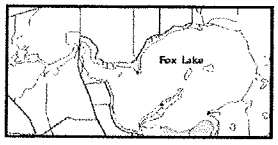
Fox Lake Inland Lake Protection and Rehabilitation District



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1/19/2022

RE: ARPA FUNDING PROPOSAL REQUEST

SUMMARY OF FUNDING REQUEST DESCRIPTION

The Fox Lake Inland Lake Protection and Rehabilitation District is requesting ARPA funds to help with additional funding towards our watershed's cover crop program. For the last three years the Fox Lake Inland Lake District and the Fox Lake Preservation Organization has contributed $26,000 annually and a total of $78,000 over the last three years towards incentives for our area farmers to take part in cover cropping and reduced till/no till to help improve the Fox Lake watershed's soil health and water quality. The area farmers that are willing to take part in these best management practices is growing each year, however we are running out of funds well before we are running out of farmer's that are interested. With community outreach done this past year in 2021 we learned that there are many more producers that would take part in this practice if the funds were available to help off-set the costs of the producers out of pocket expenses. The Fox Lake Inland Lake Protection and Rehabilitation District is asking to be considered for $50,000 of Dodge Counties ARPA funds so that we can distribute these funds along with the funds being put forth by the Fox Lake Inland Lake District and the Fox Lake Preservation Organization as an incentive to our area producers willing to farm green, plant cover and reduce tillage.

PROBLEM/NEED AND WHY COVER CROPPING IS IMPORTANT

Cover Cropping plays a huge role in Fox Lake's plan to combat nutrient pollution, cover cropping is one practice we believe is necessary to protect public health and reduce toxic effects due to phosphorous loading of algae blooms which is dangerous to animals and people. Fox Lake has been on the EPA's impaired water list since 2006 because of its excess phosphorus sediments. Fox Lake is fed by three major tributaries and is surrounded by 36,500 acres of land that drain directly to the lake. In the Fox Lake watershed, most phosphorus and sediments come from runoff and erosion in agricultural areas, though residential areas also play a role. Topography influences how much runoff a given field contributes to the lake. Through modeling we have been able to identify and assess which fields pose the highest runoff risks. This past year we have reached out to area farmers in those specific areas and offered educational

material on the importance of cover cropping and other best management practices. The feedback we have received is that these producers are willing to improve their practices and would be more willing to do so if we could offer them an incentive to help off-set some of their out-of-pocket expenses. Fox Lake Inland Lake Protection and Rehabilitation is encouraging agricultural landowners to implement practices that reduce erosion and nutrient runoff, cover cropping is a great way to do this. Cover Crops, perhaps the most effective soil conservation practice, keep soil in place at times when a field might otherwise be bare. They also build soil health over time, as the soil retains more nutrients, organic matter, and moisture.

IMPLEMENTATION/FEASABILITY

Over the course of the last three years the Fox Lake Inland Lake District and the Fox Lake Preservation Organization has contributed $26,000 annually and a total of $78,000 towards incentives for our area farmers to take part in cover cropping and reduced till/no till to help improve the Fox Lake watershed's soil health and water quality. During this time nearly **3,000** acres have been cover cropped in the Fox Lake watershed. This is a huge benefit in preventing area runoff into our lake. With the opportunity of more funds through your ARPA funds we could increase the amount of acreage being cover cropped. The area farmers that are willing to take part in these best management practices is growing each year, however we are running out of funds well before we are running out of farmer's that are interested. With community outreach done this past year in 2021 we learned that there are many more producers that would take part in this practice if the funds were available to help off-set the costs of the producers out of pocket expenses.

OUTCOMES/OBJECTIVES

The Fox Lake Inland Lake Protection and Rehabilitation District has hired an engineer/consultant that we will be working with continuously in planning and design for long-term goals and outcomes. We also work closely and are active with the Dodge County Healthy Soil Healthy Water Alliance and the DNR. You will see **attached the maps** and prioritization tools that have been laid out and ready to be put into place.

KEY CONSIDERATIONS

1) Unless external loading has been adequately addressed, in-lake treatment will have ***short-term*** benefits at best.

2) Unpublished guidelines suggest 50% or greater internal loading will limit the efficacy of watershed management activities to reduce in-lake phosphorus (Ken Wagner, pers comm).

3) Under the Clean Water SRF, (eligible projects include to construct, improve, and repair wastewater treatment plants; control non-point sources of pollution; improve resilience of infrastructure to severe weather events; create green infrastructure; manage and treat storm water or subsurface drainage water; facilitate water reuse; and protect waterbodies from pollution).

We would like to thank you for your time and consideration. The Fox Lake Inland Lake District would appreciate your consideration of financial assistance under the ARPA. Please feel free to advise or discuss and questions regarding this request.

Kindest Regards,

Timithoy Meekma

Board Chair

Tracy Zemlo

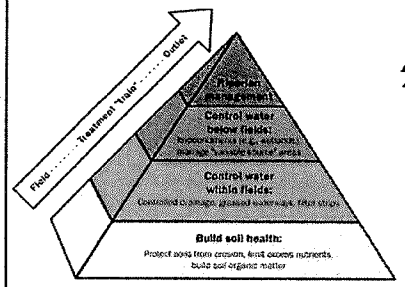
Executive Director

Subwatershed	Proposed* BMPs (number)	Subwatershed	Proposed* BMPs (number)
Cambra Creek (14,505 acres)	Cover Crops (X) Zero or reduced-tillage (X) Nutrient Management Plans (X) Grassed Waterways (55) Restored Wetlands (X) Contour Buffer Strips (354) Drainage Water Management (0) WASCOBs (0) Nutrient Removal Wetlands (0) Riparian Buffers (X)	Direct Drainage (7,564 ac total)	Cover Crops (X) Zero or reduced-tillage (X) Nutrient Management Plans (X) Grassed Waterways (72) Restored Wetlands (X) Contour Buffer Strips (104) Drainage Water Management (1) WASCOBs (0) Nutrient Removal Wetlands (1) Riparian Buffers (X)
Drew Creek (4,010 acres)	Cover Crops (X) Zero or reduced-tillage (X) Nutrient Management Plans (X) Grassed Waterways (28) Restored Wetlands (X) Contour Buffer Strips (42) Drainage Water Management (0) WASCOBs (0) Nutrient Removal Wetlands (0) Riparian Buffers (X)		

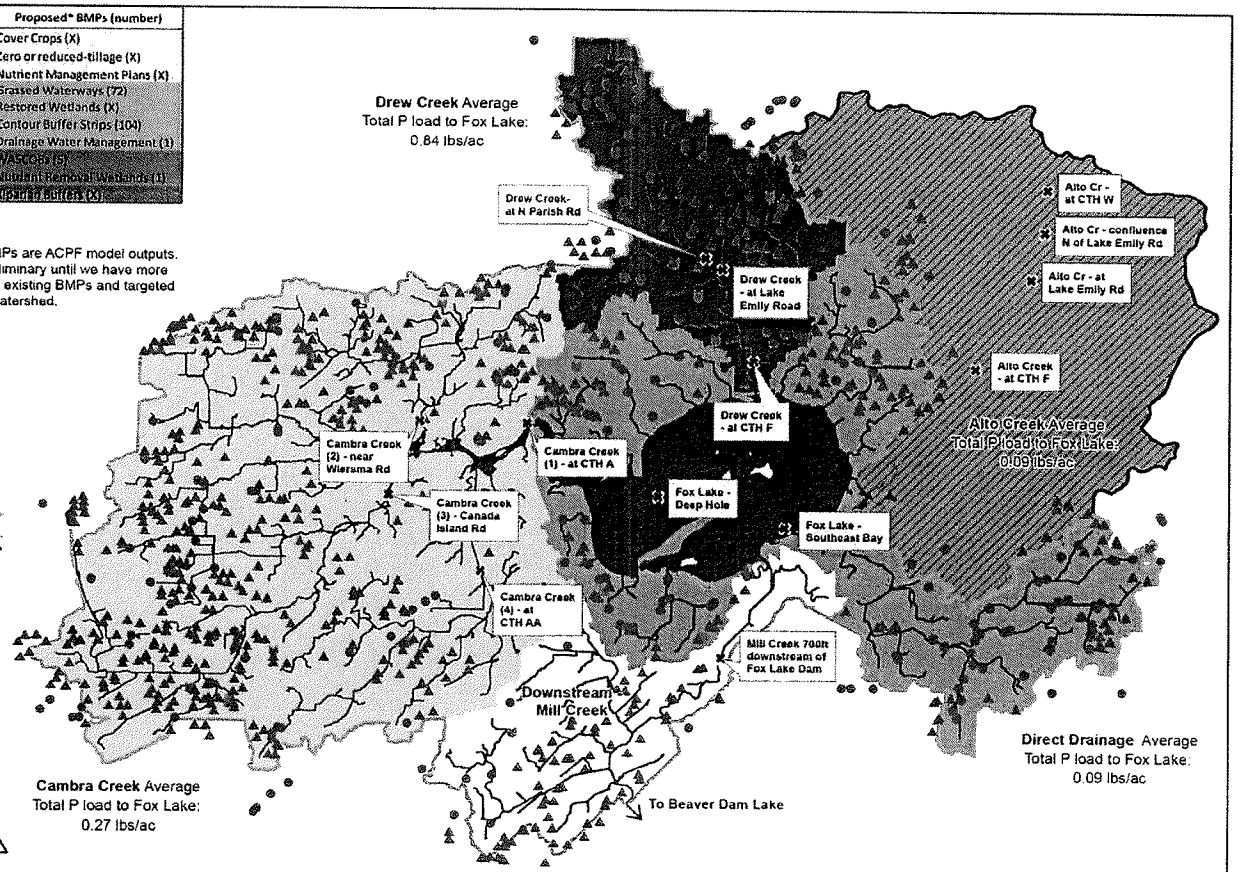
X = No Data

*Proposed BMPs are ACPF model outputs. These are preliminary until we have more information on existing BMPs and targeted goals by subwatershed.

Figure 1
Conservation pyramid as a conceptual basis for the Agricultural Conservation Planning Framework. Broad-based efforts to improve soils, structural practices within and below fields, and riparian management practices present a sequence of conservation opportunities to tailor agricultural watershed management to each watershed's landscapes using high-resolution data and can enable stakeholder participation in planning (adapted from Tomer et al. [2013]).



Combining precision conservation technologies into a flexible framework to facilitate agricultural watershed planning. Tomer et. al. 2013.



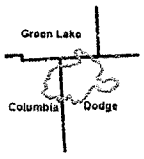
EOR water ecology community

Legend
- Existing Monitoring Points
- Fox Lake HUC-12
- Alto Creek HUC-12 (approx)
- Waterbodies
- Flow Paths

Proposed BMPs
- Nutrient Removal Wetland
- Grassed Waterways
- Drainage Water Management
- Contour Buffer Strips
- Water & Sediment Control Basin

Map Notes

- Phosphorus loading averages calculated using 2004-2005 study results from Fox Lake Management Strategy Evaluation Report & Recommendations for Future Action, Hey & Associates/UW-Milwaukee, 2008.
- Subwatersheds delineated from ACPF modeling by Sand County Foundation and EOR. Note these updated boundaries are based on more precise data and detailed methods than those in previous studies.
- Recommended BMPs (Fox Lake HUC-12 only) do not yet account for existing BMPs and/or natural features that enhance water and nutrient storage. Recommended riparian BMPs have not been determined yet.



Subwatershed P Loading & ACPF-recommended BMPs

Fox Lake HUC-12 (070900010902)

0 1 2 Miles

Prioritization Tool - Example

EOR water ecology community

Inputs:

1. Populate list of HUC 8 watersheds ->	Populate HUC 8 List	
2. Choose HUC 8 Watershed ->	Middle Cedar	07080205
3. Choose HUC 12 Watershed ->	Blue Creek	070802051502
4. Choose the BMPs to implement (below)	(63% agricultural, 2.7% impervious)	
5. Set Initial Target Adoption Rates ->	Optimized	

Management Type	% of Total N Removal	% of Total P Removal
Soil Health	60%	79%
In-Field	1%	12%
Edge-of-Field	28%	8%
Riparian	11%	2%

Options: Adjust Existing Adoption Rates

for the selected HUC 12 watershed. If you want to temporarily adjust adoption rates, close the window and adjust them on the sheet.

Import Current Rates | Import Default Rates | Update Adoption Rates

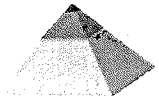
HUC 12

Riparian Management: Critical Zone; Deep-Rooted; Multi-Species; Stiff-Stem Grass; Stream Stabilization; Saturated Buffers

In-Field Management: Contour Buffers; Terraces; DWM; Grass Waterways; No-Till

Soil Health Management: Cover Crops; Extended Rotations; N Inhibitor; N Rate; N Source; N Timing; P Placement; P Rate; P Source

Edge-of-Field Management: Bioreactors; NRWs; Perennial Cover; WASCOBs



■ Riparian
■ Edge-of-Field
■ In-Field
■ Soil Health

% of Total N Removal | % of Total P Removal

Results:

	Load Reduction (%) N	Load Reduction (%) P	Load Reduction (lb/yr) N	Load Reduction (lb/yr) P
Total watershed load ->			412,677	43,511
1st Order BMPs	36.4%	23.9%	150,322	10,394
2nd Order BMPs	0.5%	0.4%	1,859	190
3rd Order BMPs	5.9%	0.7%	24,486	287
4th Order BMPs	2.3%	0.0%	9,481	0
Overall Pollutant Reduction due to Agricultural BMPs	45.1%	24.8%	186,148	10,871
Nutrient Reduction Strategy Goal for Agricultural Lands	48%	25%		
Overall Pollutant Reduction due to Urban BMPs	0%	0.0%	0	0
Nutrient Reduction Strategy Goal for Urban Lands	0%	29%		
% of Goal	94%	100%	186,148	10,871

	Annual Cost	Expenses	Savings
	$1,092,000	$1,550,000	-$458,000
Agricultural BMPs	$1,092,000	$1,550,000	-$458,000
Urban BMPs	$0	$0	$0

Estimated flood benefits for the 05/26/2004 event for Cedar River at Palo*	$151,000 in reduced losses 3.1 ft flood stage reduction
Estimated annual reduced flood losses**	$12,300

*Assumes all areas upstream of the reporting location adopt the same level of BMP implementation. For Cedar River reporting locations, this includes implementation

**Calculated from the results of a 25-year simulation

	BMP Name	Existing Adoption (%)	Target Adoption (%)	Quantity	Practice Reductions (%) N	Practice Reductions (%) P	Load Reduction (%) N	Load Reduction (%) P	Load Reduction (lbs/yr) N	Load Reduction (lbs/yr) P	Total Cost $	Cost-Benefit $/lb N/yr	Cost-Benefit $/lb P/yr
Soil Health Management	Cover crops	2%	30%	10,994 acres	31%	29%	15%	14%	63,806	6,293	$7,321,517	8.44	85.60
	Extended rotations	1%	2%	125 acres	42%	0%	0%	0%	982	0	$50,938	3.82	
	Nitrogen management: nitrification inhibitor	50%	75%	3,125 acres	9%	0%	1%	0%	5,263	0	-$127,546	(1.78)	
	Nitrogen management: rate control	10%	50%	4,997 acres	10%	0%	2%	0%	9,356	0	-$135,835	(1.07)	
	Nitrogen management: source control	18%	90%	2,249 acres	4%	0%	0%	0%	1,684	0	-$2,455,425	(107.29)	
	Nitrogen management: timing control	26%	51%	3,186 acres	6%	0%	1%	0%	3,579	0	-$665,949	(17.81)	
	Phosphorus management: placement control	50%	58%	900 acres	0%	50%	0%	1%	0	592	$203,958		25.99
	Phosphorus management: rate control	50%	60%	1,249 acres	0%	17%	0%	1%	0	419	-$186,773		(32.78)
	Phosphorus management: source control	18%	90%	2,249 acres	0%	46%	0%	5%	0	2,042	-$2,455,425		(88.48)
In-Field Management	Contour buffer strips	0%	1%	1.5 miles	0%	77%	0%	0%	0	165	$21,574		9.61
	Terraces	84%	84%	0 miles	38%	77%	0%	0%	1	0	$830	106.83	500.02
	Drainage water management	0%	50%	10 fields	53%	0%	1%	0%	2,925	0	$53,643	1.50	
	Grassed waterways	46%	46%	1 miles	0%	53%	0%	0%	0	85	$52,266		79.93
	No-Till	20%	25%	625 acres	0%	90%	0%	3%	0	1,110	$101,876		6.76
Edge-of-Field Management	Denitrifying bioreactors	0%	60%	49 reactors	43%	0%	4%	0%	16,948	0	$930,245	1.43	
	Nutrient removal wetlands	0%	40%	8 wetlands	53%	0%	4%	0%	16,578	0	$697,184	3.09	
	Perennial cover	1%	10%	1,249 acres	72%	34%	4%	2%	16,840	838	$6,621,968	28.93	581.13
	WASCOBs	46%	47%	1 basins	0%	85%	0%	0%	0	31	$87,774		210.77
Riparian Management	Riparian buffer: Critical zone buffer	76%	100%	0 miles	91%	58%	0%	0%	214	14	$4,549	1.57	23.32
	Riparian buffer: Deep-rooted vegetation buffer	70%	100%	5 miles	91%	58%	0%	0%	1,123	75	$204,698	13.42	199.64
	Riparian buffer: Multi-species buffer	73%	100%	2 miles	91%	58%	1%	1%	3,448	232	$69,939	1.49	22.21
	Riparian buffer: Stiff stem grass buffer	79%	80%	0 miles	0%	58%	0%	0%	0	15	$5,876		27.97
	Riparian buffer: Stream stabilization buffer	85%	86%	1 miles	0%	58%	0%	0%	0	13	$20,786		119.24
	Saturated buffers	0%	75%	16 miles	50%	0%	4%	0%	18,218	0	$5,180,377	20.93	
Urban Retrofits	Commercial	0%	20%	0 acres	0%	56%	0%	0%	0	0	$0		
	Public	0%	50%	0 acres	0%	61%	0%	0%	0	0	$0		
	Right-of-Way	0%	50%	0 acres	0%	44%	0%	0%	0	0	$0		
	Residential	0%	10%	0 acres	0%	53%	0%	0%	0	0	$0		