

## Soil & Water Conservation Districts (SWCDs)

There are 97 soil and water conservation districts making a difference in your community. No matter how big or small, each of the 102 counties is represented equally. From educating homeowners on practical utilization of water to helping rural landowners save soil and improve water quality; it takes everyone working together to protect our soil and water! Without these vital resources our communities cannot thrive!



The Illinois General Assembly will have the opportunity to address funding issues that have had devastating effects on many downstate programs when they return in January 2012 for the spring session.

Gaming bill sponsors have been working since the end of the 2011 veto session to craft a bill that will win the Governor's support. We respectfully request that members of the House and Senate give careful and positive consideration to supporting that measure.



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## Soil and Water Conservation Important to Lake Springfield

The following is a reprint of an article that appears in *LakeLine*, the newsletter for the North American Lake Management Society:

### Lake Springfield, Illinois: Utility and Agricultural Alliances for Source Water Protection

Lake Springfield, a 4,200-acre reservoir, is the largest municipally owned lake in Illinois. The lake's primary purposes are to serve as the source of drinking water for the City of Springfield and several nearby communities and as the source of condenser cooling water for the City's lakeshore power plant complex.

The City of Springfield, Office of Public Utilities (commonly known as City Water, Light & Power [CWLP]) owns and manages Lake Springfield and its surrounding 57 miles of shoreline property, which includes over 735 residential sites, eight public parks, and several public boat docks and launches. The lake and lake-area parks serve as a major recreation center for central Illinois, hosting some 600,000 recreational visitors each year. A 265-square mile watershed stretching 10-15 miles southwest of the lake is approximately 88 percent agriculturally oriented.

In the early 1980s, large wetland areas dominated by American lotus were forming in the upper reaches of Lake Springfield. While, ecologically, this might seem like a good thing, the underlying fact, denoted by a 1984 sedimentation study of the lake (Fitzpatrick et al. 1985), was that the lake was filling in due to sedimentation. Thirteen percent of the capacity of the original reservoir had filled with 7,700 acre-feet – 6.5 million tons! – of highly valued central Illinois topsoil since the lake was built in 1935. The City chose to dredge these upper reaches of the reservoir to re-establish these natural sedimentation basins at a cost of \$7.8 million so

it is no surprise that when the Lake Springfield Watershed Resource Plan was first compiled in 1990, sedimentation was the primary focus, followed by nutrient (phosphorus and nitrogen) concerns. Total phosphorus, along with nitrate, is a fertilizer for unwanted algae and other plant growth and moves largely in concert with eroded soils. High nitrate levels also represent a drinking water concern due to the potential for the occurrence of methemoglobinemia (blue baby syndrome) in young infants. While Lake Springfield nitrate concentrations have never exceeded the 10 mg/l drinking water standard, high values seen, which approach the drinking water standard, suggest the potential exists that higher nitrate concentrations could occur.

The only mention of pesticides in the early version of the plan was a concern about the persistence of historically used pesticides or their breakdown products like dieldrin, chlordane, and heptachlor epoxide. Not until a spike of atrazine in Springfield's drinking water in 1994 did currently used pesticides hit the radar. Fortunately, the alliances formed ten years earlier between CWLP and the Sangamon County Soil and Water Conservation District formed the basis of an active and on-going communication between the agricultural community and the drinking water utility, which has resulted in many programs to reduce sediment, nutrient, and pesticide runoff to Lake Springfield that persist today. Having all the stakeholders at the table of the Watershed Planning Committee has been key.

### Lake Springfield Watershed Resources Planning Committee

The Lake Springfield Watershed Resources Planning Committee has had participants from many relevant perspectives including area farmers and landowners, retail farm chemical and fertilizer dealers, University of Illinois Extension, farm

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managers, Illinois Departments of Agriculture and Natural Resources, Illinois Environmental Protection Agency (IEPA), Lincoln Land Community College, Sangamon County Farm Bureau, Springfield Lake Shore Improvement Association, Natural Resources Conservation Service (NRCS), Sangamon County Soil and Water Conservation District (SCSWCD), CWLP, and various agribusinesses and organizations. Having all these entities sharing ideas and solutions provides the needed expertise and perspective to achieve the desired goals.

## Sedimentation Still the Primary Focus

Despite having one of the lowest capacity loss rates of the large Illinois reservoirs at 0.26 percent per year, 137,000 tons per year of sediment had eroded from the Lake Springfield watershed, of which an average of 130,000 tons settled in the lake each year since it was constructed in 1935 (Fitzpatrick et al. 1985). Concentrating on erosion prevention has taken the form of numerous cost-share programs and research projects to demonstrate and effectively practice erosion control such that the erosion rate has declined by 7 percent over a 20-year period based on the most recent sedimentation survey (Brill and Skelly 2007).

## City Cost-Share Programs

Since 1983, cost-share monies have been made available from CWLP to the SCSWCD. Initially a \$10,000 grant to purchase a no-till planter for corn was provided when no-till farming was in its infancy. The SCSWCD rented the equipment at low cost to farmers so they could try no-till prior to making the investment in new equipment. Similarly a no-till drill for planting soybeans was purchased. These programs ran their course to a time when the use of no-till equipment became common in the area. No-till equipment differs from historically "conventional" equipment (no-till equipment might be called conventional these days) in that it can plant through the crop residue of the previous season without plowing. Reduced disturbance of cropland soils along with the protective cover of crop residue (raindrops hitting residue versus raindrops hitting bare soil) results in less movement of topsoil and hence, less sedimentation during rainfall events.

**Table 1.** Cost-share/Grant Monies (\$3,527,941) Used in the Lake Springfield Watershed Since 1983

USDA c/s	\$1,868,63	CWLP c/s	\$483,532
Sangamon County Board	\$36,250	C-2000	\$25,190
C-FAR	\$105,000	Novartis	\$630,000
Section 319 - IEPA	\$204,653	Monsanto	\$10,000
Section 319 - CWLP	\$142,183	IL Corn Growers	\$10,000

The City program evolved to provide money to cost-share traditional soil conservation practices. Conventional practices included the installation of grass waterways, terraces, and grade stabilization structures including toe walls, block chutes, sediment basins, and ponds within the watershed Stream bank stabilization was also an approved measure. The cost-share amount varied based on the practice installed, but largely 50-65 percent of actual cost, not to exceed \$3,500 per project was the norm. The SCSWCD verified that a given project met NRCS standards and specifications. Annual conservation grants from CWLP for cost-share were typically \$10,000-\$40,000. At the discretion of the SCSWCD Board, up to 20 percent of a given yearly grant could be used for administrative purposes, which included program advertisement, sign-up, on-site investigation,

survey, design, final check, and record keeping. Compared to costs expended on dredging 3.2 million cubic yards of deposited sediment from the upper end of Lake Springfield in the early 1990s (\$3.75 per ton), the expense for these cost-share programs was less than \$1 per ton to keep the soil out of the lake.

## State-allocated 319 Grants

Clean Water Act Section 319 monies awarded in Illinois by the IEPA were used for a demonstration project for urban erosion control methods in a new subdivision and a buffer strip project in the Lake Springfield watershed with the project cost matches provided by the City. The buffer strips program resulted in 75 contracts with landowners enrolling 600 acres along 29 miles of unprotected stream corridors. This program resulted in annual pollutant reductions of 6,500 tons of sediments, 8,700 pounds of phosphorus, and 18,000 pounds of nitrates. In addition to the grant expenditures, the USDA, through the Sangamon County Farm Service Agency, will provide \$1.2 million in direct payments to these local producers under the Conservation Reserve Program (CRP) filter strip contracts. One can hope that the conservation commitment demonstrated and habitat created with these enrollments and the placement of these lands primarily in grass filter strips, riparian buffers, and native grasses will continue well beyond the expiration of the 15-year CRP contracts.

## The Value of the Soil and Water Conservation Districts (SWCDs)

One needs a scorecard to track all of the programs available to landowners through their local SWCD. Programs in Illinois such as State Partners for Conservation (CPP), State Acres for Wildlife Enhancement (SAFE), and the Conservation Reserve Enhancement Program (CREP) implemented through the SWCD provide financial incentives to place conservation practices on the landscape. CPP provides cost-share assistance to producers to maintain or rebuild existing conservation practices such as grassed waterways, water and sediment control basins, grade stabilization structures, etc. SCSWCD's SAFE grant provides enrollment of 2,000 acres in Sangamon County to establish wildlife habitat for the northern bobwhite quail and other upland birds on qualifying cropland of any measurable size. Since 2000, SCSWCD has enrolled 69 state CREP easements (5,400+ acres); 66 of them are permanent easements. The 100-year floodplain land in these CREP easements will never be farmed again or developed. By taking environmentally sensitive land out of production, all of these conservation programs are very effective at improving water quality.

The SCSWCD established another innovative measure with the formation of a not-for-profit arm, The Sangamon Conservancy Trust (SCT), which can apply for and administer grants that cannot otherwise go to a governmental agency, can accept donations, establish membership opportunities, accept and hold conservation easements, and be the beneficiary of charitable remainder trusts. The SCT has received \$45,000 in the last nine years for prairie, wetlands, and woodlands habitat restoration and maintenance. They also currently hold 8 agricultural conservation easements comprising 2,712 acres, which are protected from residential, commercial, and industrial development forever.

## An Atrazine Success Story

A near violation of the IEPA drinking water requirement of an average running quarterly atrazine concentration of 3 ppb or



## Soil and Water Conservation Districts Assist Others to Protect, Maintain, Enhance and Improve their Environmental Resources

- The 97 SWCDs are continually involved in assisting local interests to maximize benefits from essential environmental resources.
- SWCDs work with municipalities, townships, counties, rural and urban land owners, developers and land users to protect natural resources
- Through application of inexpensive conservation techniques, SWCDs have saved tax payers countless millions of dollars to maintain soil and water resources on which they depend



**NOTE:** SWCDs DO NOT have taxing authority and must rely on state source funding to employ staff to administer programs.

Gaming expansion being considered by the 97th General Assembly has the potential to create thousands of jobs and fund SWCDs at a sustainable level.

less in CWLP's finished drinking water drove the Watershed Committee to coordinate research and education efforts with area producers and fertilizer and chemical dealers to find ways to continue using the popular herbicide, which manages broadleaf weeds in cornfields. A large, five-year, field-scale research project in the lake watershed was conducted by the SCSWCD funded by the manufacturer of atrazine, then Novartis Crop Protection, Inc., in cooperation with the U.S. Department of Agriculture, Agricultural Research Service Soil Tilth Lab; NRCS; Illinois State Water Survey; University of Illinois Extension; and CWLP to evaluate Best Management Practices' effectiveness on atrazine and other pesticide and nutrient movement, and erosion control.

**Table 2.** Powdered Activated Carbon Cost to Remove Atrazine from Lake Springfield Raw Water.

Year	\$ spent for PAC	\$/ton for PAC	Highest concentration of atrazine (ppm) at intake
1994	143,000	570	14.0
1995	140,000	700	17.0
1996	134,000	880	29.5
1997	6,000	880	4.0
1998	54,000	880	25.0
1999	48,000	820	6.1
2000	26,000	840	7.5
2001	30,000	840	5.5
2002	34,000	675	14.0
2003	15,000	675	4.2
2004	0	570	2.5
2005	0	555	1.7
2006	0	675	1.7
2007	0	920	0.7
2008	5,000	1120	5.3
2009	22,000	1320	4.7
2010	34,000	1260	3.7

Ultimately, a focus on implementing two-pass atrazine application programs, reducing rates for any single application, incorporation of alternative chemicals, incorporation of buffer strips, and no-till methods of farming have all helped achieve compliance for the City and reduced the need for the City to spend large sums on powdered activated carbon (PAC) to remove atrazine from the raw water (Table 2). The apparent slippage on the success in the last three years is largely due to three consecutive extremely wet years, an increase in corn acreage (now about 80 percent corn versus a historic ratio of 50 percent/50 percent corn/soybeans) in recent years, and a

significant increase in the price of PAC. Maximum concentrations of atrazine at the treatment plant intake have remained relatively low. The City monitors, with immunoassay techniques, the flow of atrazine through the reservoir, such that real-time data are available to adjust PAC feed rates as needed to keep the final pesticide concentration in check.

### Still More Work

Nitrate levels in Lake Springfield still remain a mystery with high levels approaching the 10 mg/l drinking water standard in some years and relatively low concentrations in other years. Springfield would like to avoid the construction of an expensive ion exchange system to blend low nitrogen water for dilution that was required of a neighboring water supply when levels went above the drinking water standard. More work on understanding transmission modes, promotion of greater use of nitrogen stabilizers, or more spring applications of nitrogen versus the fall applications might be in the future. Additional reduction of sediment loadings from both urban and rural settings is also still an ongoing goal of the Watershed Committee.

### Conclusions

Several factors have been significant to the watershed successes enjoyed. The strong leadership among the Watershed Committee participants has been critical to several successes. For example, with regard to atrazine use, the strong relationship among the agricultural leaders on the committee with key representatives of the chemical and fertilizer dealers represented, and subsequently the trusting, long-term relationships between the chemical dealers and their customers resulted in changes to customary practices of watershed farmers and better methods to accomplish weed control without the environmental consequences. Strong initiative, particularly with respect to SCSWCD grant writing and program administration, and the financial commitments from various cost-share partners (Table 1), was important to getting most programs implemented. We are strong proponents of our SWCD. As those who balance budgets eye programs for cuts, the land and water resources of our states will suffer the consequences should the SWCDs and the types of programs they implement be viewed as expendable. Strong, active partners in conservation yield results for communities. Lake Springfield is a successful case in point.

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