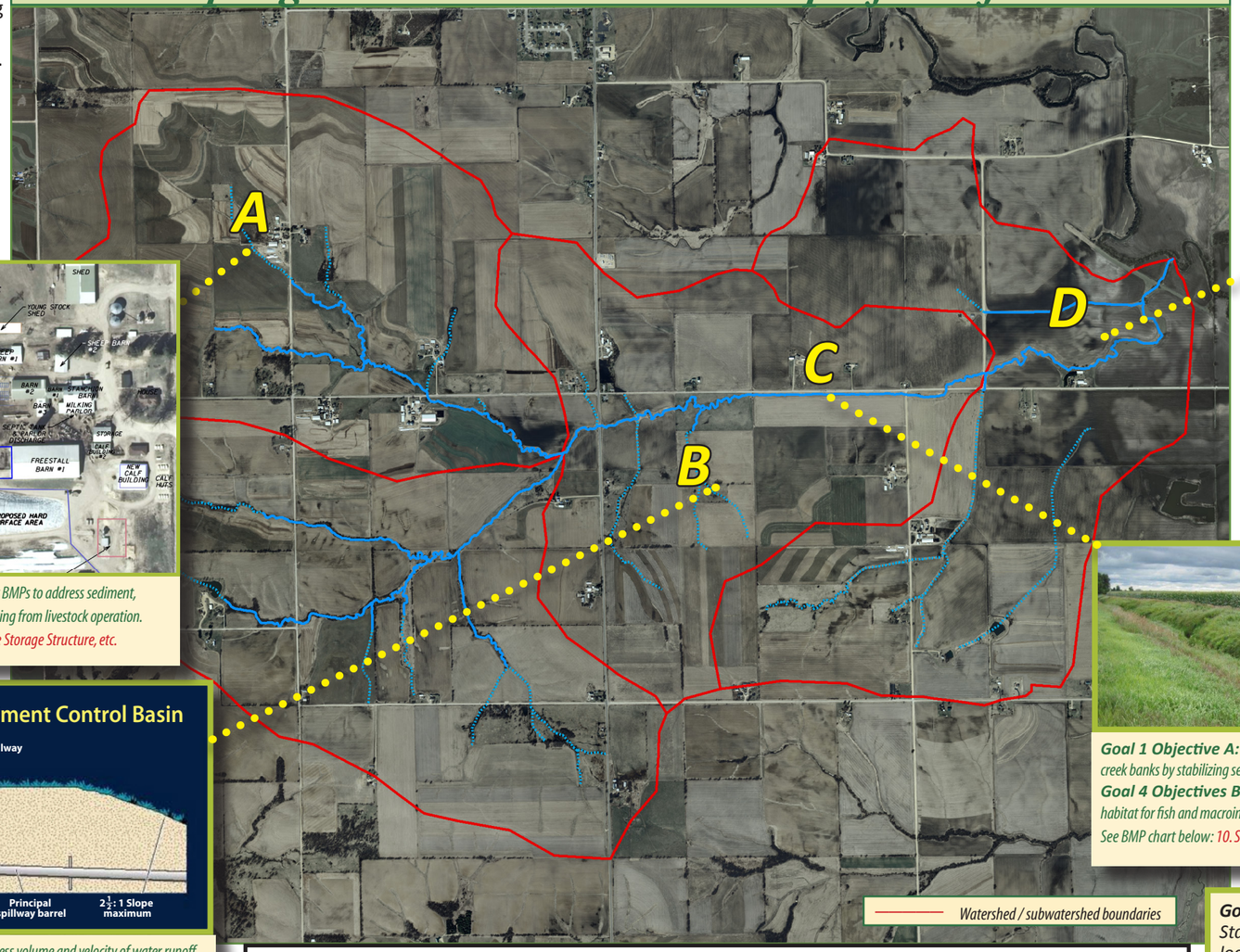
Goals for Spring Branch of Yellow Creek

The following goals were written and adopted by the Planning Committee - those who live and work in the watershed - and are the result many meetings and hours of refinement efforts.

1. *Reduce the sediment and nutrient loading from creek banks.*
2. *Reduce sediment and nutrient loading from livestock and row crop operations.*
3. *Address volume and velocity of water runoff to enhance water quality.*
4. *Utilize practices that protect and/or enhance wildlife habitat.*
5. *Consider landowner needs with each project and practice.*
6. *Maintain and support a sustainable farming community.*

Spring Branch Watershed and Site Specific Projects



***A** The livestock producer at Site A has expressed an interest in implementing BMPs to his operation to better manage livestock waste. Phase 1 would extend the freestall barn #1 to the west, removing the existing manure storage structure and remodeling of freestall barn #1 as required. The proposed expansion will house approximately 120 to 140 of the existing cows. A manure transfer system would also be required to transfer the waste from the end of the barn to a new waste storage structure. Needed storage is estimated to be approximately one million gallons. Also included in Phase 1 is construction of a hard pavement surface, a berm, and a commodity shed -- practices that address runoff.*

Photo: Wagner Consulting

Goal 2 Objective D: *Apply BMPs to address sediment, nutrients, and pathogens originating from livestock operation.*
See BMP chart below: 12. Waste Storage Structure, etc.

***B** At Site B, a private landowner has expressed interest in reducing water flow, slowing water velocity, and addressing erosion. A water and sediment control basin or level spreader could be constructed to detain water and settle sediment and nutrients on-site and then meter water out slowly through a subsurface drain or grassed waterway to the main branch of the stream.*

Goal 3 Objective B: *Address volume and velocity of water runoff*
Goal 4 Objective D: *Utilizes practices that protect and/or enhance wildlife habitat for waterfowl.*
See BMP chart below: 13. Water and Sediment Control Basin

***D** Near the confluence of Spring Branch and Yellow Creek, landowners representing a family of a Centennial Farm have expressed an interest in constructing a pond to capture sediment and nutrients, while also serving as habitat for wildlife. A one to three-acre pond could be constructed if site conditions allow. The stream could possibly flow directly into the pond; or water could be routed to the pond, filtered, then routed back to the stream. A pond at this location would capture sediment and nutrients that were in the stream before they enter the Yellow Creek.*


Photo: Larry Milliron

Goal 3 Objective B: *Addresses volume and velocity of water runoff*
Goal 4 Objectives B, C, D, and E: *Utilize practices that enhance wildlife habitat for aquatic life.*
See BMP chart below: 14. Pond

Goal 1 Objective A: *Reduce sediment and nutrient loading from creek banks by stabilizing severely eroded sections.*
Goal 4 Objectives B & C: *Utilize practices that enhance wildlife habitat for fish and macroinvertebrates.*
See BMP chart below: 10. Streambank Stabilization

***C** The property owner, a public entity, is interested in addressing erosion issues and slowing water velocity. The narrow footprint in which to work makes streambank stabilization is a likely practice. Methods of water velocity reduction and stream channel restoration, such as weirs and riffles, could also be considered.*

***At the time of this printing, four site-specific projects** were volunteered by interested landowners in the watershed. On the map above are those projects and the goals they target. Below are watershed-wide projects and practices collectively agreed upon to be appropriate by the landowners involved with the beginning of this process.*

***Goals 5 & 6 have been adopted by the watershed community.** Stakeholders have agreed that they will work collectively with local and state officials to address their desire to maintain the farming heritage and community:*

5. *Consider landowner needs with each project and practice.*
6. *Maintain and support a sustainable farming community.*

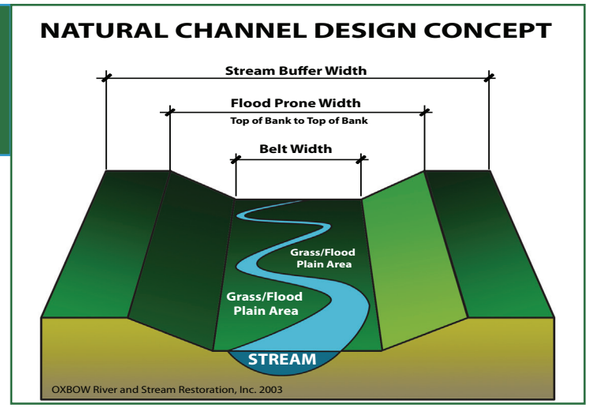
Summary of Best Management Practices (BMP) Recommended for Implementation: Watershed-wide and Site-specific (see full plan at blackhawkhills.org or olsonecosolutions.com)

Ref #	Best Management Practice Name	Potential Acres/ # of Practices	Unit Cost Est	Pollution/Nutrients Addressed	EPA Priority
1.	**No-Till (Convert from Conservation Till)**	2,120 ac.	$20	Sediment, Phosphorous, Nitrogen	High
2.	**Cover or Green Manure Crop**	3,260 ac.	$40	Sediment, Phosphorous, Nitrogen	High
3.	**Filter Strip**	82 ac.	$940	Sediment, Phosphorous, Nitrogen	Medium
4.	**End-Row Conversion**	17 ac.	$920	Sediment, Phosphorous, Nitrogen	Medium
5.	**Field Borders**	17 ac.	$920	Sediment, Phosphorous, Nitrogen	Medium
6.	**Grassed Waterway**	16 ac.	$5,250	Sediment, Phosphorous, Nitrogen	High
7.	**Grade Stabilization Structure**	13 #	$ 5,400	Sediment, Phosphorous, Nitrogen	Low

Ref #	Best Management Practice Name	Potential Acres/ Feet /# of Practices	Unit Cost Est	Pollution/Nutrients Addressed	EPA Priority
8.	**Prescribed Grazing**	196 ac.	$ -	Sediment, Phosphorous, Nitrogen	Low
9.	**Stream Channel Stabilization** (e.g. riffles)	600 ft.	$80	Sediment, Phosphorus, Nitrogen	Low
10.	**Streambank Stabilization**	29,073 ft.	$2,325,840	Sediment, Phosphorus, Nitrogen	Med
11.	**Subsurface Drain**	2,300 ft.	$ 5	Sediment, Phosphorus, Nitrogen	Low
12.	**Water and Sediment Control Basin**	1 ac.	$ 2,000	Sediment, Phosphorus, Nitrogen	Med
13.	**Waste Storage Structure, etc.**	1 #	$1,060,000	Phosphorus, Nitrogen	High
14.	**Pond**	1 #	$ 125,000	Total Suspended Solids	High

Spring Branch Watershed BMPs

There are well over 100 Best Management Practices (BMPs) listed in the Natural Resources Conservation Technical Field Guide. The stakeholders have chosen 14 they feel are achievable in this watershed. Four of those (see other side) will be boots-on-the-ground soon. Below are 10 additional BMPs the farmers plan on continuing to implement in the years to come and have the goal of implementing 20% of the areas possible for each BMP.



Watershed-wide Projects Selected by Stakeholders to Further Reduce Nutrient and Sediment in Spring Branch *

Best Management Practice	Description
No-Till (Convert from Conservation Till)	*Currently, all of the row crops in the watershed are being cropped using either conservation tillage, (2,120 acres) or no-till (824 acres). Conservation tillage is a broad definition which includes no-till and several other tillage methods. In this case, conservation tillage in the watershed is categorized as methods other than no-till. Conservation tillage is any tillage method that leaves crop residue of 30% or greater. No-till is a method of tillage that leaves 70% or greater crop residue. Converting conservation tillage methods to no-till would result in even greater reductions of sediment and nutrient loss. Leaving a residue cover of 70% reduces erosion by more than 90% when compared to a bare field whereas, while leaving only 20% to 30% after planting reduces soil erosion by approximately 50%.*
Cover or Green Manure Crop	*To combat soil and nutrient loss, cover crops primarily hold the soil and improve soil structure, blanketing entire fields rather than rows. There is potential to use cover or green manure crops on 2,944 acres of cropland throughout the watershed. Cover crops and green manure are often used interchangeably but are different terms, though related. Green manure can be fresh cover crops in spring and plowed under to increase available nutrients and build organic matter. Cover crops are planted between successive production crops, or companion- planted or relay-planted into production crops. The three best cover crops for this region are wheat, triticale, and winter cereal rye. The window for planting is fairly small and can be tricky. Cover crops should be planted before November in this county and need some growth before winter. They can be seeded on entire fields, between rows, or just end rows.*
Filter Strip	*Within a 100-foot width of the stream and along a length of 72,750 feet, or 167 acres of cropland could be converted to filter strips. Filter strips are permanently designated plantings to treat runoff and are not part of the adjacent cropland's rotation. They buffer the environmentally-sensitive stream from sediment, particulate organic matter, and dissolved contaminants.*
Grassed Waterway	*There are several areas where a shaped or graded channel could be established with suitable vegetation to convey surface water at a non-erosive velocity. The purpose of a grassed waterway is to convey runoff, prevent gullies and improve water quality. This practice is applied in areas where added water conveyance capacity and vegetative protection are needed to prevent erosion and improve runoff water quality resulting from concentrated surface flow. There is potential for installing 16 acres of grassed waterways throughout the watershed to improve water quality.*
Conversions of End Rows	*At the edges of crop fields is an end-row. These areas are row crops in the opposite direction of the rows of the field. Since rows are usually planted parallel to a slope, the end rows run up and down the slope. Thus, there is no vegetation breaking the energy of runoff traveling down the slope, and more erosion occurs. Taking extra conservation measures, such as no-till within end row only would reduce the sediment and nutrients lost with erosion. There is potential to convert 17 acres of end rows in the watershed.*
Field Borders	*Field borders are like filter strips, except that they are located at the edge of crop fields rather than at the edge of the stream. They provide an interruption between fields that capture sediment carrying nutrients from field to field and eventually into the stream. There is potential to install 17 acres of field borders in the watershed.*
Grade Stabilization Structure	*Grade stabilization structures are for areas where water is not running continuously; they are intended to stabilize the grade and control gully erosion. Structures are typically either a drop spillway or a small dam and basin with a pipe outlet built across a gully or grassed waterway. They drop water to a lower elevation while protecting the soil from gully erosion or scouring. Structures, earth embankments, and vegetated spillways need to be protected from livestock with fencing.*
Prescribed Grazing	*A planned grazing system improves the grass conditions, increases livestock production, improves wildlife habitat and reduces soil erosion and conserves water. Planned grazing systems vary. Common systems are: 1) two-pasture, one-herd; 2) Three-pasture or four-pasture; 3) one-herd system; 4) Merrill-four pasture system; 5) High-intensity; 6) low-frequency; 7) Short-duration (Management Intensive Grazing); and 8) Cell-grazing system.*
Stream Channel Stabilization (e.g. riffles)	*Streams are dynamic and constantly working toward a natural balance with four primary components: water, sediment, energy and vegetation. The balance of these components becomes altered when a stream is channelized. Channelization often decreases the length of the stream. This results in increased water velocity (energy), streambank slope, and stream bed and stream bank erosion (sediment); a reduction in the surrounding landscape and vegetation to assist in absorbing the increased volume of water. Stabilizing the stream channel means reducing the flow (energy) and increasing the vegetative cover.*
Subsurface Drain	*A drainage water management system is using a water control structure in a drain to vary the depth of the drainage outlet. The water table must rise above the outlet depth for drainage to occur. The normal mode of operation in Illinois is to set the water table control height to within 6 inches of the soil surface on November 1 and to lower the control height to the level of the tile on March 15. Thus, water is held back in the field during the fallow period. In experiments in Illinois, reductions were measured of up to 45% for nitrate and 80% for phosphate.*

**to see a list of other BMPs not selected by the stakeholders see 4.4 Other Recommendations in Chapter 4 in the watershed plan*

Acknowledgements - Watershed Planning Participants

Many people participated in the watershed planning effort, including landowners and working farmers; and representatives from federal, state, and local environmental and planning organizations. We would like to acknowledge the following individuals for their dedication to the planning effort.

Planning Committee Members:
Jim Endress, Chairman Spring Branch Watershed, Landowner
Doug Block, Landowner
Chad Bremmer, Landowner
Ross Bremmer, Landowner
Marvin Edler, Loran Township Supervisor
Vince Edler, Landowner
William Kloepping, Landowner
Mike Plager, Landowner

Yellow Creek Watershed Partnership Members:
Lee Butler
Joe Ginger
Mike Malon

Technical Advisory Committee:
Karen Rivera, Illinois Department of Natural Resources
Steve Simpson, Earth Science, Highland Community College
Nancy Williamson, Illinois Department of Natural Resources
Kerry Leigh, Natural Land Institute
Bruce Johnson, Stephenson County Farm Bureau
Jim Ritterbusch, USDA-Natural Resources Conservation Service
Jim Dykema, USDA-Natural Resources Conservation Service
Terry Kerchner, USDA-Natural Resources Conservation Service
Matt Wagner, Wagner Consulting

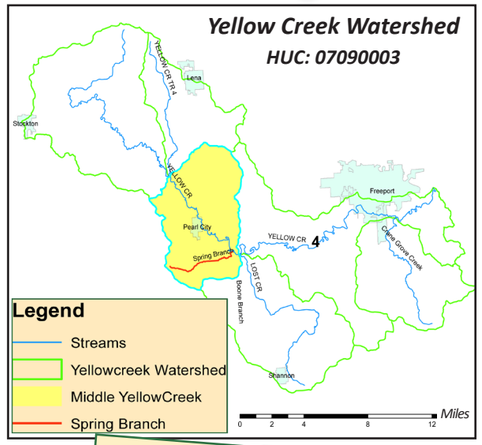
Consultants and Staff:
Andrew Shaw, Blackhawk Hills RC&D
Julie Jacobs, Blackhawk Hills RC&D
Joe Rush, JadEco Natural Resources Consultant & Management
Rebecca Olson, Olson Ecological Solutions
Shannon Thruman, Olson Ecological Solutions
Nathan Hill, Olson Ecological Solutions

Logo Design: Kristin Dinderman
Executive Summary Design: Nancy Williamson

To read the full plan: blackhawkhills.org or olsonecosolutions.com

Spring Branch Watershed Plan
Executive Summary

Spring Branch is a small watershed. It is a 6-mile stream that runs through 37 farms and then into the Middle Yellow Creek. It's located in the western edge Stephenson County, Illinois, and south of Pearl City. It is the headwaters of Yellow Creek and empties into the Pecatonica River.



Farmers of the Spring Branch Watershed are proud of the conservation-minded practices that are already taking place. A drive around the watershed reveals conservation tillage, cover crops, terraces, contour farming, and more. ***In fact, the farmers in the watershed are practicing either conservation tillage or no-till in every single crop field in the watershed, helping reduce sediment and nutrient loading into Spring Branch.*** They are also effectively protecting heavy use areas, managing pastures, and practicing pest management. Most farms have a nutrient management plan. Of the six livestock operators, two already have manure management plans. It is clear Spring Branch farmers have achieved significant improvement to the stream's water quality. Now they would like to do more.

> "My affinity for soil and water conservation has been developed through a lifetime of education and farm management experiences. Getting involved with the Spring Branch watershed project was a natural fit as part of a proactive approach to preserving and improving the resources within the watershed. Kuhlmyer/Endress land ownership within the watershed goes back 149 years. Preserving precious natural resources and sharing the story of how and why it is done is a legacy for generations to come."
>
> ***Jim Endress, landowner***

In 2015 a handful of landowners came together in public meetings to collectively create a plan with goals and action steps to improve water quality in their watershed. The Plan's basic outline, as well as the structure for group involvement, followed the Illinois Environmental Protection Agency's watershed planning process. The process included watershed residents, volunteers, and technical experts in the development of a comprehensive plan that identified locally-driven watershed actions based on in put from participating landowners. The plan contains a detailed inventory of the watershed's natural resources and demographics, and actions designed to address the stakeholder's missions and goals. *(Download Plan at: blackhawkhills.org or olsonecosolutions.com)*

Local stakeholders adopted this mission statement:
"We envision a rural watershed with a sustainable farming community that continues to improve water quality and wildlife habitat."

Six Goals for Spring Branch of Yellow Creek were also developed by the watershed community. *(See inside spread for details)*. The Goals focused on; keeping soil and nutrients where they belong to improve water quality; encouraging wildlife; and protecting an agrarian way of life. The full Plan contains a detailed inventory and precursory assessment on the Spring Branch watershed that includes: soil characteristics, topography, geology, climate information, and demographics, stream bank characteristics and assessment, past reports on the streams, and general information on phosphorus and ammonia in the waterways.

Stakeholders applied the watershed inventory knowledge to identify specific actions. Several volunteer projects in Chapter 4 implement chosen best management practices (BMPs) to reduce nutrient and sediment loading in the water. Chapter 5 details the targets, measurable milestones, schedules, cost estimates, and suggested funding sources for each recommended project and education and outreach efforts to encourage plan implementation. Chapter 6 addresses how monitoring and evaluation of the plan will unfold and includes a monitoring worksheet for landowners to annually record and evaluate their own best management practices.