



Water Resources Education Network
a project of the League of Women Voters of PA Citizen Education Fund

<http://wren.palwv.org> & www.sourcewaterpa.org

WREN April 2013 E-NEWS FEATURE

Source Water Protection Plans Key to Protecting Water Supplies from Agricultural Pollution

By Ellen Kiley and Julie Kollar

It is finally spring again in Pennsylvania. As shades of green begin to creep across the land, the farmers of our state get down to business -- and what a big business it is! Over 7.7 million acres of farmland produce \$5.9 billion in agricultural products each year, according to the PA Department of Agriculture. Adding associated businesses, like food processing and transportation, brings the total up to \$57 billion in revenue annually. These totals make farming the most economically important business in Pennsylvania.



Irrigation uses 10% of the water consumed in Pennsylvania every day. Photo courtesy of USDA Natural Resources Conservation Service.

Of course, water is essential to farming -- livestock drink it and crops may require irrigation, using roughly 10% of the water consumed in Pennsylvania every day (according to the Penn State College of Agricultural Sciences). Given its top place in our state's economy, it is no surprise that agriculture also presents a leading source of nonpoint source (NPS) pollution of the very water that farmers themselves and other families need. Agricultural NPS pollution includes runoff to waterways from farm fields, fertilizer and pesticides, soil erosion, and bacterial contamination from livestock.

Degradation of groundwater due to high nitrate levels, caused in part by animal manure and chemical fertilizer leaching into aquifers, is a growing concern for many water suppliers. Removing nitrates from water is an expensive and time-consuming proposition. Elevated levels of nitrates in drinking water can seriously harm infants, and cause other health impacts for humans and animals. While farmland plays an important part in the recharge of groundwater, officials are concerned that if nitrate levels increase, expensive treatment systems will be necessary to keep the water safe. The EPA standard for nitrate is 10 milligrams per liter for safe drinking water. Of the 236 public water supply wells that must currently treat for nitrate in Pennsylvania, one-half are located in Lancaster County, according to Bruce Lindsey, a hydrologist at the USGS.

Preventing agricultural pollution in the first place is the cheaper and easier solution. Studies have shown that trying to remove contaminants from a municipal water supply is far more costly than keeping them out in the first place. A good Source Water Protection (SWP) plan is an important tool that water suppliers and communities can use in this endeavor to avoid lengthy aquifer remediation, costly treatment or possibly replacement of a water supply well.

A great example of a source water protection plan in action comes from the Borough of Kutztown in Berks County. Kutztown, along with neighboring Topton and Lyons, received the first Wellhead Protection Demonstration Program Grant in the state in 1992 from the Environmental Protection Agency. Years later in 2007, a farmer with lands within the delineated recharge area of Kutztown's drinking water wells allowed a waste recycling company to spread biosolids, or sewage sludge, on his fields as a fertilizer. Biosolid application became controversial because of worries that heavy metals, infectious pathogens, and other

unwanted contaminants could make their way into the water supply. In addition to the private wells in the area, Kutztown's public water supply provides water for 20,000 residents.

Members of the community became concerned, and met with the borough's manager. After a series of meetings with local and state officials, Pennsylvania Department of Environmental Protection, Berks County Conservation District, the farmer, and waste recycling company, the Borough of Kutztown was able to convince the company to stop supplying the biosolids. After more negotiations, the farmer signed an agreement with the borough to not apply biosolids to his fields. With the scientific backing of the SWP plan in place, Kutztown Borough presented a clear, cogent argument for protecting the community's water, and got the results they needed.

The Eastern Lancaster County Source Water Protection Collaborative is also working within the community to prevent agricultural threats to water quality. With the help of a 2012 WREN Source Water Collaborative grant, two local water authorities (Blue Ball Water Authority and Western Heights Water Authority), four municipalities (Terre Hill Borough, New Holland Borough, and Earl and East Earl Townships) and the Lancaster County Planning Commission, formed the SWP collaborative "to work together to educate local officials, citizens and school children about ways to protect local drinking water sources from pollution," according to their project plan.

"The goal is to encourage action to mitigate risks in Eastern Lancaster County from potential contaminants, such as spills on transportation corridors, agricultural, urban runoff and other risks identified in the Source Water Protection Plans." All public water systems in Lancaster County have been invited to join the regional collaborative. Project Leader and Terre Hill Borough Mayor Robert Rissler says, "I believe we will get many more systems involved in the collaboration." This current project builds on a WREN grant from 2006, which allowed the group to purchase groundwater and surface water models for hands-on demonstrations regarding wellhead protection.

The new collaborative has begun an outreach campaign in the community. They have already distributed an updated educational brochure within their water supply areas. Kid-friendly educational kiosks about drinking water protection will soon be erected in four local parks as the weather improves. Public Water Supply signs have been erected, and local Emergency Management Services attended a training session on the importance of rapid spill response for water supply protection.

Perhaps most importantly, the collaborative has taken their water models into local schools to teach the importance of source water protection. Many of the county's residents are Old Order Amish or Mennonite; many of their children attend one-room parochial schools. The educational presentation has been welcomed into these small schools where, Mr. Rissler says, "the students are very interested in the program and like the hands-on part of the presentation." Introducing future farmers all over Lancaster County to SWP is a simple, practical way to ensure both clean water and great local food for generations to come.



Building on current efforts, in March 2013, Lancaster County was selected as one of three groups to participate in the national [Source Water Collaborative \(SWC\)](#) Pilot Program, a group of 25 partner organizations that include U.S. EPA, the U.S. Geological Survey, National Association of Conservation Districts, the National Rural Water Association, USDA, American Planning Association



Nitrogen is being applied to growing corn in a contoured, no-tilled field. Applying smaller amounts of nitrogen several times over the growing season rather than all at once at or before planting helps the plants use the nitrogen rather than have it enter water supplies. Photo courtesy of USDA Natural Resources Conservation Service.

(APA), and other influential groups.

Groundwater is a major source of drinking water in the growing county, with about 75% of the population served by municipal water supply. In addition to the challenges of population growth and agriculture as a major land use, parts of Lancaster County are underlain by carbonate aquifers. These porous aquifers, filled with voids and solution channels, complicate water management. Groundwater can flow very quickly through the channels (short times of travel) and readily carry contaminants from the surface to drinking water recharge zones.

The goal of the pilot is to combine the local leadership of the Lancaster County Planning Commission and other local stakeholders with the technical and logistical resources of the national SWC to invigorate the SWP efforts already underway in Lancaster County. *"Enhanced collaboration is a top strategic priority outlined in the Lancaster County Board of Commissioners' recently adopted [Blueprints: An Integrated Water Resources Plan for Lancaster County](#). Consistent with this plan, this pilot seeks to increase collaboration between water suppliers and key partners to implement best source water protection practices and outreach to stakeholders,"* according to the [SWC website](#).

Slated to run through December 2013, a cornerstone of the pilot will involve promotion of agricultural conservation practices that will be protective of water quality. The progress and lessons learned in Lancaster County during this intensive collaboration will hopefully spread across agricultural producers in Pennsylvania as local leaders share what they have learned and partnerships among all these concerned groups grow stronger.

Links:

More information on the Kutztown Borough resolved biosolids issue:

<http://readingeagle.com/article.aspx?id=83570>, <http://ssmgroup.com/files/content/Source-Water-Protection-Success-Story.pdf>

National Institute of Health Study: Nitrate intake and the risk of thyroid cancer and thyroid disease:

<http://www.ncbi.nlm.nih.gov/pubmed/20335813>

[Lancaster County Blueprints: An Integrated Water Resources Plan for Lancaster County](#) - 16.37MB PDF

[National Source Water Collaborative](#)

For Profiles about other source water collaborative efforts in Pennsylvania, visit the [WREN Features](#) page.

For More Information on Source Water Protection

For information on source water protection and PA DEP's **Source Water Protection Technical Assistance Program** (SWPTAP), download the [Fact Sheet on the SWPTAP program](#) and please visit www.sourcewaterpa.org and [EPA webpage](#). To learn more, subscribe to the [WREN newsletter](#) and stay tuned for news and resources.

PA Rural Water Association (www.prwa.com) is a valued Source Water Protection Partner, and offers assistance to medium and small public water systems for drinking water protection strategies.

The [American Water Works Association](#) established the ANSI/AWWA G300-07 AWWA Standard for Source Water Protection in 2007 and now has a [guidebook](#) available.

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