driveway rain water toward. Once you have selected a location you will need to size the rain garden to fit the existing landscape and expected volumes of rainwater. Now for the construction, you will need to prepare or amend the soil to accept the extra water. Usually this involves adding and tilling in sand and compost to improve your existing soil. Once the soil is prepared, choose shrubs and flowers that will thrive in this environment. Plant and mulch your new garden and you are set to help protect water quality for generations to come. If this sounds oversimplified, well it is. You do need to do a bit of research before installing a backyard rain garden. Luckily there is no shortage of resources available! A quick

internet search will yield plenty of DIY sites and how to manuals for the weekend warrior. A trip to your local garden center will generate insight on plant species and planting tips. If you are not up to the task yourself call upon one of the local professionals to assist you in building a rain garden.

So, why go through the effort in the first place? Will it really make that big of a difference? Studies have shown that if you can remove the first inch to inch and a half of rain off of driveways and sidewalks you will capture and filter most of the pollutants associated with that storm event. Also, by capturing and retaining runoff from inch and half storm events you can capture up to 80% of all the storm events every year. What does this mean for Crawford County's water? It can mean cleaner water for swimming, fishing, and drinking. It can also mean less flooding and property damage. By allowing water to slowly filter into the ground it can also mean less severe droughts during the summer, which in turn can lessen water use restrictions. Lastly, rain gardens can help you meet the new Crawford County Act 167 stormwater management requirements for new construction.

## SOME TIPS

**to remember if you are going to try and install a rain garden:**

- Do your homework - While the idea sounds simple you have to set up a rain garden correctly for it to work well.
- If you choose to use a landscaping company check references and ask plenty of questions.
- Never locate a rain garden next to a foundation.
- Use common sense when choosing a site!



▶ For a local self-guided tour of Crawford County rain gardens check out the Guide to Best Management Practices brochure under the stormwater management link at [crawfordconservation.com](http://crawfordconservation.com) or contact Tracey Crawford at the Crawford County Conservation District at 814-763-5269.

# Pennsylvania Act 167 and Stormwater Management in Crawford County

By Adam Zahniser, PE, Herbert, Rowland & Grubic, Inc. and Andy Walker, Pennsylvania Environmental Council

The Commonwealth of Pennsylvania has just that, a common wealth of water resources that are our responsibility to share and steward. Recognizing the need to preserve and restore these water resources and ensure water quality for all Pennsylvanians, the Pennsylvania legislature enacted the Storm Water Management Act in 1978 to encourage watershed based planning and to implement a comprehensive program of stormwater management.

In summer of 2010 the County adopted the Crawford County Act 167 County-Wide Stormwater Management Plan. The plan was developed by a team led by the Crawford County Planning Commission to improve the way stormwater is managed throughout the County, address the impacts of future development, preserve existing water resources and meet the legal requirements of state and federal law. The principal purpose of the plan is to address the impacts of future land use on current levels of stormwater runoff and to recommend measures to control accelerated runoff, thereby preventing increased flood damage and additional water quality degradation.

The technical standards in the plan present a new approach to managing stormwater—encouraging best practices that slow down and infiltrate stormwater where it falls. Further, the plan places the responsibility and cost of ensuring

adequate stormwater infrastructure on those who cause increased runoff and stand to benefit financially from new development. Implementation of the plan will require new up-front investments from developers for design, installation and maintenance of stormwater infrastructure and will require additional resources from local municipalities to administer and enforce these new regulations.

Historically, the taxpayer has been subjected to many “hidden” costs of unmanaged or mismanaged stormwater, including maintenance and improvements to existing drainage systems that often required increased culvert sizes or larger bridges, reconstruction of flooded roadways or stream bank stabilization. The county-wide stormwater management plan is intended to shift the responsibility and financial burden of mitigating these negative impacts of stormwater to private developers, thereby reducing our public infrastructure needs and minimizing the need for public tax dollars.

**FACT:**

In 2007, the Pennsylvania Emergency Management Agency (PEMA) estimated that the total economic loss in Crawford County during a 10-year storm event is \$238 million dollars. This number increases to \$306 million for a 100-year event.

## Involved and active citizens are essential. Get Involved.

Effective planning cannot happen in a vacuum; it must be a reflection of community values.

Contact one of these partners to get involved.

### Crawford County Conservation District

21742 German Road, Meadville PA 16335

(814) 763-5269

[www.crawfordconservation.com](http://www.crawfordconservation.com)

### Crawford County Planning Commission

903 Diamond Park, Meadville, PA 16335

(814) 333-7341

[www.crawfordcountypa.net/planning](http://www.crawfordcountypa.net/planning)

### Pennsylvania Environmental Council

301 Chesnut Street, Meadville, PA 16335

(814) 332-2946

[www.pecpa.org](http://www.pecpa.org)

### Meadville Area Water Authority

18160 Rodgers Ferry Road, Meadville, PA 16335

(814) 724-6057

[www.mawa.us](http://www.mawa.us)

[www.crawfordconservation.com](http://www.crawfordconservation.com)

cover photo by: Wendy Kedzierski

### CRAWFORD COUNTY ENVIRONMENTAL CONCERNS & WHO TO CONTACT

**Erosion and Sedimentation Pollution from Earthmoving Operations Waterways, Wetlands, & Floodway Concerns**  
Crawford County Conservation District  
(814) 763-5269

**Well or Water Supply Contamination**  
PA Department of Environmental Protection,  
Northwest Regional Office  
Complaint Line: (814) 332- 6945

**Sewage, Septic or Stormwater Concerns**  
Contact your Municipal Office

**Wildlife Concerns**  
PA Game Commission  
Northwest Regional Office  
(814) 432-3188

**Littering/ Dumping Waste in a waterway**  
PA Fish & Boat Commission  
Northwest Regional Office  
(814)-337-0444

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.