Section 2, Chapter 4
Implementation of Watershed-Wide Practices

Written by Rebecca Olson and Alyssa Robinson

Introduction

Chapter 3 provided the foundation for education and outreach to stakeholders of the watershed that have the power to make positive landscape and cultural changes to the watershed. This chapter details the steps needed to implement the watershed-wide projects and practices recommended in Chapter 2. The next chapter will detail site-specific projects. Support resources for financial and technical needs to implementing these projects and practices is found in Chapter 6.

In order to implement watershed-wide projects and practices in a planned manner, we need to understand the benefits in terms of pollution load reduction estimates and the costs from various perspectives such as total cost and cost effectiveness. With this information, we have planned a general schedule over the next ten years and have predicted improvement to be experienced along the way.

The following pages prioritize watershed-wide best management practices geographically; estimate how much sediment, phosphorus, and nitrogen would be removed from the water utilizing each of the proposed watershed-wide best management practices; and then estimate the cost of implementing each practice. The costs are analyzed per pound of nutrient or ton of sediment to determine how cost effective each practice would be to implement. Determining both the most effective and most cost-effective methods of keeping pollutants out of the water can give us needed direction. Due to the large amount of information regarding watershed-wide and site-specific projects, the two are presented separately, in this chapter and the next.

Priority Areas for Watershed-Wide Projects and Practices

In order to prioritize areas to implement watershed-wide practices recommended in Chapter 2, we considered the origin of nonpoint source pollution, estimated pollutant loading from each subwatershed, and environmentally sensitive lands. For maximum effect, priority locations for best management practices should be placed as close to the origin of nonpoint source pollution as possible, such as management practices within crop fields and lawns and projects adjacent to impervious surfaces, lawns, and crop fields. Once those areas have been explored, we recognize the best opportunity for improvement to move down the watershed, working within and next to greenways, steep ravines, streams, and wetlands. Keeping this pattern in mind, a given project may be more effective if it is placed in a prioritized subwatershed, in an environmentally sensitive area, or both.

The East Fork Creek Watershed can be broken down into subwatersheds. Figures 38-45 in Section 1 (East Fork Creek Watershed Inventory) depict these subwatershed boundaries as well as nitrogen, phosphorous, sediment, and pathogen loading within each subwatershed. These figures depict annual pollutant load per acre within each watershed and total annual pollutant load within each subwatershed. Because all the subwatersheds vary in size, priority was given to the areas with higher pollutant loads by acreage as opposed to looking at the total pollutant load. Recommended best management practices and projects that can be implemented within the subwatersheds that have higher pollutant loads per acre are the areas of highest priority. Subwatersheds A, B, C, and D consist primarily of agricultural land. Subwatersheds E, F, and G house mostly residential property. Since different types of best management practices are recommended for agricultural and residential land use, our prioritization of practices based on geographical location differs between the two land uses.

Subwatershed H is comprised mostly of forests, open spaces, and wetlands with a small amount of both residential and agricultural land uses. Compared to the other subwatersheds, it consistently has pollutant loads by acreage on the lower end of the spectrum.

This plan has identified sediment as the first priority pollutant, phosphorous as a second, and nitrogen as a third. Looking at the residential subwatersheds, E and F are predicted to contribute more sediment, phosphorus, and nitrogen per acre than subwatershed G. Therefore, the greatest opportunity for implementation of projects in residential areas are within subwatersheds E and F. Considering agricultural subwatersheds, sediment runoff per acre is equally led by subwatersheds A, B, and C followed by D while nutrient runoff of phosphorus and nitrogen is most concentrated in subwatershed C, followed equally by A, B, and D. Within the agricultural portions of the watershed, areas of greatest potential vary if focusing on sediment or nutrients. For practices aimed at reducing sediment loads to the stream, subwatersheds A, B, and C equally offer the greatest opportunity. For practices focused on phosphorus and nitrogen reduction, a practice within subwatershed C may be more effective than a similar project elsewhere. *Table 4.1* portrays a visual of which watershed has the great reduction potential per pollutant load.

Table 4.1 Prioritized Subwatersheds

Subwatershed	Primary Land Use	#1 Priority -Sediment Reduction Potential	#2 Priority -Phosphorous Reduction Potential	#3 Priority Nitrogen Reduction Potential
A	Agricultural	★		
B	Agricultural	★		
C	Agricultural	★	★	★
D	Agricultural			
E	Residential	★	★	★
F	Residential	★	★	★
G	Residential			
H	Natural Areas			

Agricultural ★ Greatest Reduction Potential

Residential Natural Areas

Beyond the prioritized subwatersheds, other areas with the greatest opportunity for pollutant reduction are those that are most sensitive to water quality impairments. These sensitive areas include land near open water and wetlands, areas in flood zones, areas with high runoff potential, areas with hydric soils, areas with frequent flooding, and areas with highly erodible land. *Figure 4.1* depicts these various parameters that are more likely to be sensitive to water quality impairments. The NWI, or National Wetland Inventory, layer depicts the abundance of wetlands. The Hydrologic Groups D, B/D, and C/D depict soils with the highest runoff potential. Hydrologic soil groups are the classifications that the National Resource Conservation Service (NRCS) have given soils based on the soil's runoff potential. There are four hydrologic soils groups: A, B, C, and D. Hydrologic Soil Group A has the smallest runoff potential, while Hydrologic Soil Group D has the greatest soil runoff potential. Dual Hydrologic soil groups are designated for soils that were originally classified in group D but have been adequately drained to the point where they are classified into a different hydrologic soil group. Hydrologic soil groups B/D and C/D represent areas that after adequate drainage have moved from a hydrologic soil

group D condition into either a hydrologic soil group C or B condition. Soils are drained mostly likely for agricultural and developmental purposes. We consider these areas to be sensitive because these particular hydrologic soil groups depict areas with potential for minimizing flashy hydrology by treating the increased flow via drain tiles. The next parameter included in *Figure 4.1* is hydric soils. Hydric soils are soils that developed under historic wetland conditions, even in areas that are not currently functioning as wetland (e.g. drained wetlands). Similarly, areas with frequent flooding and the FEMA (Federal Emergency Management Agency) flood hazard zones are also included on the Priority Areas Map. Because areas of frequent flooding, flood hazard zones, and areas with hydric soils are more likely to have ponding or flooding and are usually in close proximity to wetlands and open water, they can be more sensitive to water pollution. One final parameter included in the Priority Area Map is HEL, which stands for highly erodible land. For land to be categorized as highly erodible land, factors like wind erosion and water erosion are considered to determine the land's erodibility potential. HEL is more sensitive to erosion and runoff. These priority areas that are more sensitive to erosion and water quality impairments pose the great opportunity for implementation of best management practices and projects. Stakeholders can make the greatest impact in reducing water quality impairments by implementing recommended best management practices and projects at locations where these sensitive priority areas and prioritized subwatersheds overlap.

Areas for Watershed-Wide Stabilization Projects

In order to stabilize highly erodible land, ravines, and streambanks, we located the areas appropriate for projects throughout the watershed. *Figure 4.2* maps forested, highly erodible land (HEL) with land covers categorized as forested and residential within the Lake Carroll Association. *Figure 4.3* illustrates HEL categorized as forested land cover throughout the watershed. *Figure 4.4* provides a breakdown of stream and ravine classification based on topographic maps and aerial photography.

Figure 4.1

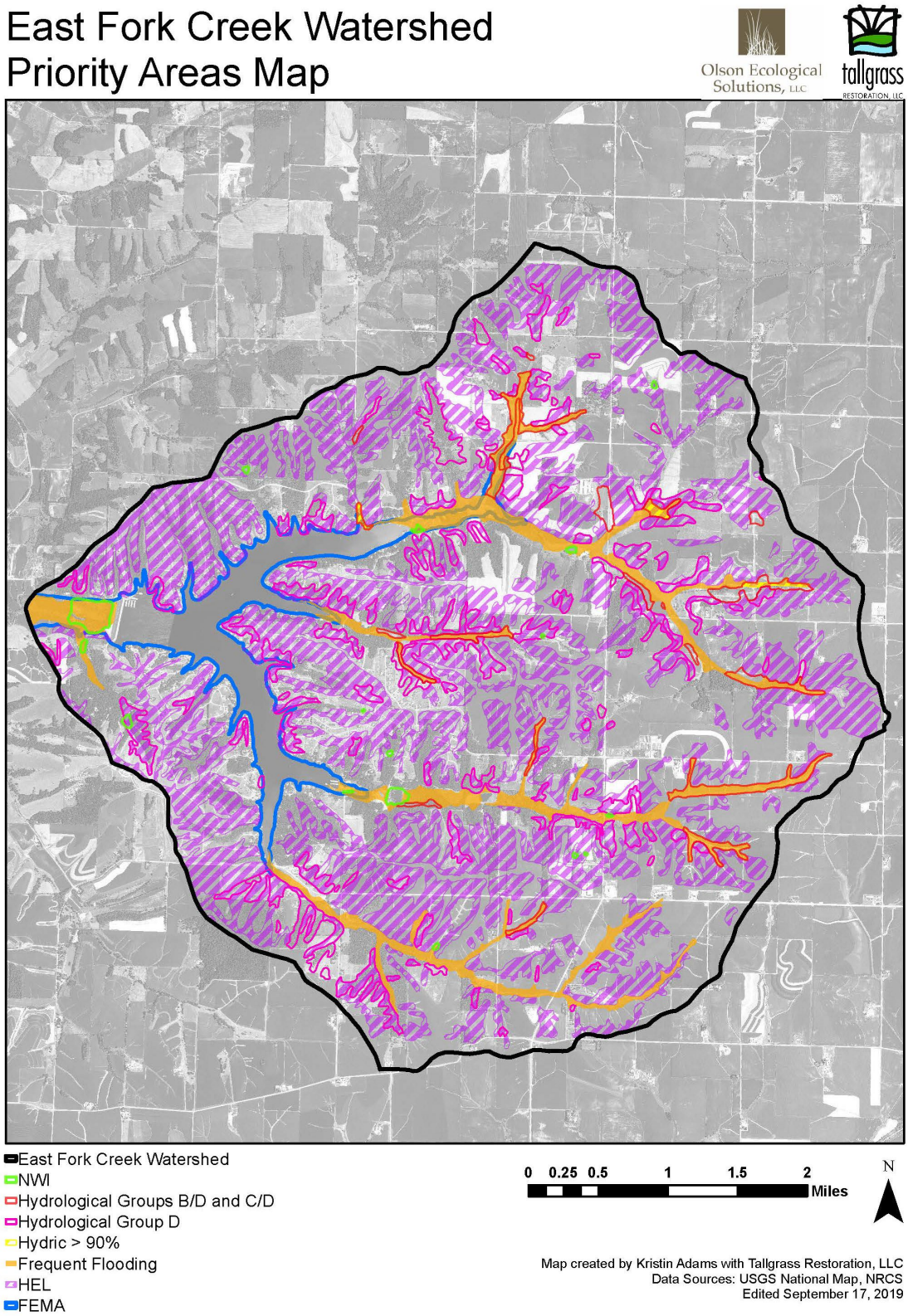

East Fork Creek Watershed
Priority Areas Map
Olson Ecological Solutions, LLC
tallgrass RESTORATION, LLC
East Fork Creek Watershed
NWI
Hydrological Groups B/D and C/D
Hydrological Group D
Hydric > 90%
Frequent Flooding
HEL
FEMA
0 0.25 0.5 1 1.5 2
Miles
N
Map created by Kristin Adams with Tallgrass Restoration, LLC
Data Sources: USGS National Map, NRCS
Edited September 17, 2019

Figure 4.2

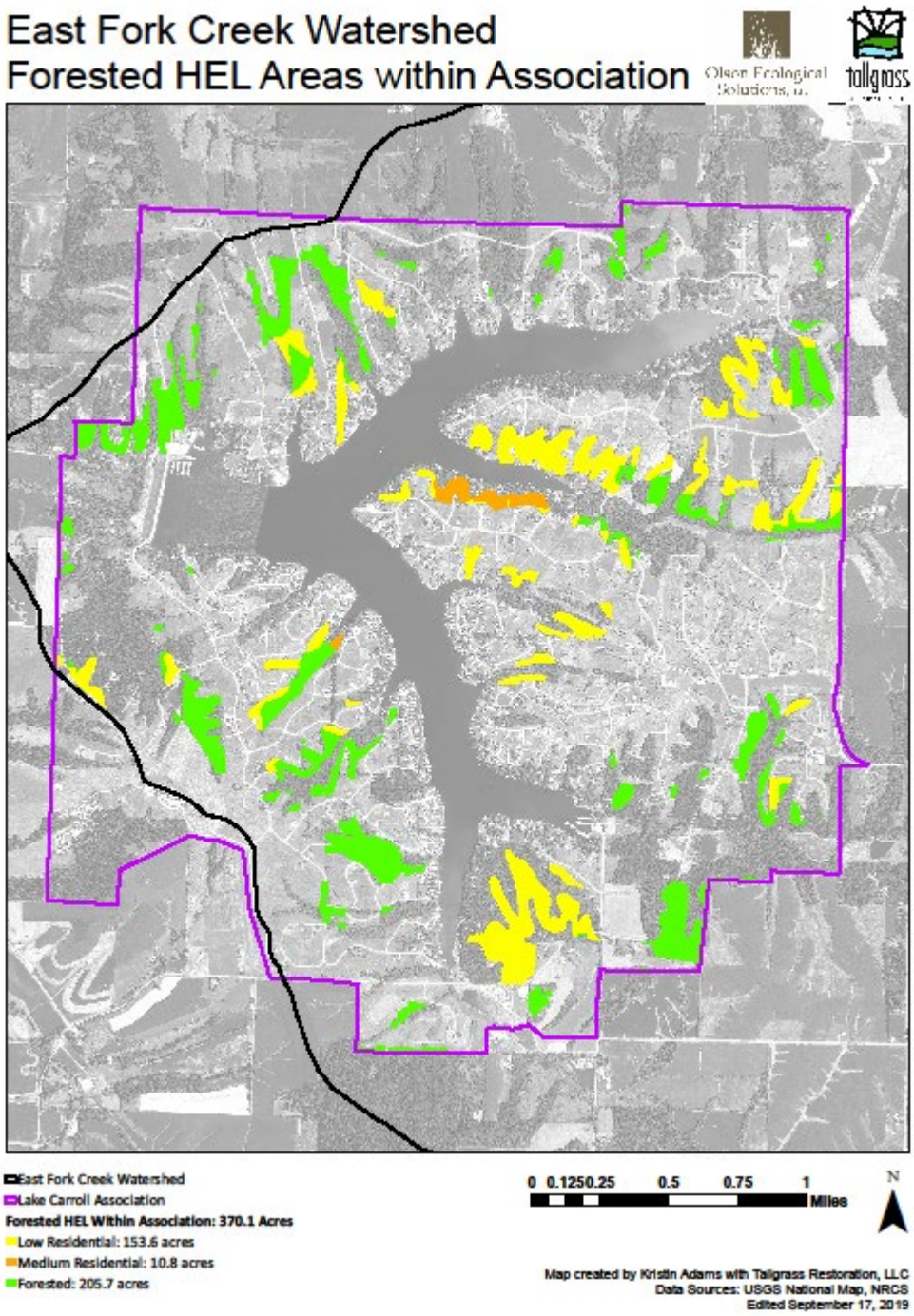

East Fork Creek Watershed
Forested HEL Areas within Association
Olson Ecological Solutions, LLC
tallgrass
East Fork Creek Watershed
Lake Carroll Association
Forested HEL Within Association: 370.1 Acres
Low Residential: 153.6 acres
Medium Residential: 10.8 acres
Forested: 205.7 acres
0 0.1250.25 0.5 0.75 1
Miles
N
Map created by Kristin Adams with Tallgrass Restoration, LLC
Data Sources: USGS National Map, NRCS
Edited September 17, 2019

Figure 4.3

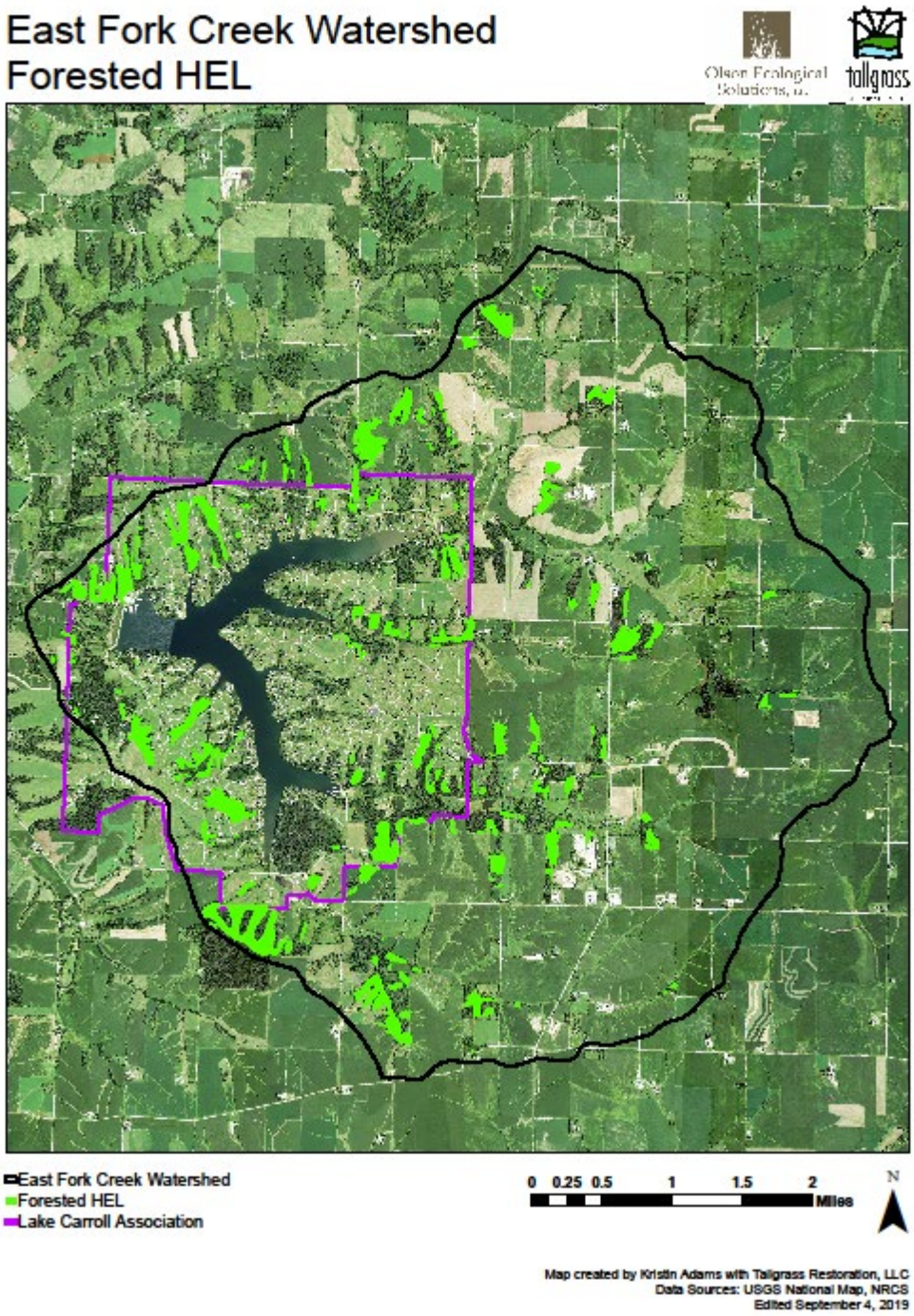
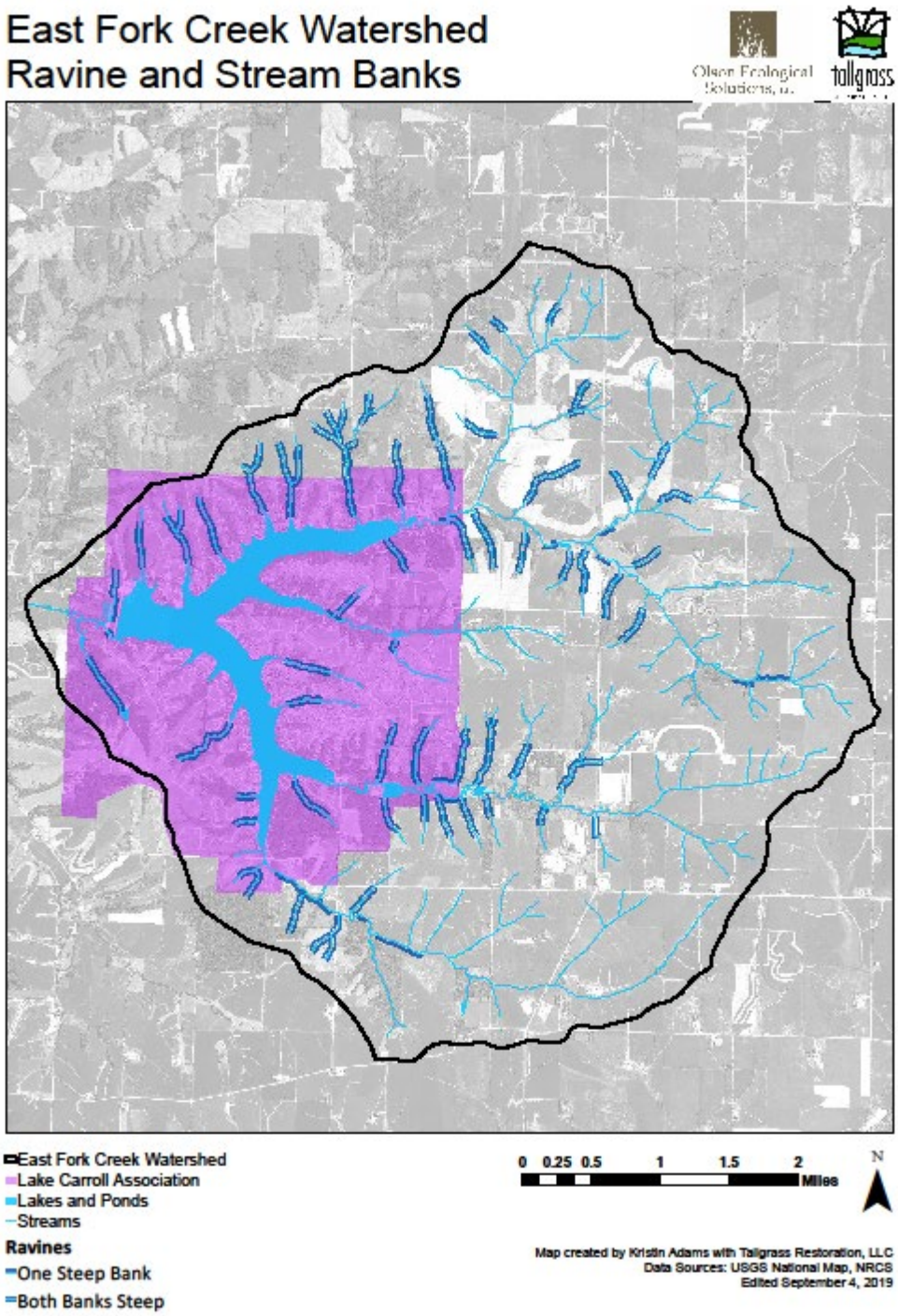

East Fork Creek Watershed
Forested HEL
Olson Ecological Solutions, LLC
tallgrass
East Fork Creek Watershed
Forested HEL
Lake Carroll Association
0 0.25 0.5 1 1.5 2
Miles
N
Map created by Kristin Adams with Tallgrass Restoration, LLC
Data Sources: USGS National Map, NRCS
Edited September 4, 2019

Figure 4.4


East Fork Creek Watershed
Ravine and Stream Banks
Olson Ecological Solutions, LLC
tallgrass
East Fork Creek Watershed
Lake Carroll Association
Lakes and Ponds
Streams
Ravines
One Steep Bank
Both Banks Steep
0 0.25 0.5 1 1.5 2
Miles
N
Map created by Kristin Adams with Tallgrass Restoration, LLC
Data Sources: USGS National Map, NRCS
Edited September 4, 2019

Pollution Load Reduction Estimates for Watershed-Wide Practices

All of the projects and practices highly prioritized by stakeholders would add significant value to the efforts of reducing sediment and nutrients in the waters of East Fork Creek and Lake Carroll. The main concern for stakeholders is sedimentation to Lake Carroll, followed by excess phosphorus loading responsible for nuisance algae blooms, and thirdly, excess nitrogen. Pollution load reduction estimates for each watershed-wide project and practice are listed below in *Tables 4.2 and 4.3*, first by percent efficacy then as predicted for the total watershed-wide practices prescribed in this plan.

From these summary charts, we can see that the best opportunities for removing sediment, phosphorus, and nitrogen in the watershed are to stabilize ravines and severely eroded streambank, followed by widening and repairing grassed waterways and constructing detention features. Removing nitrogen could also be well served by focusing on vegetating highly erodible land and installing vegetated filter strips and swales. These decisions are made evident when considering the opportunities in the watershed rather than the percent of sediment and nutrient removal per practice.

Table 4.2 Pollution Load Reduction Efficacy per Watershed-Wide Practices

#	Recommended BMPs - Watershed Wide	Sediment Reduction Efficiency (%)	Phosphorus Reduction Efficiency (%)	Nitrogen Reduction Efficiency (%)	Source of Reduction Efficiency Information
1	HEL Stabilization with Forest Stand Improvement	87%	28%	92%	Region 5 - Conservation Easements Worksheet
2	Ravine Stabilization	N/A	N/A	N/A	N/A - Not a land use-based BMP, no Region 5 percent reduction est.
3	Streambank Stabilization - Severe	N/A	N/A	N/A	N/A - Not a land use-based BMP, no Region 5 percent reduction est.
4	Vegetated Filter Strips - Stream	73%	45%	40%	Region 5 - Urban Runoff Loading Rate Worksheet
5	Vegetative Filter Strips - Shoreline	73%	45%	40%	Region 5 - Urban Runoff Loading Rate Worksheet
6	Vegetated Swales	65%	25%	10%	Region 5 - Urban Runoff Loading Rate Worksheet
7	Rain Gardens (DIY)	58%	26%	30%	Region 5 - Urban EMC Worksheet for Dry Detention
8	Grassed Waterways - widen existing waterways (1/3 efficiency added)	21%	8%	3%	Region 5 - Urban Runoff EMC Worksheet x 1/3
9	Grassed Waterways (full repair, full efficiency)	65%	25%	10%	Region 5 - Urban Runoff EMC Worksheet
10	Detention Features	65%	38%	28%	Region 5 - Urban Runoff Loading Rate Worksheet, Avg of wet pond, wetland detention, and dry detention

*Source of cost estimates: Illinois CPPE. 2015. Provided by Stephenson Co. NRCS. Cost of site preparation and installation with 10% added for inflation/buffering.

**Cost estimate breakdown for install of a DIY rain garden is $2.00/sf for volunteer labor and $6.00/sf for materials and equipment rental. Install of a rain garden by a contractor is estimated for $12-$15/sf.

Table 4.3 Pollution Load Reduction Estimates for Recommended Watershed-Wide Practices

#	Recommended BMPs - Watershed Wide	Description (Chosen area only)	Amount	Unit	Total Phosphorus Reduction (lb/yr)	Total Nitrogen Reduction (lb/yr)	Sediment Reduction (ton/yr)
1	HEL Stabilization w/Forest Stand Improvement	Stabilize the forested, highly erodible lands throughout the watershed by removing invasive buckthorn and allowing the ground cover to regenerate.	160	ac.	8	352	11
2	Ravine Stabilization	Stabilize 1/4 of the ravines throughout the watershed (not including site-specific ravines within the Lake Carroll Association).	22,421	ft.	1,643	3,285	1,932
3	Streambank Stabilization - Severe	Stabilize 1/4 of the severely eroded streambank throughout the watershed.	65,630	ft.	4,808	9,616	5,656
4	Vegetated Filter Strips - Stream	Install 50'-wide vegetated filter strips along 1/3 of the 63% of streambanks in poor or fair condition (161,374').	185	ac.	277	2,382	131
5	Vegetated Filter Strips - Lake and Ponds	Install vegetated filter strips along lake shore and ponds currently in mowed turf.	23	ac.	34	296	16
6	Vegetated Swales	Install 35 vegetated swales throughout the Lake Carroll community (100'x30' ea).	105,000	sf	294	910	147
7	Rain Gardens	Create rain gardens at 100 residences w/priority for 20% of the 1/4-ac lots in Lake Carroll Assoc. upstream of ravines and other BMPs (150 sf ea.)	15,000	sf	3	23	1
8	Grassed Waterways - widen	Widen grassed waterways from 15' to 30' wide to handle larger storms for 67% of grassed waterways throughout the watershed for an estimated improvement of 1/3 pollutant load reductions (53 ac. or 153,318' x 15' wide).	53	ac.	1,238	2,476	1,238
9	Grassed Waterways - fully repair	Install grassed waterways in waterways that are currently bare for 14% of waterways throughout the watershed (22 ac. or 32,037' x 30' wide).	22	ac.	776	1,552	776
10	Detention Features	Construct vegetated, shallow water detention/scrapes and dry detention to ease flashy hydrology (1% of drainage area).	144	ac.	1,179	8,286	572
TOTAL					**10,260**	**29,177**	**10,480**

Cost Estimates for Watershed-Wide Practices

Valuation for each best management practice was estimated using cost estimates provided mostly by Stephenson County Natural Resource Conservation Service, as provided in *Table 4.4*. Exceptions to this resource were the cost estimates for vegetated swales, ravine stabilization, and rain gardens which were provided by Olson Ecological Solutions. These estimates were applied to the opportunities for implementing each practice throughout the watershed to come up with a total cost per practice as shown in *Table 4.5*. Cost estimates were considered for the total amount of each best management practice proposed for implementation during the life of the plan. In *Table 4.5*, riparian buffer strips are recommended to be installed along lake shore and ponds (BMP #4) totaling 23 acres of shoreline. Please

note that 15-foot wide buffers were used to come up with the 23-acre estimate. Although a 15-foot width is recommended in order to increase effectiveness of this particular BMP, any width is encouraged.

Table 4.4 Cost Estimates for Watershed-Wide Practices per Unit

#	Recommended BMPs - Watershed Wide	Cost Est. per Unit	Unit	Source of Cost Estimate Information
1	HEL Stabilization with Forest Stand Improvement	$ 1,074	ac.	Stephenson Co. NRCS*
2	Ravine Stabilization	$ 58	ft.	Olson Ecological Solutions
3	Streambank Stabilization - Severe	$ 58	ft.	Stephenson Co. NRCS*
4	Vegetated Filter Strips - Stream	$ 919	ac.	Stephenson Co. NRCS*
5	Vegetative Filter Strips - Shoreline	$ 919	ac.	Stephenson Co. NRCS*
6	Vegetated Swales	$ 2.11	sf	Olson Ecological Solutions
7	Rain Gardens (DIY)	$ 8.00	sf	Olson Ecological Solutions**
8	Grassed Waterways - widen existing waterways (1/3 efficiency added)	$ 2,580	ac.	Stepenson Co. NRCS (cost through EQIP program)
9	Grassed Waterways (full repair, full efficiency)	$ 3,650	ac.	Stepenson Co. NRCS (cost through EQIP program)
10	Detention Features	$ 765	ac.	Stephenson Co. NRCS*

*Source of cost estimates: Illinois CPPE. 2015. Provided by Stephenson Co. NRCS. Cost of site preparation and installation with 10% added for inflation/buffering.
**Cost estimate breakdown for install of a DIY rain garden is $2.00/sf for volunteer labor and $6.00/sf for materials and equipment rental. Install of a rain garden by a contractor is estimated for $12-$15/sf.

Table 4.5 Cost Estimates for Watershed-Wide Practices

#	Recommended BMPs - Watershed Wide	Description (Chosen area only)	Amount	Unit	Cost Est. ($)
1	HEL Stabilization w/Forest Stand Improvement	Stabilize the forested, highly erodible lands throughout the watershed by removing invasive buckthorn and allowing the ground cover to regenerate.	160	ac.	$ 172,000
2	Ravine Stabilization	Stabilize 1/4 of the ravines throughout the watershed (not including site-specific ravines within the Lake Carroll Association).	22,421	ft.	$ 1,307,000
3	Streambank Stabilization - Severe	Stabilize 1/4 of the severely eroded streambank throughout the watershed.	65,630	ft.	$ 3,826,000
4	Vegetated Filter Strips - Stream	Install 50'-wide vegetated filter strips along 1/3 of the 63% of streambanks in poor or fair condition (161,374').	185	ac.	$ 170,500
5	Vegetated Filter Strips - Lake and Ponds	Install vegetated filter strips along lake shore and ponds currently in mowed turf.	23	ac.	$ 21,000
6	Vegetated Swales	Install 35 vegetated swales throughout the Lake Carroll community (100'x30' ea).	105,000	sf	$ 222,000
7	Rain Gardens	Create rain gardens at 100 residences w/priority for 20% of the 1/4-ac lots in Lake Carroll Assoc. upstream of ravines and other BMPs (150 sf ea.)	15,000	sf	$ 120,000
8	Grassed Waterways - widen	Widen grassed waterways from 15' to 30' wide to handle larger storms for 67% of grassed waterways throughout the watershed for an estimated improvement of 1/3 pollutant load reductions (53 ac. or 153,318' x 15' wide).	53	ac.	$ 80,500
9	Grassed Waterways - fully repair	Install grassed waterways in waterways that are currently bare for 14% of waterways throughout the watershed (22 ac. or 32,037' x 30' wide).	22	ac.	$ 137,000
10	Detention Features	Construct vegetated, shallow water detention/scrapes and dry detention to ease flashy hydrology (1% of drainage area).	144	ac.	$ 110,000
TOTAL					**6,166,000**

Costs per Unit of Reduced Pollutants

Some of the projects have significant cost when compared to others. This may be that they are more expensive, but more likely there is better opportunity and more of this type of practice is slated for implementation. Another way to look at costs is dollars per pound of pollutant removed. The chart below in *Table 4.6* presents cost per pound of each pollutant removed. In most cases, the dollars per ton of sediment removed will be most important to stakeholders.

Table 4.6 Cost per Unit of Reduced Pollutants

#	Recommended BMPs - Watershed Wide	Description (Chosen area only)	Amount	Unit	Cost to Remove 1 lb TP ($/lb)	Cost to Remove 1 lb TN ($/lb)	Cost to Remove 1 ton Sediment ($/ton)
1	HEL Stabilization w/Forest Stand Improvement	Stabilize the forested, highly erodible lands throughout the watershed by removing invasive buckthorn and allowing the ground cover to regenerate.	160	ac.	$ 21,500	$ 489	$ 16,165
2	Ravine Stabilization	Stabilize 1/4 of the ravines throughout the watershed (not including site-specific ravines within the Lake Carroll Association).	22,421	ft.	$ 795	$ 398	$ 677
3	Streambank Stabilization - Severe	Stabilize 1/4 of the severely eroded streambank throughout the watershed.	65,630	ft.	$ 796	$ 398	$ 676
4	Vegetated Filter Strips - Stream	Install 50'-wide vegetated filter strips along 1/3 of the 63% of streambanks in poor or fair condition (161,374').	185	ac.	$ 616	$ 72	$ 1,301
5	Vegetated Filter Strips - Lake and Ponds	Install vegetated filter strips along lake shore and ponds currently in mowed turf.	23	ac.	$ 611	$ 71	$ 1,292
6	Vegetated Swales	Install 35 vegetated swales throughout the Lake Carroll community (100'x30' ea).	105,000	sf	$ 755	$ 244	$ 1,511
7	Rain Gardens	Create rain gardens at 100 residences w/priority for 20% of the 1/4-ac lots in Lake Carroll Assoc. upstream of ravines and other BMPs (150 sf ea.)	15,000	sf	$ 40,000	$ 5,217	$ 120,000
8	Grassed Waterways - widen	Widen grassed waterways from 15' to 30' wide to handle larger storms for 67% of grassed waterways throughout the watershed for an estimated improvement of 1/3 pollutant load reductions (53 ac. or 153,318' x 15' wide).	53	ac.	$ 65	$ 33	$ 65
9	Grassed Waterways - fully repair	Install grassed waterways in waterways that are currently bare for 14% of waterways throughout the watershed (22 ac. or 32,037' x 30' wide).	22	ac.	$ 177	$ 88	$ 177
10	Detention Features	Construct vegetated, shallow water detention/scrapes and dry detention to ease flashy hydrology (1% of drainage area).	144	ac.	$ 93	$ 13	$ 192

Looking at projects and practices in terms of the cost to remove one pound of nutrient or one ton of sediment provides us with a different perspective regarding the cost of pollutant removal. Focusing on sediment, widening and repairing grassed waterways and constructing detention features were the most cost-effective solutions, ranging from $65 to $192 per ton of sediment. Ravine and streambank stabilization had a moderate cost of $677 per ton of sediment, and it would cost from $1,292 to $1,511 per ton of sediment to install vegetated filter strips along streams and around lakes and ponds and

vegetated swales. Rain gardens and forest stand improvement on highly erodible land were not cost effective in terms of sediment removal.

The cost to remove one pound of phosphorus, a secondary interest to stakeholders, closely mirrored the cost effectiveness of sediment removal. The only difference was that vegetated filter strips along streambanks and shorelines were less expensive per pound of phosphorus than ravine and streambank stabilization, which was not the case for sediment removal. Widening and repairing grassed waterways and constructing detention features were most cost effective at $65 to $93 per pound of phosphorus removed. Moderately cost-effective projects included planting vegetated filter strips along streams and shorelines, constructing vegetated swales, and stabilizing severely eroding streambanks and ravines, ranging from $611 to $795 per pound. Forest stand improvement on highly erodible lands and rain gardens were not cost-effective ways to control phosphorus.

The pattern of cost effectiveness held true for nitrogen, except that installing vegetated filter strips along streambanks and shorelines also a cost-effective way to control nitrogen. Widening and repairing grassed waterways, constructing detention features, and vegetated filter strips along streambanks and shorelines were most cost effective, ranging from $13 to $88 per pound of nitrogen removed. Vegetated swales, stabilization of ravines and streambanks, and forest stand improvement on highly erodible land all had a moderate cost of $244 to $489 per pound. Rain gardens were not a cost-effective way to remove nitrogen.

Schedule of Implementation of Watershed-Wide Practices

To implement the proposed projects and practices over a ten-year time frame, we plan to spread the budget evenly at about $616,600 per year. Grants and financial assistance organizations usually will require match, although amounts vary. One grant may require 40% match, which would require local sources to spend $246,640 while obtaining $369,960 from grant sources. Another may require 20% or 50%, creating a range of match needed per year. The schedule of implementation for watershed-wide practices is presented in *Table 4.7*. More detail about abbreviated funding and technical support is offered in Chapter 6.

The schedule of implementation is simple, implementing an equal area or size of each best management practice and keeping the same budget every year for ten years. It may take longer to set up such a schedule in the first place, but it then becomes routine each year. Doing so would allow landowners a consistent variety of options for participation each year. This may be optimum, as factors may affect a landowner's ability and interest to participate in the implementation of a particular program each year. We recognize that the actual schedule will depend on many factors including leadership, community interest, and financial and technical support opportunities. This schedule should be reviewed and revised annually.

Table 4.7 Schedule of Implementation of Watershed-Wide Practices

Year(s)	Interim, Measurable Milestone	Potential Funding/ Tech. Support	Annual Cost Estimate ($/yr)
1-10	Improve forest stand by removing invasive buckthorn on 16 ac. of highly erodible land per year.	Trees Forever, NRCS, IEPA, USFWS, IDOA, NWTF, PF, JDCF	$17,200
1-10	Stabilize 2,242 ft of ravine banks each year (not including site-specific ravines within the Lake Carroll Association).	NRCS, TU, IEPA	$130,700
1-10	Stabilize 6,563 ft of severely eroded streambank each year.	NRCS, TU, IEPA	$382,600
1-10	Install 18.5 acres of vegetated filter strips along streambanks in poor or fair condition each year.	USDA, NRCS, IEPA, IDOA, Trees Forever, PF	$17,050
1-10	Install 2.3 acres of riparian buffer strips along lake and pond shorelines each year.	IEPA, Trees Forever, PF	$2,100
1-10	Install 10,500 sf of vegetated swales per year.	IEPA, Patagonia, Wyss	$22,200
1-10	Create 10 rain gardens per year, preferably on private residences near ravines.	Prairie Club	$12,000
1-10	Widen 15,332 ft of grassed waterways annually (5.3 ac).	NRCS, IEPA	$8,050
1-10	Repair 3,200 ft of grassed waterways annually (2.2 ac).	NRCS, IEPA	$13,700
1-10	Construct 14.4 ac of vegetated, shallow water detention/scrapes and dry detention per year.	USDA, NRCS, IEPA, IDNR, USFWS, IDOA, PF, TU, DU	$11,000
	Total per Year		**$616,600**

Responsible Parties

We ask all stakeholders to do what they can to help implement the plan. In addition to private homeowners and landowners, this watershed uniquely has structure and organization offered by the Blackhawk Hills Regional Planning Council and Lake Carroll Association and its various committees. Both entities have expressed a willingness to help implement the plan.