McKnight Grant Report 2015-2016

St. Croix-Red Cedar Farmer-Led Watershed Project

Photo Credit – Eric Wojchik

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PROJECT PROGRESS SUMMARY

Once again our McKnight grant was the cornerstone of the farmer-led watershed council movement in north-western Wisconsin. While the project faced challenges over the past two years, the project team learned much more about the level of commitment and support needed to manage a successful citizen-led effort. With the ever present reluctance of citizens to engage themselves and the exit of the project coordinator, this grant cycle did not play out as originally planned. However, as quickly as changes happened the St. Croix Red Cedar Farmer-Led Watershed project team began to adapt and redirect its course. Change brought new challenges, but with change, a great opportunity was realized.

Councils in the project have been working in each watershed for the past four years. Early on each group lacked a sense of direction and purpose. Over the course of these four years most councils have discovered their role and interests related to soil conservation and water quality. With the changes that have taken place in the last grant period, most of the councils and their collaborating county staff have realized the tremendous opportunity to strengthen and develop the leadership structure within the council making this project more "farmer-led" than it ever was before. Once again the agriculture community demonstrated commitment to this farmer-led movement. When given the choice to move forward with or without the leadership of a coordinator they were comfortable moving forward without a coordinator, with the help of the local conservation staff.

This statement by the councils is a very important indicator of the progress that has been made. The councils willingness to take on more leadership, explore ways to promote recruitment, and enhance peer to peer learning shows they value this type of model, and they are committed to moving this effort forward. By sharing their stories in conservation, and providing the environment for others to explore conservation practices, their neighbors may begin to shift what they value in agriculture as the watershed councils have.

WATERSHED UPDATES

DUNN COUNTY – Hay River Watershed Council

The Hay River Farmer-Led Watershed Council has developed and evolved into an established core of farmers within the last two years. Today they have a mix of farmers who are new to the council as well as those who were there from the beginning, which adds more depth to the questions and the ideas they share. Typically, the council prefers to meet more often during the winter months, with limited meetings worked around their work on the farm. Their time during the council meetings is spent discussing and deciding upon incentives to offer, updates on field plots, seminars to host, field days to plan, and what they have learned through their own experiences or want to learn more about. They stay on task by following their Mission Statement: *A voluntary, producer-led program to promote and enhance environmentally sound management of soil and water in the Hay River Watershed. Our Goal is to keep soil and nutrients on the land through increased adoption of management practices including, but not limited to: grassed waterways, no-till and minimum-till systems, perennials, and cover crops.*

Expansion has occurred as a result of the progress of all four of the farmer-led watershed councils. Farmers and staff in the Barron County area have been invited and joined in on council meetings, one-on-one meetings, seminars and field days held by the Hay River farmer-led watershed council. Now those farmers have become the *Farmers of the Barron County Watersheds*, and they are providing additional seminars and field days in their area.

During council meetings the farmers of the Hay River watershed council discussed, debated and decided upon what incentives would improve soil health and water quality in their own watershed and on farms. Farm walkovers and soil testing were offered in 2014. These incentives also provided the opportunity to discuss the successes and the improvements needed on their own farms. For unknown reasons, farmers in the watershed were not open with sharing information about their farms and these incentives offered a way to share information, as well as build respect and trust with the council. In 2015 the council continued with soil testing, eliminated the farm walkover, and added soil health based Haney soil testing. By 2016 grassed waterways and cover crops were added while soil testing still remained an incentive, while the Haney test was dropped. The incentives have assisted in education and outreach and have resulted in a few new farmers joining the council. Throughout these years, the council has played a key role in encouraging other farmers to take advantage of the incentives through one-on-one meetings with other farmers, discussions at seminars and field days, and also mailings. Staff also participated in Civic Governance training to learn how to enhance the farmers to lead this project and assist with influencing other farmers to gain interest.

The following are some of the informational events the Hay River watershed council has organized or attended:

- Soil Health and Cover Crop Seminar held in Ridgeland – about 75 people attended
- Booth at the Red Cedar Demonstration Farm field day
- Assisted with facilitating a breakout session at The Red Cedar Conference at UW-Stout.
- Farmers attended "Dig Deep with Ray Archuleta" hosted by the Wisconsin Farmer-Led Watershed Council Project-Including all 4 Farmer-Led Watershed Councils
- Presented during a breakout session at the Wisconsin River Symposium at Stevens Pint with County Conservationist Dan Prestebak and County Supervisor Robert Walters
- Presented during a breakout session at the Lakes Partnership Conference in Stevens Point
- Soil and Stream Health Field Day with a stream shocking demonstration to inventory fish in the stream and soil health demonstrations using the soil of the field adjacent to the stream. About 40 people were in attendance to share and learn.
- Maximizing Conservation Maximizing Profit Seminar featuring presentations on grid sampling and precision agriculture, cover crop economics and contract grazing. About 60 people attended.

The farmers of the Hay River Farmer-Led Watershed have utilized soil testing, grassed waterways, farm walkovers and cover crops through their incentives. These practices are in alignment with the council's goal of "*keep soil and nutrients on the land*". Phosphorus runoff is greatly reduced by implementing these incentives. It is well known in Dunn County that there has been a recent surge in acreage planted to cover crops within the last 4 years, and the farmers of the Hay River Farmer-Led Watershed are a part of this increase in use of cover crops. The incentives help influence other farmers to try out these practices that they may otherwise be reluctant to try. The field plot has also been a good tool to show the impact of the use of cover crops and no-till practices on soil health, which in turn improves water quality of both surface and ground water.

Conservation Practices and Units Installed by Incentive Participants

Year	Number of Participants	Cover Crops (ac)	Waterways (linear ft)	Haney Soil Health Test (#)	Soil Samples (ac)
2015	9	--	--	16	264
2016	10	1,634	6,361	Discontinued	2,201.2

Calculating phosphorus reductions for the incentive practices is a work in progress. Data in the Hay River Farmer-Led Watershed needed to create a Phosphorous Index is limited, therefore other options were pursued. The Spreadsheet Tool for Estimating Pollutant Loads (STEPL) was found to provide information regarding phosphorus reductions by using the data that was obtainable. At this time STEPL data for phosphorus reductions is not available. Generating STEPL data for incentive practices will be a priority in 2017.

PIERCE COUNTY – South Kinni Watershed Council

The 2015 - 2016 grant period brought a lot of changes and maturation to the South Kinni council. At the end of 2014, the group went by the name of the Rocky Branch council and held regular meetings in the office of a member's dairy barn. By 2015, the council had expanded the size of its territory by including the South Fork Kinni watershed and renamed to the South Kinni Watershed Council. They moved their regular meeting location to the River Falls Town Hall, held six regular meetings, and saw an increase in participation. After a vacancy in the project coordinator position, the members decided to continue without the assistance of a coordinator. In 2016 average attendance at the six regular meetings held steady, at around six members. By the end of 2016, the council was making steps towards greater autonomy and independence. At their January meeting in 2017, the council adopted by-laws to help govern the council and elected a Chair and Co-Chair to lead the council. These changes show the evolution of the council and reflect a positive direction in which the council is heading.

In 2015, the council offered 3 conservation incentives: grassed waterways, soil testing, and farm walkovers. In 2016, the council offered 5 conservation incentives: farm walkovers, grassed waterways, soil testing, buffer strips, and cover crops. All farm

walkovers were conducted by Dan Sitz, Pierce County Land Conservation Technician. A follow up letter was sent to the owner describing positive practices observed, as well as recommendations to improve soil and water conservation.

Conservation Practices and Units Installed by Incentive Participants

Year	Number of Participants	Cover Crops (ac)	Waterways (linear ft)	Farm Walkovers (#)	Soil Samples (ac)
2015	17	--	3,010	9	270.6
2016	17	195	8,340	6	160.6

Using a gully erosion calculator and generalizing the pre-existing condition of the grassed waterways, it is estimated that the waterways constructed in 2015 and 2016 prevented 719 tons of sediment (or 144 lbs. of phosphorus) from reaching surface water each year.

Although the council's cover crop incentive is relatively new, the STEPL model estimated that the cover crops planted in 2016 prevented 205 lbs/acre of phosphorus from reaching surface water. In addition, there are several documented practices that were completed in the watershed during this grant period that were not implemented through the council's incentives. These practices were likely influenced by the presence of the council's work. These include the following:

- 2,458 linear feet of waterway constructed – 31 lbs. of phosphorus removed annually
- Completion of Nutrient Management Plan for a 297 acre Dairy Farm – 207.9 lbs. of phosphorus removed (STEPL).
- There have been 2 conservation practices that owners completed without financial incentive from the council based on recommendations from a farm walkover. These include one farmer who developed and is implementing a managed grazing plan, and another who constructed a subsurface drain to keep surface water from a barnyard. A third landowner is expected to complete a streambank protection project in 2017 based on a farm walkover in 2016.

Although exact acres are unknown, a couple members have shared that they are moving towards more no-till and less conventional tillage. There are also a couple producers in the watershed that are not members, but have been implementing more no-till in their operation.

The South Kinni council continues to develop a phosphorous index (PI) inventory of the watershed using conservation incentives. In addition to offering cost sharing for soil testing, the council strongly encourages members to share any soil test data they have and require it before offering additional incentives. The council currently has PI data for 1,844.5 acres in the watershed. This represents almost 19% of all the cropland in the watershed. This information is being used to maintain a PI map in order to establish a baseline, as well as target hot spots in the watershed. Below is a summary of the PI inventory:

Producer	Total Acres	Number of Fields	Average PI Per Field
JR	9.8	5	0
BK	46.1	11	1.1
DN	29.7	2	6
TR	242.49	36	2.7
RP	681.1	52	1.37
JH	91.1	30	1.2
WF	223.4	12	1.75
LK	18.7	3	3.67
DK1	140.2	13	3.46
DK2	9.7	1	0
DB	17	2	0.5
TS	38.2	8	1.38
BB	297	11	2.82

Note: The Phosphorus Index is a measure of a fields potential to deliver phosphorus to the fields edge. The value represents phosphorus in lbs/year and Wisconsin requires the PI for fields to fall under 6 lbs/year.

The council plans on maintaining two PI maps; one for all first time soil test results obtained (to show baseline data) and a second for all updated soil test data (to show change). In 2016, the council received our first updated soil test data for 160.6 acres, which showed a reduction in the PI for those fields. It will take more time to collect enough data to look at the entire watershed. In the meantime, other models will be used to show measurable reductions in phosphorus.

POLK COUNTY – Horse Creek Watershed Council

The Horse Creek Watershed council was very productive during the 2014-2016 McKnight grant period. The council typically organized four to six meetings a year that involve six active council members. Within the six council members the council has appointed a Chair and a Vice Chair. Throughout the course of many meetings the council identified soil health and cover crops as their priorities to focus their efforts.

With soil health and cover crops as their focus, the council began planning their incentive list and events early in 2015. In addition to offering incentives for soil sampling, soil health test analysis, P-Indexing, cover crop planting, and manure spreader calibration; the council planned for one large soil health seminar and began a cover crop test plot.

In 2016 the council identified their role as local experts on the practices eligible for incentives. They included their contact information on their incentive letter to offer new adopters assistance if they needed. Practices eligible for incentives in 2016 were soil sampling, P-Indexing, cover crop planting, manure spreader calibration, and corn stalk nitrate testing. Field days in 2016 were a great success. In March, the Horse Creek Council

hosted renowned regenerative agriculture expert Gabe Brown from North Dakota. This seminar hosted over 100 guests. Later that year the council hosted a cover crop test plot open house that delivered test plot research to nearly twenty farmers and agronomists.

Conservation Practices and Units Installed by Incentive Participants

Year	Number of participants	Soil Sampling (ac)	P-Index (ac)	Cover Crop (ac)	Corn stalk N test (#)	Manure spreader Cal. (#)	Soil Health Test (#)
2015	8	1,133.8	845.3	150	8	0	2
2016	11	2,221.96	1,562.9	875	13	0	Discontinued

Nutrient Loading Inventories and Nutrient Reductions

Since the council has been making efforts to promote soil health and cover crops, there has been increasingly more evidence that their work is changing the agriculture community around them. There has been more conversation around cover crops and other producers in neighboring watersheds are beginning to plant cover crops. State-wide, this model is being evaluated and replicated in other watersheds, largely due to the program developed by the St. Croix-Red Cedar Farmer-Led Watershed Council project. Each spring a cover crop inventory is performed in the Horse Creek watershed. The purpose of this inventory is to track the adoption of cover crops within the watershed where the council is most active. In the 2014/15 harvest year a thorough inventory of combined practices was completed. The following is a report on the acres of practices installed and estimated nutrient reductions from STEPL.

Total cropland acres in Horse Creek Watershed per 2006 Land Use inventory – 7,998.4 ac

2014/15 harvest year BMP acres inventoried:
Cover Crops – 656.09 acres
No Till – 2,721.45 acres
Nutrient Management – 923 acres

STEPL Summary for harvest year 2014/15

Load before BMPs = 193,372.2 lbs/yr Nitrogen
Load after BMPs = 173,450.9 lbs/yr Nitrogen
Reduction = 19,921.3 lbs/yr Nitrogen

Load before BMPs = 38,738 lbs/yr Phosphorus
Load after BMPs = 34,030.5 lbs/yr Phosphorus
Reduction = 4,707.5 lbs/yr Phosphorus

The following is a report specific to cover crop installation within the Horse Creek watershed from 2014-2016 and its estimated P reductions.

Year	Cover Crop Acres Incentivized	Cover Crop Acres Inventoried	P & N Reduction (lbs) on inventoried Ac.
2014/15	0	656	488.3 (P) 2,588.8 (N)
2015/16	150	1088	809.8 (P) 4,293.6 (N)
2016/17	875	Not yet inventoried	* Est. from incentive ac. 649 (P) 3,441.2 (N)

* Average reduction of 0.74 lbs P/acre cover crop

A summary of harvest year 2016/2017 has not yet been completed because cover crop inventories are only feasible after spring snow melt. We will have a better idea of all of the cover crop acres planted within the Horse Creek watershed following an inventory planned for the spring 2017.

It is estimated that an additional 2,000 acres of cover crops were planted in neighboring watersheds as a result of the council's educational events in 2016. The producers who planted these acres attended one or more of the watershed council's informational events. The subject matter was intriguing enough to trial these practices on their operations, on their own. These additional acres have potential reductions of around 1,480 lbs of phosphorus.

ST. CROIX COUNTY – Dry Run Creek Watershed Council

The Dry Run Creek Watershed council remained active through the 2014-2016 McKnight grant period meeting four times a year. Each meeting was typically attended by six farmers. Recently, an additional two farmers have shown interest in becoming regular members. The council's meetings resulted in identifying waterways, cover crops, and soil tests as priorities for the watershed. In addition, the council is looking into implementing a GPS/precision agriculture model for the purpose of identifying areas of land that are not productive. The Ag Solver program, "Profit Zone Manager," could help target portions of crop fields for enrollment in permanent cover conservation practices.

Early in 2015, with water quality improvement as their focus, the council identified two priorities to incentivize: waterways and cover crops. Our council also became an important partner in St. Croix county staff efforts to implement a National Fish and Wildlife Foundation "Conservation Partners Grant." The council was able to leverage their financial resources with federally granted dollars. Two council members took part in a streambank restoration on Dry Run Creek, and they installed a native buffer along this section of the creek. The streambank work was used as a demonstration, where other landowners and council members were invited to the site to discuss erosion abatement procedures and general maintenance of shorelines.

As a result of the council exploring the Ag Solver Program, a general watershed wide meeting was held. There were approximately twelve producers in attendance. In the near future, the council plans on holding additional informational meetings.

Conservation Practices and Units Installed by Incentive Participants

Year	Cover Crops (ac)	Waterways (linear ft)	Streambank Stabilization (linear ft)	Nutrient Management Plan (ac)	N Reduced (lbs/yr)	P Reduced (lbs/yr)	Sediment Reduced (tons/yr)
2015	170	2,100	--	170	209	80	128
2016	359	6,740	500	2,183	1,751	487	435

*Cropable acres in Dry Run Creek Watershed is approximately 17,500 acres.

Nutrient loading from Dry Run Creek was calculated using the Soil and Water Assessment Tool (SWAT) model. Revised results of SWAT modeling show an approximate load of 3200 pounds P moving through Dry Run. Reductions have, and will continue to be, calculated based on US EPA's Spreadsheet Tool for Estimating Pollutant Loads (STEPL) model.

SPENDING REPORT

The following is a spending report for the full two-year grant period. The majority of our spending went toward the farmer-directed conservation incentives. Each watershed council developed their own list of practices based on their conservation practice priorities. Each group designed the programs themselves, and performed outreach to recruit participants who were willing to implement the practices. What follows is a break-down of our spending.

Type	Incentive Expense	Meeting Materials	Project Materials	Administrative Services	Total Expenses
South Kinni	$17,233.90	$716.96	--	--	$17,950.86
Horse Creek	$21,471.69	$375.00	$1,115.66	--	$22,962.35
Dry Run Creek	$19,536.44	--	--		$19,536.44
Hay River	$33,634.00	$2,075.25	--	--	$35,709.25
WI Farmers Union	--	--	--	$2,654.91	$2,654.91
Misc. Materials	--	--	$1,186.19	--	$1,186.19
Totals	$91,876.03	$3,167.21	$2,301.85	$2,654.91	$100,000.00

Below you will find an incentive practice inventory for the 2015-2016 McKnight grant period. This is a listing of the units of each conservation practice implemented across the four watershed councils making up the total incentive practice expense of $91,876.03.

Participant (#)	NMP and P-Index (ac)	Cover Crop (ac)	Waterways (linear ft)	Farm Walkover (#)	Soil Sampling (ac)	Stream bank Stabilization (linear ft)	Corn Stalk N. Tests (#)
81	4,761.2	3,383	26,551	15	6,252.16	500	21

PLANNING FORWARD

Overall the councils and project team of conservation staff have made exceptional progress towards developing and promoting the farmer-led movement over the past two years. The project team has also learned a great deal from working alongside our farmers. It has proven to be a very unique and successful partnership that councils, conservation staff, and project partners are committed to continue. Moving forward, it will be important show improvements in the soil and water quality to maintain interest in the project.

In 2017 the project team will continue to improve upon the peer-to-peer learning methods. A great deal of education surrounding cover crops and soil health is already planned and upcoming events are scheduled. The agriculture community is seeking out farmer council members to ask about upcoming educational events. From this interest and feedback, council members have begun to plan ways to refine their mentoring approach to increase interest and adoption.

More detailed work surrounding the effectiveness of peer-to-peer learning will also be taking place 2017. The Horse Creek watershed council received a grant from the National Wildlife Federation to test different peer-to-peer learning strategies and how they affect adoption of practices. These results will be observed and shared with the National Wildlife Federation. The hope is to develop a suite of effective strategies to be used nationwide to promote the adoption of various conservation practices, specifically cover crops.

The project team is still challenged with finding appropriate ways to measure nutrient and sediment reductions for the practices councils are promoting. As you have learned from this report, the project team has had success with STEPL, but other modeling programs are being evaluated as well. Other models such as SWAT and the Region 5 Model show promise, but supporting data needed for proper calculation is not always available. The project team realizes the importance of measuring success in terms of nutrient reductions and we plan to continue to broaden our experience with these models with the hope of finding one that will fit our programs needs.

Note –the project team is interested in collaborating with other McKnight grantees to find shared tools and models that can help us better track and estimate the water quality impacts of our work. We would be interested in finding consistent models that could be used across the St Croix basin.