



TECHNICAL SERVICE PROVIDER NETWORK
MAKING CONSERVATION A PRIORITY
An Organization Developed by TSP's for TSP's

**Lake Springfield Watershed
Springfield, Illinois
Nutrient Management
Project**

by Dennis J. Godar, CPAg/TSP

Background:

Lake Springfield is the largest municipality-owned lake in Illinois and provides drinking water for approximately 165,000 people and is a major recreational area for boating, fishing and water sports. Water consumption averages about 22 million gallons per day. The Lake Springfield watershed consists of 265 square miles, or 169,160 acres. 73% of the watershed area is cropland.

In 2017 the Lake Springfield Watershed Resource Planning Committee and Sangamon County Soil & Water Conservation District commissioned a watershed-based plan with the following goals and objectives:

1. Reduce surface water runoff from farm fields.
2. Identify and secure stable cost-share funding sources for implementation of BMPs.
3. Improve environmental education and outreach efforts to the public.
4. Reduce urban stormwater runoff.
5. Meet the 45% reduction goal for nutrients, as outlined in INLRS.
6. Improve groundwater quality.
7. Meet IEPA's TMDL for phosphorus in Lake Springfield (IL_REF) and Sugar Creek (EOA_04).



8. Meet IEPA's TMDL for TSS and aquatic algae.
9. Enhance the quality and quantity of wildlife habitat.
10. Promote

- prime farmland preservation and protection.
11. Support controlled urban development.
12. Restore and improve aquatic habitat.
13. Improve recreational opportunities.

Best Management Practices

Site specific BMPS, which can help meet some of the goals of the watershed-based plan have been adopted by farmers in the watershed through education efforts, voluntary participation and BMP incentive programs funded by NRCS programs, City, Water, Light & Power Company and 319 grants from the Illinois EPA.

The BMPs include: Cover Crops, Nutrient Management, Grass Buffer Strips, Grassed Waterways, WASCObS, Tile Drainage Management and others. This article discussed two of the site-specific BMPs and potential impacts on water quality.

Nutrient Management Plans

In 2018 & 2019 we worked with farm managers and farmers in the

Two Great Opportunities

Annual Meeting
Sept. 6, 19
Burlington, IA



TSP Training Conference
Nov. 13-15, 19
Murfreeboro, TN



Both events are designed with education and training in mind, and will provide the necessary assistance in TSP certification, re-certification and CCA credits. Experienced TSP's will provide much of the training, and be prepared to answer your technical and business related questions for CAP Planning and working with USDA-NRCS staff.

watershed to develop Nutrient Management Plans for farms within the Lake Springfield Watershed. The NMP project included 7032 acres in the watershed and 39 farms.

The 4-Rs, Right Source, Right Rate, Right Time, Right Place

The 4 Rs of Nutrient Management are widely adopted by farmers in the watershed especially regarding nitrogen usage because it makes good sense to be efficient with plant nutrients. Practicing the 4-Rs can improve a farm's *profitability* and improve *water quality*; it does not involve choosing one over the other.

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The Lake Springfield Watershed Maximum Return to Nitrogen rate tool was used to recommend nitrogen rates for corn production. The MRTN rates for 2019 ranged from 165 to 192 lbs/acre for corn following soybeans and 199 to 232 lbs/acre for corn following corn.

Pattern-tiled fields pose the greatest risk for nitrogen leaching in the watershed. Only a few of the fields in this project had pattern tile drainage systems installed. To reduce N leaching risks from fields with high Leaching risks the following BMPs are followed:

- Lowest risk is spring applied N; preplant or at planting plus side-dressed.
- Fall applied N should be applied with a Nitrification inhibitor and no more than half of the recommended nitrogen should be applied in fall.

Soil Tests: All of the farms in the NMP project had soil tests, a few of the farms needed to update soil samples this year.

- Most soil sampling was on 2.5-acre grids, several had 5.0-acre grids.
- Approximately 25% of the farms were using some variable rate applications.

Soil Phosphorus: Average soil P levels for the 39 NMPs was: 64.4 lbs/acre.

- Soil tests indicate that 39.7 % of all grids sampled had soil P > 65 lbs/acre.
- 2729 of the 7032 acres had no recommendation for Phosphorus fertilizer.

Soil Erosion: Average soil loss across all fields was 1.2 tons per acre.

Cover Crops: Approximately 25% of the fields were planned to have cover crops planted in fall 2019. As part of the NMP project, we did

a comparative analysis for soil loss with or without cover crops. For the fields in this project, we calculated average soil losses if cover crops are planted would be reduced by 33% or 0.4 tons per acre per year.

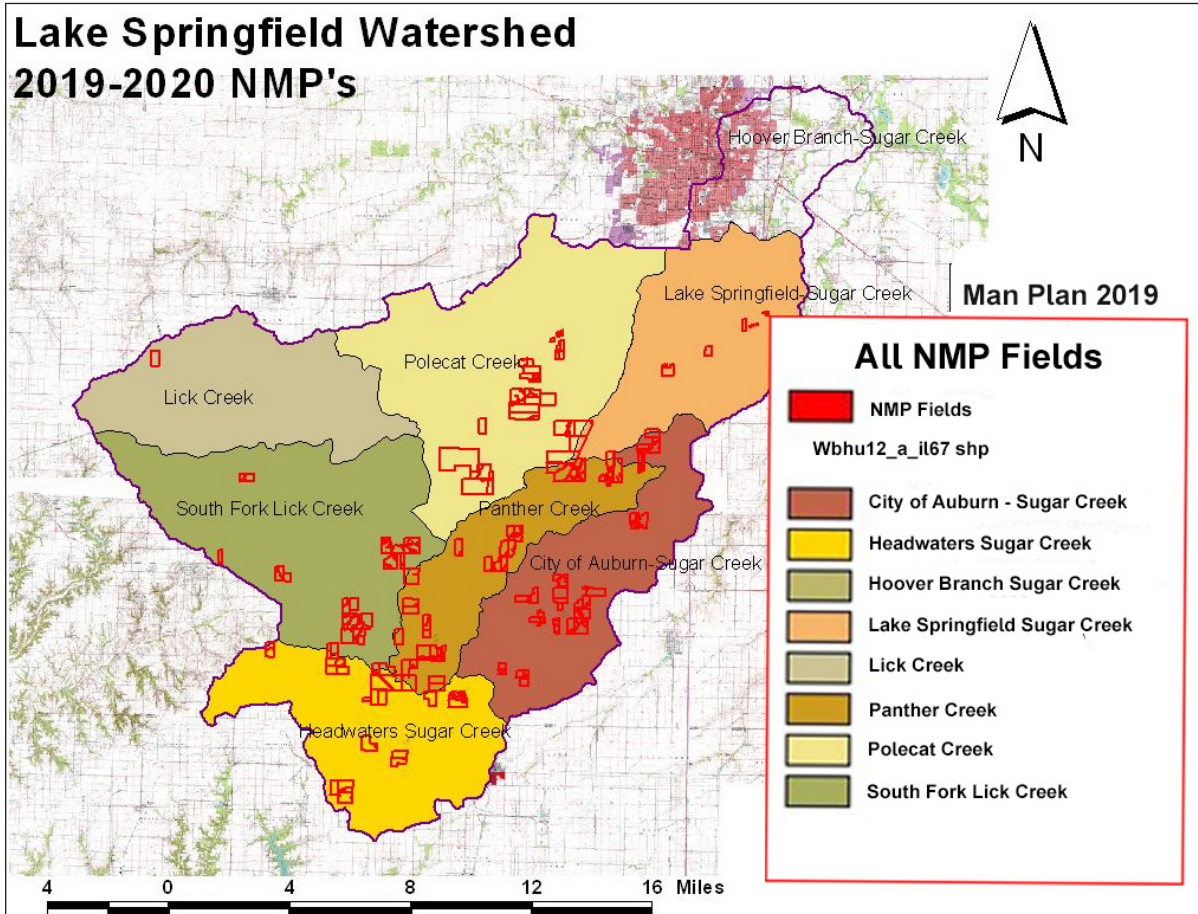
For the 7032 acres in the NMP project, cover crops have potential to reduce soil losses by 2867 tons annually. This amount of eroded soil is equivalent to 120 semi-loads of top soil contributing to sediment and nutrient loading for the Lake Springfield Watershed.

Phosphorus Losses: Potential soil loss reductions from implementation of cover crops would also reduce Phosphorus losses by 0.4 lbs/acre, (2567 lbs for 7032 acres). This equates to 6.4 tons of DAP fertilizer. That's not a lot of Phosphorus from a crop production view, (\$0.50/acre); however, 0.4 lbs/

acre of Phosphorus represents 25.6% of average annual P loading to the watershed.

- Estimated total annual Phosphorus load to watershed from cropland surface runoff and tiles = 194,763 lbs. (Northwater-2017)
- That's an average of 1.56 lbs/acre of Phosphorus for the 124,522 acres of cropland.

NOTE: The Lake Springfield water quality standard for Total Phosphorus concentration is 0.05 ppm. The Nitrate standard is 200 times higher at 10.0 ppm.



Notes from the Executive Director

by Joe Lally

After 2 years of working through the process of obtaining a USDA-NRCS grant to enable a low-cost training course for TSP's we have achieved success. This success has been largely due to the Tennessee TSP Coordinator's effort – Danny Jones, plus the support of his entire Tennessee state office staff. The dates for this course will be November 13-15th, in Murfreesboro, TN. We will be publishing the details and agenda's soon.



We have all heard of, or know someone, who has experienced challenges in the registration, re-certification process. Tim Pilkowski, TSP Team, from the National NRCS staff will outline the current process to facilitate TSP registrations and certification. He will also update attendees on the TechReg website and Aglearn. His focus will be with new TSP's and TSP Coordinators. The Middle Tennessee State University Research farm will be the site of the farm visit, including a dairy herd.

The TSP Training Course will offer technical guidance on CAP 102 (CAP104), CAP 106, and CAP 138 (CAP114). This initiative will focus on Third-Party plans written by TSP's to

arrive at consistency, efficiency and clarity. These issues will continue as long as communication between local NRCS staff, farmers, and TSP's improves. One of our primary goals of this training course is to discuss and recommend ways to improve our output products. This course will provide a forum for networking, steps for us to take to improve, and most of all, upgrade our approach to communication. We are all busy! Let's take the initiative to upgrade our own career results.

Attend the TSP Training Course in Murfreesboro. You'll be glad you did !!

New Poultry Project Commands Excellence in Nutrient Management

By Andy Scholting
President/General Manager
Nutrient Advisors

When Lincoln Premium Poultry selected Fremont, NE as the site for their fully integrated poultry operation, environmental stewardship was one of the key priorities in their grower contracts.



Lincoln Premium Poultry (LPP) will begin processing broiler chickens in September of 2019 that will primarily supply rotisserie chickens for Costco's western US stores. The approximate \$400 million project includes a processing plant, feed mill, and hatchery on one campus south of Fremont. Lincoln Premium Poultry has contracted with nearly 100 growers to grow pullets, breeders, and broiler

chickens to supply the project.

Most of these new contract growers have not raised poultry previously and many have not been in the livestock business at all. This project has been a great opportunity for growers to diversify the farm, have steady revenue, bring or keep next generations on the farm, and utilize the litter as fertilizer to grow crops. As a matter of fact, one of the factors that helped LPP select eastern Ne for the project was the good fit of contract production with farms with low fertility and low organic matter soils that could greatly benefit from the addition of the poultry litter fertilizer.

LPPs focus on environmental stewardship led them to include very high standards for their new contract growers. One of those requirements is that they would implement and follow a state approved nutrient management plan. They not only required state approval but also required that their growers have land available to utilize

all of the nitrogen that their poultry site will produce and all of the Phosphorus as well. These high standards have also been helpful in alleviating environmental concerns of local residents and planning groups.

LPP contracted with our company, Nutrient Advisors, to work with their growers to help navigate through the permitting processes as well as to develop their nutrient management plans to meet both internal and external requirements. Nutrient Advisors will work with the growers on an ongoing basis to ensure that their growers are in compliance with their permits and contracts. We will also educate and strategize with growers to ensure that they are achieving maximum benefit from this new fertilizer that they will be producing. This ongoing partnership will help farmers understand and implement

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their nutrient management plans but also hold them accountable to the high environmental standards of their grower contracts.

This project has been very rewarding to work with growers with varying experience to understand the risks and rewards of utilizing livestock manure on their farms. Our staff experiences, along with training as TSPs and CCAs, has proven fruitful to help in a wide array of circumstances. This project encompasses over 15 counties in eastern Nebraska and western Iowa. The group of farmers includes extreme diversity from cultural practices, topography, soil types, irrigation methods, commercial fertilizer practices, existing manure sources, crops, and crop rotations to name a few. Most of the farms are grain operations that are excited to add diversity and a manure fertilizer resource to their farm.

The reality in this project is that all parties want the same thing. Agronomics, economics and the environment all benefit from 4R nutrient management. All three of those platforms have incentive to put the right product, at the right rate, at

the right time and at the right place. If we can accomplish all of that, then we end up with the highest yields with the highest profits, the cleanest water, and the litter has the highest value because all nutrients are being utilized and, therefore, valued.

The specifics of litter management with this project include composting the litter inside the broiler houses. The farms will house birds for approximately 6 weeks and then will have a 2-week break. During that break period, farmers will place litter into compost windrows inside the houses. The material will heat up, and then be turned approximately one more time before being re-spread for use as litter and bedding for new flocks. This system is very safe and keeps all litter under roof until the farmer is ready to remove it for land application. This also gives the farmer great flexibility to utilize nutrients at the right place and at the right time. After being composted several times, the litter is very dry and uniform.

As a result of this process, the large majority of the nitrogen is in the organic form and therefore very stable when applied. The organic nitrogen becomes plant available slowly throughout the growing season with the accumulation of heat and

moisture. I like to think of the slow mineralization of organic nitrogen as an IV for crops. It provides crop with available nitrogen slowly as it needs it and has much less risk of volatilization and leaching compared to commercial nitrogen fertilizers.

The phosphorus and potassium in the litter will be highly concentrated which minimizes the overall tons of litter that will need be handled. The concentration also allows the growers to justify greater transport costs to reach the furthest fields in their operation. This greatly increases the overall footprint and promotes greater utilization of all nutrients. Again, applying the right product to the right acre.

There are many aspects to this project and it has certainly made us better consultants by expanding our experiences and meeting the highest expectations to do it right for all parties. This includes the general public which expects and relies on clean water, air, and good quality of life. It is great to be part of a network of quality consultants and TSPs across the country to learn from each other and to uphold the highest accountability to do nutrient management right.

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