

# 1. Watersheds

## *Connecting People, Land and Water*

by John Jose, Watershed Specialist, Pike County Conservation District

*“When the land does well for its owner,  
and the owner does well by his land –  
when both end up better by reason of their partnership –  
then we have conservation.”*

~ Aldo Leopold

All lands covering the Earth’s surface are divided into **watersheds**. At any given time a person will find his or herself in the watershed where they live or as a visitor in a watershed that other people call home.

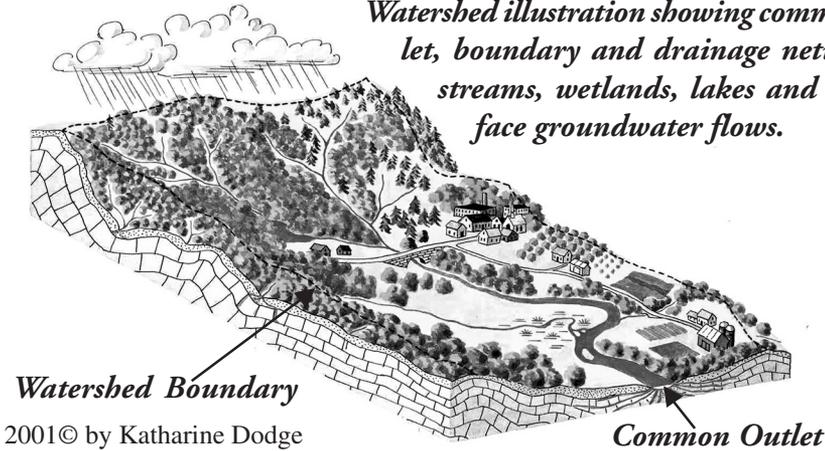
**All lands covering the Earth’s surface are divided into watersheds.**

A watershed can be compared to a large basin that captures all the precipitation (rain, snow, etc.) that falls within its **boundary**. A watershed boundary is formed by highpoints in the landscape, where an unbroken, continuous ridgeline creates a divide between adjacent basins. Each watershed has its own uniqueness based on climate, differences in topography (flat vs. rolling hills or mountainous), the types of plants and soils found there and, very importantly, both past and present **land use activities** that have taken place. Examples of land use activities include commercial, industrial and residential development, farming, mining, logging, and recreational activities.

Watersheds vary greatly in shape and size from the greater Atlantic Basin that extends from the Continental Divide to the east coast of the U.S., down to a smaller **sub-watershed** – or watershed within a watershed – of less than an acre draining into a local backyard pond. Pike County watersheds are part of the larger Delaware River Basin that drains portions of New Jersey, New York and Pennsylvania. The County’s eighteen major watersheds range in size from the Lackawaxen River Watershed that encompasses nearly 600 square miles, occupying portions of two neighboring counties, to the Vandermark Creek Watershed that lies entirely within County boundaries and occupies less than 6 square miles of drainage area.

The precipitation that a watershed receives flows naturally from the upper, higher elevation areas downward through its **drainage system** – a network of interconnected streams, ponds, wetlands and subsurface groundwater flows – eventually reaching a **common outlet**. Sometimes referred to

*Watershed illustration showing common outlet, boundary and drainage network of streams, wetlands, lakes and subsurface groundwater flows.*



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as the “receiving body of water,” the common outlet serves as the potential destination for any water moving through a watershed’s drainage system. The health of the common outlet reflects both the condition of a watershed as well as the overall health of a basin’s water resources.

**The health of the common outlet reflects the overall health of a watershed.**

### **Pike County Major Watersheds**

A watershed typically gets its namesake from its common outlet. Listed below are the eighteen major watersheds of Pike County.

- |                          |                                     |
|--------------------------|-------------------------------------|
| 1. Bushkill Creek        | 10. Vandermark Creek                |
| 2. Saw Creek             | 11. Cummins Creek                   |
| 3. Little Bushkill Creek | 12. Bush Kill (Millrift) Creek      |
| 4. Toms Creek            | 13. Little Walker/Twin Lake Creek   |
| 5. Hornbecks Creek       | 14. Shohola Creek                   |
| 6. Dingmans Creek        | 15. Lackawaxen River                |
| 7. Adams Creek           | 16. Masthope Creek                  |
| 8. Raymondskill Creek    | 17. Wallenpaupack Creek             |
| 9. Sawkill Creek         | 18. East Branch Wallenpaupack Creek |

### **Special Protection Watersheds**

All of Pike County’s major watersheds have been granted **Special Protection** status by the PA Department of Environmental Protection (PA DEP). The streams that drain these watersheds are PA DEP classified as either **High Quality (HQ)** or **Exceptional Value (EV)** water resources affording them additional protection from potential adverse impacts from

land use activities – including residential and commercial development – through state environmental regulatory programs.

What does this mean to Pike County residents? Overall, residents enjoy good quality and generally abundant groundwater for drinking water supplies; healthy coldwater streams supporting diverse aquatic life; biologically rich wetlands that also provide for water



*All Pike County watersheds drain to the Delaware River*

filtration, groundwater recharge, and stormwater and flood control; and lakes offering recreational and aesthetic value among many other benefits.

The looming question is whether or not these water resources will be maintained in their current state in the face of the County's very significant and increasing land development pressures. Simply having Special Protection status does not guarantee the County's Exceptional Value and High Quality water resources will remain High Quality and Exceptional Value. However, managing these water resources on a watershed basis could provide officials and residents with an excellent framework from which to protect these water resources.

### **Watershed Management**

Managing water resources on a watershed-basis provides a logical and highly effective framework for both surface and groundwater protection. Why? Because watersheds are natural systems that link the land and water resources and the living organisms, including people, within their boundaries.

Neither the water flowing through a stream nor the groundwater moving beneath the surface recognizes the political (municipal, county or state) boundaries drawn on a watershed. This makes cooperation between residents, community associations and neighboring governments, that share the water resources of a watershed, essential.

Intermunicipal cooperation is particularly important in Pennsylvania where decisions on land use and protection of natural resources, made in local townships and boroughs, in large part determine the future of communities. Neighboring municipalities, whose political boundaries fall partly or completely within the same watershed, can benefit residents by working together to manage natural resources and taking a more holistic, long-term

approach to stormwater management and flood control, groundwater protection and stream conservation, to mention a few of many advantages.

### **Do You Know Your Watershed Address?**

Where does the water that rains on your home and the surrounding landscape go? After it leaves your lawn, street or driveway where is it headed? Does it flow downhill straight to a nearby stream or lake or wander into wetlands?

Whether it's a pond, stream or lake, that destination determines your watershed address. Just like there are towns, within counties within states, in a natural watershed system there are sub-watersheds within watersheds within drainage basins. A watershed address provides a natural reference point that orients residents to the watershed they reside in.

**Watersheds are natural systems that link the land and water resources and the living organisms, including people, within their boundaries.**

For example, the rain that falls on your driveway might flow into McConnell Pond, which flows into McConnell Creek, which flows into Shohola Creek, which flows into the Delaware River. So your watershed address would be: McConnell Pond, McConnell Creek, Shohola Creek, Delaware River even though your mail finds you through Hemlock Farms, Blooming Grove, PA.

### **Watershed Stewardship**

As important as it is for landowners living next to a stream, pond or wetland to practice good water resource stewardship, it is just as important for the residents of the entire watershed to make their contribution. Although a resident may not feel that their individual efforts are significant, the collective efforts of all watershed residents can make a difference. Among the many options discussed throughout this book, good backyard stewardship practices include the following:

- Controlling non-point source pollution (Chapter 2)
- Maintaining on-lot sewage disposal systems (Chapter 3)
- Managing stormwater runoff (Chapter 4)
- Preventing groundwater contamination (Chapter 6)
- Maintaining streamside vegetation (Chapter 9)

### **Pike County Watershed Organizations**

Although watershed groups vary as much as the watersheds they

advocate for, they all share one common goal: Conservation of the natural resources, particularly the surface and groundwater resources, of the watershed they represent. As this publication goes to press, there are four active watershed groups in Pike County:

- Bushkill Watershed Conservancy
- The Lackawaxen River Conservancy
- Lake Wallenpaupack Watershed Management District
- Twin and Walker Creeks Watershed Conservancy

These organizations assume many roles and responsibilities including:

- Promoting awareness of the importance and uniqueness of the water resources of their watershed and the need for good stewardship practices.
- Working cooperatively with municipal officials in land use planning efforts that incorporate smart growth strategies and conservation of community natural resources.
- Obtaining financial and technical resources to address problems affecting water quality of lakes and streams, including stream restoration efforts and controlling stormwater runoff.
- Providing a voice for the concerns of citizens, bridging the gap between residents, community associations and local, state and federal governments.
- Providing educational opportunities for a wide variety of audiences.
- Monitoring the water quality of streams, rivers and lakes.

Citizen-based watershed groups provide an invaluable service to watershed residents – both current and future – by working for the protection of the water resources so critical to the health of residents, the regional economy and

the environment. To remain a vital and effective voice for the concerns of residents, watershed organizations need local support.

Contact information for Pike County’s four active watershed organizations is listed below. For more detailed information, including what current resource conservation initiatives they are undertaking and volunteer opportunities they offer, refer to Appendix A, “Watershed Organizations in Pike County: Information and Volunteer Opportunities.”

**Citizen-based watershed groups provide an invaluable service to watershed residents by working for the protection of the natural resources so critical to the health of residents, the regional economy and the environment.**

### **Bushkill Watershed Conservancy**

P.O. Box 193 • Bushkill, PA 18324

Telephone: 570-226-8220 (Pike County Conservation District)

Email: [pikecd@pikepa.org](mailto:pikecd@pikepa.org)

Web site: [www.bushkillwatershed.org/index.htm](http://www.bushkillwatershed.org/index.htm)

### **Lake Wallenpaupack Watershed Management District**

P.O. Box 143 • Hawley, PA 18428

Telephone: 570-226-3865

Email: [lwwmd@ptd.net](mailto:lwwmd@ptd.net)

Web site: [www.wallenpaupackwatershed.org](http://www.wallenpaupackwatershed.org)

### **The Lackawaxen River Conservancy**

P.O. Box 176 • Rowland, PA 18457

Email: [TLRC@ltis.net](mailto:TLRC@ltis.net)

Web site: [www.lackawaxenriver.org](http://www.lackawaxenriver.org)

### **Twin and Walker Creeks Watershed Conservancy**

Peter Wulfhorst, President

100 Walker Lake Road • Shohola, PA 18458

Telephone: 570-296-3400

Email: [Ptw3@psu.edu](mailto:Ptw3@psu.edu)

Web site: [www.twcwc.com](http://www.twcwc.com)

### **Summary**

Watersheds are natural systems linking land, people and water. What happens on the land can affect both surface and groundwater resources and in turn, the residents of a watershed.

All of Pike County's major watersheds have been designated Special Protection watersheds by the PA DEP. The streams of these watersheds are all classified as High Quality (HQ) or Exceptional Value (EV).

However, Special Protection, HQ or EV status cannot guarantee the County's water resources will remain in their high quality state as land development pressures continue to increase. A commitment that includes cooperative efforts on the part of residents, local officials, communities, resource conservation organizations and the business sector is needed. Residents can start right at home by learning their watershed address and what they can do in their own backyard.

Managing natural resources on a watershed basis provides an effective framework for water resource protection. Because the water flowing through a stream or beneath the surface as groundwater does not recognize

political (state, county, municipal, etc.) boundaries, cooperation – particularly among neighboring municipalities – is critical.

Citizens-based watershed organizations provide an invaluable service to watersheds residents, both current and future, by working toward the protection of the water resources so important to the health of residents, the regional economy and the environment. To remain a vital and effective voice, Pike County’s watershed organizations need the support of local residents. Residents can contact the watershed organization representing their watershed to find out what volunteer opportunities exist and how they can lend their support.

### **Action Steps for Watershed Conservation**

- ☞ Join and support a local watershed organization (Appendix A).
- ☞ Learn your watershed address and what you can do in your own backyard to protect the watershed you live in.
- ☞ Support local municipal officials (Appendix B) in their efforts to work with neighboring municipalities in watershed-based natural resource management.

### **Resources for More Information**

Bushkill Watershed Conservancy: [www.bushkillwatershed.org/](http://www.bushkillwatershed.org/)

Lake Wallenpaupack Watershed Management District:  
[www.wallenpaupackwatershed.org](http://www.wallenpaupackwatershed.org)

PA DEP: [www.dep.state.pa.us/info.htm](http://www.dep.state.pa.us/info.htm), select “Watershed Management.”

Pennsylvania Organization of Watersheds and Rivers:  
[www.pawatersheds.org/](http://www.pawatersheds.org/)

Pike County Conservation District: [www.pikeconservation.org](http://www.pikeconservation.org). Select “Water.” Includes links to Pike County watershed group web sites and digital watershed maps.

The Lackawaxen River Conservancy: [www.lackawaxenriver.org/](http://www.lackawaxenriver.org/)

Twin and Walker Creeks Watershed Conservancy: [www.twcwc.com/](http://www.twcwc.com/index.htm)  
[index.htm](http://www.twcwc.com/index.htm)

US EPA, Watershed Academy Web. On-line training in watershed management: [www.epa.gov/watertrain/](http://www.epa.gov/watertrain/).